



# Windows Server® 2008

## Migrating SYSVOL to DFS Replication

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Microsoft Corporation

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### **Abstract**

To improve the performance, scalability and reliability of SYSVOL replication, use DFS Replication to replicate the SYSVOL folder, which stores Group Policy objects and logon scripts. To do so, you can either create a new domain that uses the Windows Server 2008 domain functional level, or you can use the procedure that is discussed in this document to upgrade an existing domain and migrate replication to DFS Replication.

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# SYSVOL Replication Migration Guide: FRS to DFS Replication

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Domain controllers use a special shared folder named SYSVOL to replicate logon scripts and Group Policy object files to other domain controllers. Windows 2000 Server and Windows Server 2003 use File Replication Service (FRS) to replicate SYSVOL, whereas Windows Server 2008 uses the newer DFS Replication service when in domains that use the Windows Server 2008 domain functional level, and FRS for domains that run older domain functional levels.

To use DFS Replication to replicate the SYSVOL folder, you can either create a new domain that uses the Windows Server 2008 domain functional level, or you can use the procedure that is discussed in this document to upgrade an existing domain and migrate replication to DFS Replication.



## Note

This document assumes that you have a basic knowledge of Active Directory Domain Services (AD DS), FRS, and Distributed File System Replication (DFS Replication). For more information, see [Active Directory Domain Services Overview](#), [FRS Overview](#), or [Overview of DFS Replication](#)

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## Additional references

[SYSVOL Migration Series: Part 1—Introduction to the SYSVOL migration process](#)

[SYSVOL Migration Series: Part 2—Dfsrmig.exe: The SYSVOL migration tool](#)

[SYSVOL Migration Series: Part 3—Migrating to the 'PREPARED' state](#)

[SYSVOL Migration Series: Part 4—Migrating to the 'REDIRECTED' state](#)

[SYSVOL Migration Series: Part 5—Migrating to the 'ELIMINATED' state](#)

[Step-by-Step Guide for Distributed File Systems in Windows Server 2008](#)

[FRS Technical Reference](#)

## SYSVOL Migration Conceptual Information

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Before migrating SYSVOL replication to DFS Replication, it is important to be familiar with the SYSVOL migration states. It can also be useful to have a basic understanding of the tasks that you will perform during the migration process.

For more information, see the following topics:

- [SYSVOL Migration States](#)
- [Overview of the SYSVOL Migration Procedure](#)

## SYSVOL Migration States

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The migration process proceeds through a number of states, during which SYSVOL replication transitions from using File Replication Service (FRS) to using Distributed File System Replication (DFS Replication). This transition takes place in discrete steps, as described in the following sections.

- [Global and local migration states](#)
- [Migration states](#)
- [How DFS Replication migrates between states](#)

## Global and local migration states

Because the migration process involves setting migration directives on the domain controller that is the Primary Domain Controller (PDC) emulator and waiting for the other domain controllers to carry out those directives, migration states can either be global to the domain or local to an individual domain controller:

- **Global** The global migration state is the migration state that you set with the **dfsrmig** command to initiate one of the phases of the migration process. After you set the global state,

which is stored in Active Directory Domain Services (AD DS), it replicates to all domain controllers.

For more information about the **dfsrmig** command, see [Appendix C: Dfsrmig Command Reference](#).

- **Local** Each domain controller has a local migration state. DFS Replication on each domain controller polls AD DS to determine the global migration state to which the domain controller should migrate. If the global migration state differs from the local state on the domain controller, DFS Replication attempts to transition the local state to match the global state. The local migration state can be one of the stable states or the transition states that are described later in this section.

## Migration states

The SYSVOL migration process is a state-based process that progresses through four primary (stable) states, as well as six temporary (transition) states that individual domain controllers progress through to reach the stable states.

### Stable states

There are four stable states, which are in effect the four phases of migration. These states are similar to the process that occurs when employees of a company plan to retire or leave the company, and they train other employees to assume their responsibilities. The similarities in these processes are described in the following table.

State	Transition Process for Job Responsibilities	Migration Process for SYSVOL Replication
Start (State 0)	Before deciding to retire or leave, the employee handles all of the responsibilities of the job.	Before SYSVOL migration begins, FRS replicates the SYSVOL shared folder.
Prepared (State 1)	The first employee continues working while the new employee shadows the first employee, learning how to perform the work. The new employee may become responsible for some minor tasks, but the first employee remains accountable for the primary responsibilities of the job.	FRS continues to replicate the SYSVOL shared folder that the domain uses, while DFS Replication replicates a copy of the SYSVOL folder. This copy of the SYSVOL folder is not used to service requests from other domain controllers.
Redirected (State 2)	The new employee takes over most of the responsibilities of	The DFS Replication copy of the SYSVOL folder becomes

State	Transition Process for Job Responsibilities	Migration Process for SYSVOL Replication
	the job, but the first employee remains to assist the new employee if needed.	responsible for servicing SYSVOL requests from other domain controllers. FRS continues to replicate the original SYSVOL folder, but DFS Replication now replicates the production SYSVOL folder that domain controllers in the Redirected state use.
Eliminated (State 3)	The first employee retires or leaves, and the new employee handles all of the responsibilities of the job.	DFS Replication continues to handle all the SYSVOL replication. Windows deletes the original SYSVOL folder, and FRS no longer replicates SYSVOL data.

You use the **dfsrmig** command during migration to step through the four stable states. The significant changes in SYSVOL replication that occur during these phases and that are most visible to users include the following events:

- The migration process creates a copy of the SYSVOL folder.  
FRS continues to replicate the original SYSVOL folder, which is located by default at `[drive:]Windows_folder\SYSVOL`. DFS Replication replicates the copy of the SYSVOL folder, which is located by default at `[drive:]Windows_folder\SYSVOL_DFSR`.
- The mapping of the SYSVOL shared folder changes.  
This mapping controls whether the SYSVOL information that the domain actively uses is replicated by FRS or DFS Replication. Originally, the SYSVOL shared folder maps to `[drive:]Windows_folder\SYSVOL`, so the SYSVOL information that the domain actively uses is replicated by FRS. Later in the migration process, the SYSVOL shared folder maps to `[drive:]Windows_folder\SYSVOL_DFSR`, and the SYSVOL information that the domain actively uses is replicated by DFS Replication.
- The migration process deletes the original copy of the SYSVOL folder.



The following table shows the stable states during the migration process.

State number	State	[drive:]\Windows_folder\SYSVOL Folder	[drive:]\Windows_folder\SYSVOL_DFRS Folder	SYSVOL Shared Folder Mapping
0	Start	Present, contains content, and replicated by FRS.	Not present, unless migration was rolled back. Not replicated if present.	[drive:]\Windows_folder\SYSVOL
1	Prepared	Present, contains content, and replicated by FRS.	Present, contains content, and replicated by DFS Replication.	[drive:]\Windows_folder\SYSVOL
2	Redirected	Present, contains content, and replicated by FRS.	Present, contains content, and replicated by DFS Replication.	[drive:]\Windows_folder\SYSVOL_DFSR
3	Eliminated	Absent, unless the folder was open during migration to the eliminated state. If present, contains no files and is not replicated.	Present, contains content, and replicated by DFS Replication.	[drive:]\Windows_folder\SYSVOL_DFSR

## Local Transition states

During migration, each domain controller cycles through intermediate states before reaching one of the stable states described in “Stable states” earlier in this document. The following table lists these local transition states.

State number	Transition state name
4	Preparing
5	Waiting for initial synchronization
6	Redirecting
7	Eliminating
8	Undo redirecting
9	Undo preparing

 **Note**

The Preparing state is only applicable to read-only domain controllers (RODCs).

## How DFS Replication migrates between states

The DFS Replication service on each domain controller polls AD DS for the current global migration state. If the global state differs from the local state on the domain controller, DFS Replication takes steps to change its local state to match the global state.

You use the **dfsrmig** command to migrate domain controllers from the Start state to each subsequent stable state until the domain controllers reach the Eliminated state. Before domain controllers migrate to the Eliminated state, you can reverse the migration if needed either completely back to the Start state or partially back to a previous stable transition state. This process is called rollback.

For example, if the global migration state in the domain is Redirected, you can choose to roll back to either the Prepared state or the Start state. After you move to the Eliminated state, however, you cannot roll back the migration. Therefore, you should move to the Eliminated state only if you are absolutely sure that the DFS replication of SYSVOL works satisfactorily and that you are fully committed to switch to DFS Replication.

### State transitions during migration and rollback

Figure 1 shows the states through which the migration process moves. The large circles represent the four stable migration states. The small circles represent the transition states that a domain controller passes through to reach the stable states.

**Figure 1** Moving forward through migration states

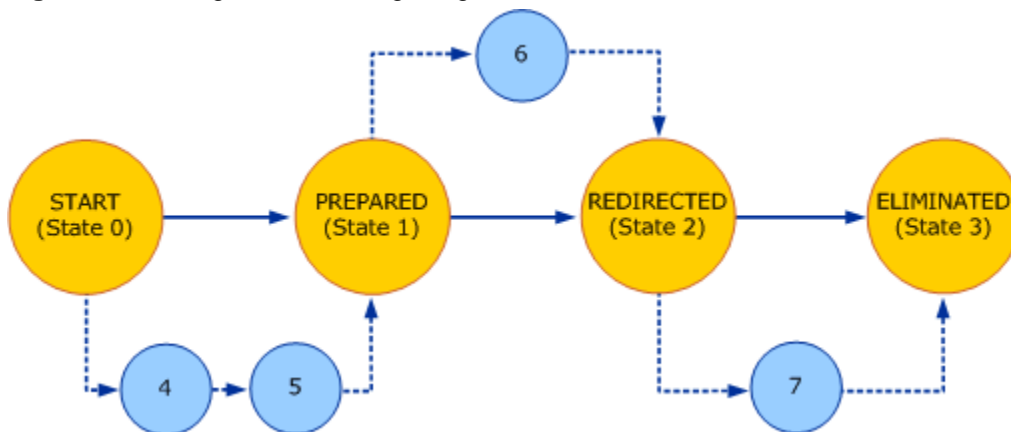
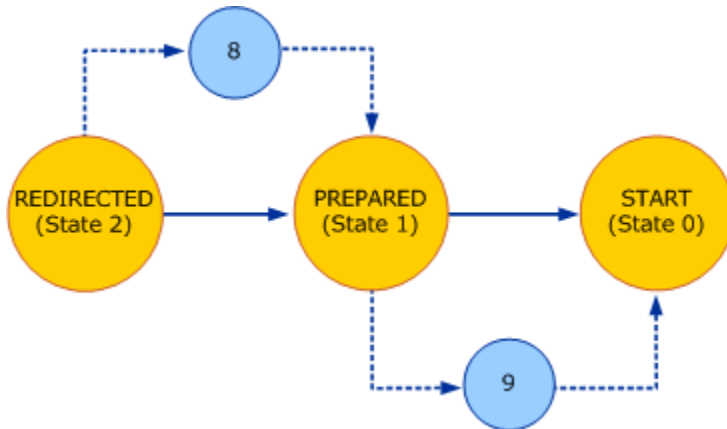


Figure 2 shows the states through which domain controllers move during the rollback process. The large circles represent stable migration states. The small circles represent the transition states that a domain controller passes through during the roll back to one of the stable states.

**Figure 2** Moving backwards in migration states



## Additional references

[Overview of the SYSVOL Migration Procedure](#)

[SYSVOL Migration Procedure](#)

[Troubleshooting SYSVOL Migration](#)

[SYSVOL Migration Reference Information](#)

[SYSVOL Migration Series: Part 1 – Introduction to the SYSVOL migration process](#)

# Overview of the SYSVOL Migration Procedure

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The following sections provide an overview of the procedures that you perform when you migrate SYSVOL replication from File Replication Service (FRS) to Distributed File System (DFS Replication).

- [Migrating to the Prepared State](#)
- [Migrating to the Redirected State](#)
- [Migrating to the Eliminated State](#)
- [Rolling Back Migration](#)

## Caution

To minimize the likelihood of the SYSVOL replication migration process causing problems in your environment, test the procedure prior to migrating a production environment. Consider testing the procedure in a lab (especially if domain controllers are separated by firewalls), using a simple domain as a pilot project, or by installing DFS Replication on domain controllers in the domain and testing the replication of other shared folders.

## Migrating to the Prepared State

This migration phase includes the tasks in the following list. After this phase is complete, FRS will continue to replicate the SYSVOL shared folder that the domain uses, whereas DFS Replication replicates a copy of the SYSVOL folder.

- Raising the domain functional level to Windows Server 2008.
- Verifying that the SYSVOL shared folder is healthy and that FRS is correctly replicating SYSVOL by using the Ultrasound diagnostic tool or a manual procedures.
- Backing up the data in the SYSVOL folder.
- Verifying that the DFS Replication service is installed, has a **Start Type** of Automatic, and is running on the PDC emulator.
- Running the **dfsrmig /SetGlobalState 1** command on the PDC emulator to start the migration to the Prepared state.
- Waiting for all domain controllers to reach the Prepared state, which you can verify by running the **dfsrmig /GetMigrationState** command.
- Verifying that migration to the Prepared state succeeded.

## Tip

To monitor the status of DFS Replication for SYSVOL, periodically run DFS Replication health reports and monitor the Event Log for DFS Replication events.

For information about how to raise the domain functional level to Windows Server 2008 and migrate SYSVOL replication to the Prepared state, see [Migrating to the Prepared State](#).

To download Ultrasound, see <http://go.microsoft.com/fwlink/?LinkId=121859>. For information about Ultrasound, see the Ultrasound Help.

## Migrating to the Redirected State

This migration phase includes the tasks in the following list. After this phase is complete, the DFS Replication copy of the SYSVOL folder becomes responsible for servicing SYSVOL requests from other domain controllers. FRS continues to replicate the original SYSVOL folder, but DFS Replication now replicates the production SYSVOL folder that domain controllers in the Redirected state use.

- Verifying that migration has reached the Prepared state on all domain controllers and that the domain is prepared to migrate to the Redirected state.
- Running the **dfsrmig /SetGlobalState 2** command on the PDC emulator to start the migration to the Redirected state.
- Waiting for all domain controllers to reach the Redirected state, which you can verify by running the **dfsrmig /GetMigrationState** command.
- Verifying that migration to the Redirected state succeeded.

For information about how to migrate SYSVOL replication to the Redirected state, see [Migrating to the Redirected State](#).

## Migrating to the Eliminated State

This migration phase includes the tasks in the following list. After this phase is complete, DFS Replication is exclusively responsible for SYSVOL replication. Windows deletes the original SYSVOL folder, and FRS no longer replicates SYSVOL data.

- Verifying that migration has consistently reached the Redirected state on all domain controllers and that the domain is prepared to migrate to the Eliminated state.  
You cannot reverse migration after migration reaches the Eliminated state. Therefore, you should make sure that all domain controllers have migrated to the Redirected state and that the DFS replication service can handle SYSVOL replication correctly before you begin the migration to the Eliminated state.
- Running the **dfsrmig /SetGlobalState 3** command on the PDC emulator to start the migration to the Eliminated state.
- Waiting for all domain controllers to reach the Eliminated state, which you can verify by running the **dfsrmig /GetMigrationState** command.
- Verifying that migration to the Eliminated state succeeded.
- Removing the FRS role service if it is not used for other purposes and is no longer needed.

### **Caution**

If you migrate directly from the Start state to the Eliminated state, each domain controller automatically progresses through all of the intermediate steps and eliminates FRS. Doing so gives you no opportunity to troubleshoot problems before you commit your domain to the migration. Therefore, this approach is not recommended.

For information about how to migrate SYSVOL replication to the Eliminated state, see [Migrating to the Eliminated State](#).

## Rolling Back Migration

You can reverse the migration process any time before you migrate to the Eliminated state. However, after you migrate to the Eliminated state, you can no longer roll back the migration of SYSVOL replication to DFS Replication. The steps for rolling back migration resemble the steps for advancing through the migration phases. For more information about how to roll back the migration process, see [Rolling Back SYSVOL Migration to a Previous Stable State](#).

## Additional references

[SYSVOL Migration Procedure](#)

[Troubleshooting SYSVOL Migration](#)

[SYSVOL Migration Reference Information](#)

[SYSVOL Migration Series: Part 1 – Introduction to the SYSVOL migration process](#)

# SYSVOL Migration Procedure

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To migrate SYSVOL replication from File Replication Service (FRS) to Distributed File System (DFS Replication), you must migrate a domain through three states: Prepared, Redirected, and Eliminated. The steps for migrating through these states are described in the following procedures.

- [Migrating to the Prepared State](#)
- [Migrating to the Redirected State](#)
- [Migrating to the Eliminated State](#)

## Migrating to the Prepared State

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The first part of the process for migrating SYSVOL replication from File Replication Service (FRS) to Distributed File System (DFS) Replication is to raise the functional level of the domain to Windows Server 2008 and to set the global migration state to Prepared.

Migrating to the Prepared state includes the following tasks:

1. [Verify the health of Active Directory Domain Services](#)
2. [Raise the domain functional level to Windows Server 2008](#)
3. [Migrate the domain to the Prepared state](#)
4. [Verify that the domain has migrated to the Prepared state](#)

For more information about the SYSVOL migration states and the transitions between them, see [SYSVOL Migration States](#). For information about the actions that the migration tool and the DFS Replication service perform during the migration to the Prepared state, see [Appendix D: SYSVOL Migration Tool Actions](#).

## Verify the health of Active Directory Domain Services

Before you raise the functional level of the domain, it is a good idea to verify that Active Directory Domain Services (AD DS) is healthy and that the SYSVOL folder is properly replicating. If Active Directory replication is not working properly, other domain controllers could fail to migrate. This is especially important for remote domain controllers, because those domain controllers will only start migration after the migration directive replicates to the remote sites.

▶ **To verify the health of AD DS**

1. On each domain controller in the domain that you want to migrate, open a command prompt window and type **net share** to verify that the SYSVOL shared folder is shared by each domain controller in the domain and that this shared folder still maps to the SYSVOL folder that FRS is replicating. Text similar to the following should appear as part of the command output:

```
Share name      Resource                                             Remark
-----
[...]
```

Share name	Resource	Remark
NETLOGON	C:\Windows\SYSVOL\sysvol\corp.contoso.com\SCRIPTS	Logon server share
SYSVOL	C:\Windows\SYSVOL\sysvol	Logon server share

 **Tip**

To use the **net share** command on a remote computer, download and use the [Windows Sysinternals PsExec tool](http://go.microsoft.com/fwlink/?LinkId=161328) (<http://go.microsoft.com/fwlink/?LinkId=161328>).

2. Check the amount of available disk space on the drive that stores the SYSVOL share. The server must have enough available disk space to create a copy of the SYSVOL share.
3. Use the Ultrasound tool to verify that FRS replication of the SYSVOL folder is healthy. If you are not already using Ultrasound to monitor FRS, see the following blog post for a simpler method to check SYSVOL replication using the FRSDIAG tool <http://go.microsoft.com/fwlink/?LinkId=137837>.

 **Note**

(The Ultrasound tool provides detailed monitoring and troubleshooting of FRS. To download Ultrasound, see <http://go.microsoft.com/fwlink/?LinkId=121859>. For information about using Ultrasound to monitor FRS replication, see the Ultrasound Help.)

4. On a domain controller in the domain that you want to migrate, open a command prompt window and type **repadmin /ReplSum** to verify that Active Directory replication is working properly. The output should indicate no errors for all of the domain controllers in the domain.
5. Use Registry Editor on each domain controller in the domain to navigate to **HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\Netlogon\Parameters**



and verify that the value of the **SysVol** registry entry is `[drive:]Windows_folde\SYSTEM\sysvol`, and that the value of the **SysvolReady** registry entry is **1**.

6. On each domain controller, click **Start**, point to **Administrative Tools**, and then click **Services**.
7. In the **Services** window, on the **Extended** tab, verify that the **DFS Replication** service is listed with the values of **Started** in the **Status** column and **Automatic** in the **Startup Type** column.
8. Fix any problems with replication before beginning the migration to the Prepared state.

## Raise the domain functional level to Windows Server 2008

Before you begin the migration process, you must raise the functional level of the domain to Windows Server 2008. To do so, all domain controllers in the domain must be running Windows Server 2008. Upgrading the operating system on a domain controller does not automatically raise the functional level of your domain.

To raise the functional level of a domain, use the following procedure.

### **Important**

Do not raise the domain functional level to Windows Server 2008 until all domain controllers in the domain are running Windows Server 2008. If the domain operates at the Windows Server 2008 functional level and you attempt to install AD DS on a Windows Server 2003–based server or a Windows 2000–based server, the installation will fail. After you raise the domain functional level, you cannot go back to a lower functional level.

### **To raise the domain functional level to Windows Server 2008**

1. Open **Active Directory Domains and Trusts** from the Administrative Tools folder.
2. In the console pane of the **Active Directory Domains and Trusts** window, right-click the name of the domain for which you are migrating the SYSVOL folder, and then click **Raise Domain Functional Level**.
3. In the **Raise domain functional level** dialog box, in the **Select an available domain functional level** list, click **Windows Server 2008**, and then click **Raise**.
4. In the warning message that mentions that raising the domain functional level affects the entire domain and cannot be reversed, click **OK**.
5. In the confirmation message that indicates that raising the domain functional level succeeded, click **OK**.

# Migrate the domain to the Prepared state

After you perform the procedures earlier in this topic, you are ready to migrate the domain to the Prepared state.

## Tip

After beginning migration, avoid making any changes to Group Policy or logon scripts until all domain controllers are in the Redirected state. This ensures that client computers can obtain the most up-to-date policies and scripts from their local cache, even if the SYSVOL folder is temporarily unavailable while migrating between states.

## To migrate the domain to the Prepared state

1. Save the state of your domain controllers so that if problems arise with the migration, you can restore the domain controllers to the premigration state. Use the **Wbadmin start systemstatebackup** command to back up the system state of the individual domain controllers. For information about the **Wbadmin** command, see (<http://go.microsoft.com/fwlink/?LinkId=121860>).
2. From a command prompt window on a writeable domain controller (not a read-only domain controller), type **dfsrmig /setglobalstate 1** to set the global migration state to Prepared.
3. Type **dfsrmig /getglobalstate** to verify that the global migration state is Prepared. The following output appears if the global migration state is Prepared.

```
Current DFSR global state: 'Prepared'  
Succeeded.
```

4. Type **dfsrmig /getmigrationstate** to confirm that all of the domain controllers have reached the Prepared state. The following output should appear when all of the domain controllers reach the Prepared state.

```
All Domain Controllers have migrated successfully to Global state  
( 'Prepared' ).  
Migration has reached a consistent state on all Domain Controllers.  
Succeeded.
```

This step can take some time. The time needed for all of the domain controllers to reach the Prepared state depends on Active Directory latencies and the amount of data that is present in the SYSVOL shared folder.

## Important

You should not begin migrating to the Redirected state until migration reaches a consistent state on all domain controllers. Also, If you promote a new read-only domain controller during the migration before the domain is in the Eliminated state, then you must manually create the AD DS objects for DFS Replication as discussed in the “Migration appears stalled at the

Preparing transition state on a read-only domain controller” section of [Migration appears stalled at the Preparing transition state on a read-only domain controller](#).

## Verify that the domain has migrated to the Prepared state

Before you continue the migration and migrate the domain to the Redirected state, it is important to first verify that the domain has properly migrated to the Prepared state. Use the following procedure to verify the health of the migration.

After you are satisfied that migration to the Prepared state succeeded and that SYSVOL is still replicating properly, you can migrate to the Redirected state.

### ► To verify that the domain has migrated to the Prepared state

1. On each domain controller in the domain that you want to migrate, open a command prompt window and type **net share** to verify that the SYSVOL shared folder is shared by each domain controller in the domain and that this shared folder still maps to the SYSVOL folder that FRS is replicating.
2. Use the Ultrasound tool to verify that FRS replication of the original SYSVOL folder remains healthy. For information about using Ultrasound to monitor FRS replication, see the Ultrasound Help.

If you are not already using Ultrasound to monitor FRS, see the following blog post for a simpler method to check SYSVOL replication using the FRSDIAG tool <http://go.microsoft.com/fwlink/?LinkId=137837>.

3. Verify that the `[drive:]\Windows_folde\SYSVOL_DFSR` folder was created on each domain controller, and verify that the contents of the `[drive:]\Windows_folde\SYSVOL` folder are successfully copied to the `[drive:]\Windows_folde\SYSVOL_DFSR` folder. The migration process copies only the contents of the Domain and SYSVOL folders under the `[drive:]\Windows_folde\SYSVOL` folder to the `[drive:]\Windows_folde\SYSVOL_DFSR`. This copying step can take some time, depending on the size of the SYSVOL folder.
4. Use the DFS Management snap-in to create a Diagnostic Report for the SYSVOL\_DFSR folder by performing the following steps:



#### Note

You must be a member of the local Administrators group on each server for which you want to prepare a diagnostic report.

- a. Open **DFS Management** from the **Administrative Tools** folder.

If DFS Management is not already installed, from Server Manager, use the Add Features Wizard to install the **Remote Server Administration Tools** feature, and select the **File Services Tools** feature with the **Distributed File System Tools** option.

- b. In the console tree, under the **Replication** node, click **Domain System Volume**.
- c. Click the **Membership** tab, click **Membership Status**, and then for each domain controller in the domain, verify that the **Enabled** check box is selected for a **Local Path** of `[drive:]Windows_folde\SYSVOL_DFSR\domain`.
- d. Right-click **Domain System Volume**, and then click **Create Diagnostic Report** to create a diagnostic report for DFS Replication of the SYSVOL\_DFSR folder. Follow the instructions in the Diagnostic Report Wizard and view the report that the wizard produces to verify the health of DFS Replication of the SYSVOL\_DFSR folder.

DFS Management in Windows Server 2008 includes the ability to run a propagation test and generate two types of diagnostic reports—a propagation report and a general health report. To verify that SYSVOL replication is working properly, perform the propagation test and examine both reports for problems.



#### **Note**

The amount of time necessary to generate a diagnostic report varies based on a number of factors, including DFS Replication health, the number of replicated folders, available server resources (for example, CPU and memory), WAN availability (connectivity, bandwidth, and latency), and the chosen reporting options. Because of the potential delay in creating diagnostic reports, you should create diagnostic reports for no more than 50 servers at a time.

5. Migrate SYSVOL replication to the Redirected state after you are satisfied that the migration to the Prepared state succeeded and that the replication of the SYSVOL shared folder continues to operate properly. For information about how to migrate SYSVOL replication to the Redirected state, see [Migrating to the Redirected State](#).

If you need additional confirmation that the migration to the Redirected state succeeded or if you need additional troubleshooting information when migration to the Redirected state does not succeed, perform the additional verification steps in **Detailed verification of migration to the Prepared state**.

## **Additional references**

[Overview of the SYSVOL Migration Procedure](#)

[Migrating to the Redirected State](#)

[Migrating to the Eliminated State](#)

[SYSVOL Replication Migration Guide: FRS to DFS Replication](#)

[SYSVOL Migration Series: Part 3 - Migrating to the 'PREPARED' state](#)

# Migrating to the Redirected State

---

After you have verified that all domain controllers have successfully migrated SYSVOL replication to the Prepared state and that SYSVOL replication still operates as expected, you can migrate SYSVOL replication to the Redirected state. In the Redirected state, DFS Replication takes over the replication of the primary SYSVOL folder for the domain; however, FRS continues to replicate the original SYSVOL folder.

To migrate to the Redirected state, perform the following tasks:

1. [Migrate the domain to the Redirected state](#)
2. [Verify that the domain has migrated to the Redirected state](#)

After you migrate successfully to the Redirected state, you can proceed to migrate to the Eliminated state, as discussed in the [Migrating to the Eliminated State](#) topic.

## Migrate the domain to the Redirected state

After you verify that the domain is successfully in the Prepared state, as discussed in the [Migrating to the Prepared State](#) topic, you are ready to migrate the domain to the Redirected state.

### ► To migrate the domain to the Redirected state

1. From a command prompt window on a writeable domain controller (not a read-only domain controller) in the domain that you want to migrate, type **dfsrmig /setglobalstate 2** to set the global migration state to Redirected.
2. Type **dfsrmig /getglobalstate** to verify that the global migration state is Redirected. The following output appears if the global migration state is Redirected.

```
Current DFSR global state: 'Redirected'
Succeeded.
```

3. Type **dfsrmig /getmigrationstate** to confirm that all domain controllers have reached the Redirected state. The following output should appear when all domain controllers reach the Redirected state.

```
All Domain Controllers have migrated successfully to Global state
('Redirected').

Migration has reached a consistent state on all Domain Controllers.

Succeeded.
```

This step can take some time. The time needed for all of the domain controllers to reach the Redirected state depends on Active Directory latencies and the amount of data that is present in the SYSVOL shared folder.

### Important

You should not begin migrating to the Eliminated state until the migration

reaches a consistent state on all domain controllers.

## Verify that the domain has migrated to the Redirected state

Before you continue the migration and migrate the domain to the Eliminated state, it is important to first verify that the domain has properly migrated to the Redirected state. Use the following procedure to verify the health of the migration. Once you are satisfied that migration to the Prepared state has succeeded and that SYSVOL is still replicating properly, you can migrate to the Eliminated state.

### ► To verify that the domain has migrated to the Redirected state

1. On each domain controller in the domain that you want to migrate, open a command prompt window and type **net share** to verify that the SYSVOL shared folder is shared by each domain controller in the domain and that this shared folder now maps to the SYSVOL\_DFSR folder that DFS Replication is replicating. Text that is similar to the following should appear as part of the output of the command:

```
Share name      Resource                                     Remark
-----
[...]
```

NETLOGON	C:\Windows\SYSVOL_DFSR\sysvol\corp.contoso.com\SCRIPTS	Logon server share
SYSVOL	C:\Windows\SYSVOL_DFSR\sysvol	Logon server share

#### Tip

To use the **net share** command on a remote computer, download and use the [Windows Sysinternals PsExec tool](http://go.microsoft.com/fwlink/?LinkId=161328) (<http://go.microsoft.com/fwlink/?LinkId=161328>).

2. Use the DFS Management snap-in to create a Diagnostic Report for the SYSVOL\_DFSR folder by performing the following steps:

#### Note

You must be a member of the local Administrators group on each server for which you want to prepare a diagnostic report.

- a. Open **DFS Management** from the **Administrative Tools** folder.
- b. In the console tree, under the **Replication** node, click **Domain System Volume**.
- c. Click the **Membership** tab, click **Membership Status**, and then for each domain controller in the domain, verify that the **Enabled** check box is selected for a **Local**

**Path** of [drive:\]Windows\_folder\SYSVOL\_DFSR\domain.

- d. Right-click **Domain System Volume**, and then click **Create Diagnostic Report** to create a diagnostic report for the DFS Replication of the SYSVOL\_DFSR folder. Follow the instructions in the Diagnostic Report Wizard and view the report that the wizard produces to verify the health of the DFS Replication of the SYSVOL\_DFSR folder.

DFS Management in Windows Server 2008 provides the ability to run a propagation test and generate two types of diagnostic reports—a propagation report and a general health report. To verify that SYSVOL replication is working properly, perform the propagation test and examine both reports for problems.



#### **Note**

The amount of time necessary to generate a diagnostic report varies based on a number of factors, including DFS Replication health, the number of replicated folders, available server resources (for example, CPU and memory), WAN availability (connectivity, bandwidth, and latency), and the chosen reporting options. Because of the potential delay in creating diagnostic reports, you should create diagnostic reports for no more than 50 servers at a time.

3. Use the Ultrasound tool to verify that the FRS replication of the original SYSVOL folder remains healthy. For information about using Ultrasound to monitor FRS replication, see the Ultrasound Help.

If you are not already using Ultrasound to monitor FRS, see the following blog post for a simpler method to check SYSVOL replication using the FRSDIAG tool

<http://go.microsoft.com/fwlink/?LinkId=137837>.

Although DFS Replication rather than FRS is responsible for SYSVOL replication after migration to the Redirected state, you should still confirm that FRS replication continues to work in case you need to roll back migration later.

4. Migrate SYSVOL replication to the Eliminated state when you are satisfied that migration to the Redirected state succeeded and that replication of the SYSVOL shared folder continues to operate properly. For information about how to migrate SYSVOL replication to the Eliminated state, see [Migrating to the Eliminated State](#).

If you need additional confirmation that migration to the Redirected state succeeded or if you need additional troubleshooting information when migration to the Redirected state does not succeed, perform the additional verification steps in [Appendix B: Verifying the State of SYSVOL Migration](#).

## **Additional references**

[SYSVOL Replication Migration Guide: FRS to DFS Replication](#)

[Migrating to the Prepared State](#)

## Migrating to the Eliminated State

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The final phase of the SYSVOL replication migration is migrating the domain to the Eliminated state. After you migrate SYSVOL replication to the Eliminated state, all SYSVOL replication duties are performed by DFS Replication and you can no longer roll back migration to a previous state.

To migrate the domain to the Eliminated state, perform the following tasks.

1. [Prepare to migrate the domain to the Eliminated state](#)
2. [Migrate the domain to the Eliminated state](#)

## Prepare to migrate the domain to the Eliminated state

Before you migrate the domain to the Eliminated state, you should perform all of the verification procedures in the [Migrating to the Redirected State](#) topic. Then use the following procedure to verify that the migration state is consistent and at the Redirected state on all domain controllers.

### To prepare to migrate the domain to the Eliminated state

1. Log on to a writeable domain controller (if you are not logged on already).
2. At a command prompt, type **dfsrmig /getmigrationstate** to verify that all the domain controllers are at the Redirected state. The following output appears when all domain controllers are at the Redirected state.

```
All Domain Controllers have migrated successfully to Global state
('Redirected').

Migration has reached a consistent state on all Domain Controllers.

Succeeded.
```

#### Important

Do not migrate to the Eliminated state unless all the domain controllers have successfully reached a consistent state of Redirected. Also do not save the state of an individual domain controller unless that domain controller is in a stable migration state.

3. Type **repadmin /ReplSum** to verify that Active Directory replication is working properly. The output should indicate that there are no errors for any of the domain controllers in the domain.
4. Save the state of your domain controllers so that if problems arise with the migration, you



can restore to the previous state. Use the **Wbadmin start systemstatebackup** command to back up the system state of the individual domain controllers. For information about the **Wbadmin** command, see (<http://go.microsoft.com/fwlink/?LinkId=121860>).

## Migrate the domain to the Eliminated state

After you perform the previous procedure to prepare for the Redirected state, you are ready to migrate the domain to the Redirected state.

### Note

After you migrate SYSVOL replication to the Eliminated state, you can no longer roll back migration to a previous state. You should make sure that everything is operating normally in the Redirected state and that you are ready to commit to using DFS Replication for replicating the contents of the SYSVOL folder.

### To migrate the domain to the Eliminated state

1. On a writeable domain controller (not a read-only domain controller), open a command prompt window and then type **dfsrmig /setglobalstate 3** to set the global migration state to Eliminated.

### Important

You cannot revert back to FRS replication after this stage. You should carry out this step only when you are fully committed to using DFS replication.

2. Type **dfsrmig /getglobalstate** to verify that the global migration state is Eliminated. The following output appears if the global migration state is Eliminated.

```
Current DFSR global state: 'Eliminated'  
Succeeded.
```

3. Type **dfsrmig /getmigrationstate** to confirm that all domain controllers have reached the Eliminated state. The following output should appear when all domain controllers reach the Eliminated state.

```
All Domain Controllers have migrated successfully to Global state  
(`Eliminated`)  
Migration has reached a consistent state on all Domain Controllers.  
Succeeded.
```

This step can take some time. The time needed for all of the domain controllers to reach the prepared state depends on Active Directory latencies and the amount of data present in the SYSVOL shared folder.

4. On each domain controller in the domain, open a command prompt window and type **net share** to verify that the SYSVOL shared folder is shared by each domain controller in the domain and that this shared folder maps to the SYSVOL\_DFSR folder that DFS

Replication is replicating. Text that is similar to the following should appear as part of the output of the command.

Share name	Resource	Remark
-----		
----		
[...]		
NETLOGON	C:\Windows\SYSTEM32\sysvol\corp.contoso.com\SCRIPTS	Logon server share
SYSVOL	C:\Windows\SYSTEM32\sysvol	Logon server share

 **Tip**

To use the **net share** command on a remote computer, download and use the [Windows Sysinternals PsExec tool](http://go.microsoft.com/fwlink/?LinkId=161328) (<http://go.microsoft.com/fwlink/?LinkId=161328>).

5. Use the DFS Management snap-in to create a Diagnostic Report for the SYSVOL\_DFSR folder by performing the following steps:

 **Note**

You must be a member of the local Administrators group on each server for which you want to prepare a diagnostic report.

- a. Open **DFS Management** from the **Administrative Tools** folder.
- b. In the console tree, under the **Replication** node, click **Domain System Volume**.
- c. Click the **Membership** tab, click **Membership Status**, and then for each domain controller in the domain, verify that the **Enabled** check box is selected for a **Local Path** of `[drive:]Windows_folder\SYSTEM32\sysvol\domain`.
- d. Right-click **Domain System Volume**, and then click **Create Diagnostic Report** to create a diagnostic report for the DFS Replication of the SYSVOL\_DFSR folder. Follow the instructions in the Diagnostic Report Wizard and view the report that the wizard produces to verify the health of the DFS Replication of the SYSVOL\_DFSR folder.

DFS Management in Windows Server 2008 provides the ability to run a propagation test and generate two types of diagnostic reports—a propagation report and a general health report. To verify that SYSVOL replication is working properly, perform the propagation test and examine both reports for problems.

 **Note**

The amount of time necessary to generate a diagnostic report varies based on a number of factors, including DFS Replication health, the number of replicated folders, available server resources (for example, CPU and memory), WAN availability (connectivity, bandwidth, and latency), and the

chosen reporting options. Because of the potential delay in creating diagnostic reports, you should create diagnostic reports for no more than 50 servers at a time.

6. On each domain controller in the domain, verify that the [drive:]\Windows\_folder\SYSVOL folder was removed. If the folder was open at the command line or in Windows Explorer during the migration to the Eliminated state, the [drive:]\Windows\_folder\SYSVOL folder and some of its subfolders can remain present after migration to the Eliminated state, but none of these folders contain any files in the Eliminated state.
7. Uninstall the FRS role service unless you were using FRS for purposes other than SYSVOL replication. To uninstall the FRS role service:
  - e. Click **Start**, point to **Administrative Tools**, and then click **Server Manager**.
  - f. In the console pane of the **Server Manager**, under **Roles**, right-click **File Services**, and then click **Remove Role Services**.
  - g. In **Remove Role Services**, clear the **File Replication Service** check box, click **Next**, and then click **Remove**.



#### Note

If you need additional confirmation that migration to the Eliminated state succeeded, follow the procedures in the [Appendix B: Verifying the State of SYSVOL Migration](#) topic.

## Additional references

[SYSVOL Replication Migration Guide: FRS to DFS Replication](#)

[Migrating to the Prepared State](#)

[Migrating to the Redirected State](#)

[SYSVOL Migration Series: Part 5–Migrating to the “ELIMINATED” State](#)

# Troubleshooting SYSVOL Migration

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If you encounter problems while migrating SYSVOL replication to DFS Replication, you might need to troubleshoot the issues, or even roll back the migration to a previous state, as described in the following procedures.

- [Troubleshooting SYSVOL Migration Issues](#)
- [Rolling Back SYSVOL Migration to a Previous Stable State](#)

## Troubleshooting SYSVOL Migration Issues

---

The following sections list known issues with the DFS Replication migration process and suggest resolutions for these issues.

- [Renaming of a domain controller is not supported](#)
- [Migration or rollback stalls on some domain controllers](#)
- [Events specific to read-only domain controllers appear on domain controllers that are not read-only during migration to the Eliminated state](#)

For additional troubleshooting information, see the topic [Appendix B: Verifying the State of SYSVOL Migration](#).

### Renaming of a domain controller is not supported

Renaming of a domain controller during migration causes migration and replication to fail. This is because the connection and member object names for FRS and DFS Replication do not remain synchronized with the new domain controller name. The promoting and demoting of domain controllers does not affect the migration process.

To rename a domain controller during migration, demote the domain controller, rename it, and then promote the domain controller, as described in the following steps.

#### To rename a domain controller during the SYSVOL migration process

1. At a command prompt, run the **dcpromo** command to demote the domain controller.
2. Open **Server Manager** from the Administrative Tools folder.
3. In the **Server Manager** window, click **Change System Properties**.
4. On the **Computer Name** tab of the **System Properties** dialog box, click **Change**.
5. Under **Computer name** in the **Computer Name/Domain Changes** dialog box, change the computer name to the new name, and then click **OK** twice.
6. At a command prompt, run the **dcpromo** command to repromote the computer as a domain controller with the new name.

## Migration or rollback stalls on some domain controllers

Migration from one stable state to another can take an extended period, especially if some of the domain controllers are read-only or are located in a remote site. In these cases, migration may not reach a consistent state on all domain controllers for a long time after you change the global migration state.

You can determine if migration is stalled by typing the following command: **dfsrmig /GetMigrationState**. If the output indicates that some domain controllers remain in the previous stable state or are in a transition state, then the migration is temporarily stalled. For example, output such as the following appears when you run the **dfsrmig /GetMigrationState** command.

The following Domain Controllers are not in sync with Global state ('Prepared'):

```
Domain Controller (Local Migration State) - DC Type
=====
CONTOSO-DC2 ('Start') - ReadOnly DC
CONTOSO-DC3 ('Preparing') - Writable DC
```

```
Migration has not yet reached a consistent state on all domain controllers
State information might be stale due to AD latency.
```

The delay in reaching a consistent migration state does not necessarily indicate that the migration failed or that it resulted in issues that need to be addressed. The reasons for a delay in reaching a consistent migration state may include:

- The migration directive relies on Active Directory replication to propagate to each domain controller and is dependent on Active Directory replication latencies.
- Read-only domain controllers (RODCs) must wait for the primary domain controller (PDC) emulator to modify Active Directory objects on their behalf, taking additional time. In particular, RODCs may be subject to migration delays in the following cases due to replication delays:
  - **Migration to the Prepared state.** The local migration state for the RODC can remain at **4** (Preparing) state for an extended period.
  - **Rollback to the Start state.** The local migration state for the RODC can remain at **9** (Undo Preparing) for an extended period.
  - **Migration to the Eliminated state.** The local migration state for the RODC can remain at **7** (eliminating) for an extended period.

You can continue to wait for migration to reach a consistent state, or you can take one of the following actions to try to prompt the migration process to reach a consistent state:

- Force Active Directory replication on domain controllers that have a migration delay. To do so, at a command prompt on the domain controller, type **repadmin /syncall /AeD**
- Force the DFS Replication service to poll Active Directory on domain controllers that have a migration delay. To do so, at a command prompt on a domain controller, type the following command, where *remote\_domain\_controller\_name* is the computer name of the affected domain controller: **dfsrdiag pollad /member:remote\_domain\_controller\_name**

### Important

For this to command to work, be sure that Windows Management Instrumentation (WMI) is allowed by the firewall on the remote computer. For more information, see the articles 179442

<http://go.microsoft.com/fwlink/?LinkId=137839> and 832017

<http://go.microsoft.com/fwlink/?LinkId=137838> in the Microsoft Knowledge Base.

If forcing Active Directory replication or a manual poll of Active Directory does not enable SYSVOL migration to proceed, check the Event Log for warnings or errors that the DFS Replication service logged during the SYSVOL migration and perform any corrective actions mentioned in those events. Also, if migration or rollback is stalled for a read-only domain controller, see the following sections for additional actions that you can take.

[Migration appears stalled at the eliminating transition state on a RODC](#)

[Migration appears stalled at the preparing transition state on a RODC](#)

**Migration appears stalled for a RODC promoted during migration**

[Rollback appears stalled at the undo preparing transition state on a RODC](#)

## Migration stalls at the Eliminating state on a RODC

If AD DS replication takes a long time, RODCs may stall at the Eliminating transition state. This can occur because RODCs must wait for the PDC emulator to modify Active Directory objects on their behalf, taking additional time.

If you notice that migration stalls at the Eliminating transition state, use the following steps to manually delete the AD DS objects for FRS.

### To manually delete the Active Directory objects for FRS

1. Follow the steps in the “Check whether Active Directory objects for FRS still exist” section of [Appendix B: Verifying the State of SYSVOL Migration](#) to check if the Active Directory objects for FRS replication were removed for the read-only domain controller.
2. At a command prompt, type **dfsrmig /DeleteRoNtfrsMember domain\_controller\_name** to manually delete any remaining AD DS objects for FRS.

## Migration stalls at the Preparing state on a RODC, or when you promote a new RODC

If AD DS replication takes a long time, RODCs may stall at the Preparing transition state. This can occur because RODCs must wait for the PDC emulator to modify Active Directory objects on their behalf, taking additional time.

If you notice that migration stalls at the Preparing transition state, or if you promote a new RODC during the migration before the domain is in the Eliminated state, use the following steps to manually create the AD DS objects.

### ► To manually create the Active Directory objects for DFS Replication

1. Follow the steps in the “Check the Active Directory objects for DFS Replication” section of [Appendix B: Verifying the State of SYSVOL Migration](#) to check if the Active Directory objects for DFS Replication exist for the read-only domain controller.
2. At a command prompt, type **dfsrmig /CreateGlobalObjects** to manually create the Active Directory objects for DFS Replication if they are not present (no parameters are required with this command).

## Rollback appears stalled at the Undo Preparing state on a RODC

If AD DS replication takes a long time, RODCs may stall at the Undo Preparing rollback transition state. This can occur because RODCs must wait for the PDC emulator to modify Active Directory objects on their behalf, taking additional time.

If you notice that the rollback stalls at the Undo Preparing transition state, use the following steps to manually delete the AD DS objects for DFS Replication.

### ► To manually delete the AD DS objects for DFS Replication

1. Follow the steps in the “Check the Active Directory objects for DFS Replication” section of [Appendix B: Verifying the State of SYSVOL Migration](#) to check if the Active Directory objects for DFS Replication were removed for the read-only domain controller.
2. At a command prompt, type **dfsrmig /DeleteRoDfsrMember *domain\_controller\_name*** to manually delete any remaining AD objects for DFS Replication.

## Events specific to read-only domain controllers appear on domain controllers that are not read-only during migration to the Eliminated state

During the migration to the Eliminated state, event 8004 occurs on all domain controllers. The description of the event refers to the domain controllers as read-only domain controllers, even if they are not read-only.

The occurrence of this event on domain controllers that are not read-only domain controllers is a known issue. Ignore this event when it occurs during the migration to the Eliminated state on a domain controller that is not read-only.

Below is an example of event 8004

Source:	DFS Replication
Event ID:	8004
Level:	Information
Description:	The NTFRS member object for the Read-only Domain Controller <FULL_DC_NAME> was deleted successfully.

## Additional references

[Migrating to the Prepared State](#)

[Migrating to the Redirected State](#)

[Migrating to the Eliminated State](#)

[Rolling Back SYSVOL Migration to a Previous Stable State](#)



# Rolling Back SYSVOL Migration to a Previous Stable State

---

If critical problems occur during the migration process before migrating to the Eliminated state, or if you determine that replication of the SYSVOL folder by DFS Replication does not meet your needs, you can roll back migration to a previous state as described in the following sections.

1. [Notes about rolling back to a previous state](#)
2. [Preparing to roll back migration to a previous state](#)
3. [Rolling back migration to a previous state](#)

For information about how to troubleshoot the issues before you roll back migration, see the [Troubleshooting SYSVOL Migration Issues](#) section.

## Notes about rolling back to a previous state

Although you can change the global migration state back and forth as often as you want before you change it to eliminated, you should wait for the domain controllers to reach a stable state (their local states match the global migration state) before you change the global migration state again.

You can skip a stable state when you roll back migration. For example, you can roll back migration from the Redirected state to the Start state. The disadvantage to this approach is that you have no opportunity to troubleshoot problems in the intermediate stable states before you reach the state you specified.

For more information about the migration states for SYSVOL migration and the transitions between them, see [SYSVOL Migration States](#). For information about the actions that the migration tool and the DFS Replication service perform during rollback, see [Appendix D: SYSVOL Migration Tool Actions](#).

## Preparing to roll back migration to a previous state

Before you roll back migration to a previous state, you should verify that the migration state is consistent for all domain controllers in the domain and that AD DS replication and SYSVOL replication are working properly.

### To prepare roll back migration to a previous state

1. Log on to the primary domain controller (if you are not logged on already).
2. At a command prompt, type **dfsrmig /getmigrationstate** to verify that all the domain controllers are at a consistent migration state. The following output appears when all

domain controllers are at a consistent migration state.

```
All Domain Controllers have migrated successfully to Global state ('state').  
Migration has reached a consistent state on all Domain Controllers.  
Succeeded.
```

 **Important**

You should not roll back migration unless all the domain controllers have successfully reached a consistent migration state. You should not save the state of an individual domain controller unless that domain controller is in a stable migration state.

3. On each domain controller in the domain, open a command prompt window and type **net share** to verify that the SYSVOL shared folder is shared by each domain controller in the domain.

If you want to roll back from the Redirected state to an earlier state, this shared folder should map to the [drive:]Windows\_folder\SYSTEM\sysvol folder that DFS Replication is replicating, and text similar to the following should appear as part of the output of the command. If you want to roll back from the Prepared state, this shared folder should map to the [drive:]Windows\_folder\SYSTEM\sysvol folder that FRS is replicating.

```
Share name      Resource                                             Remark  
-----  
-----  
[...]  
NETLOGON       C:\Windows\SYSTEM\sysvol\corp.contoso.com\SCRIPTS  
                                                       Logon server share  
SYSVOL         C:\Windows\SYSTEM\sysvol                          Logon server share
```

4. Use the Ultrasound tool to verify that FRS replication of the [drive:]Windows\_folder\SYSTEM folder is healthy. For information about using Ultrasound to monitor FRS replication, see the Ultrasound Help.  
If you are not already using Ultrasound to monitor FRS, see the following blog post for a simpler method to check SYSVOL replication using the FRSDIAG tool <http://blogs.technet.com/askds/archive/2008/05/22/verifying-file-replication-during-the-windows-server-2008-dfs-sysvol-migration-down-and-dirty-style.aspx>.
5. If you want to roll back from the Redirected state to the Prepared state, use the DFS Management snap-in to create a Diagnostic Report for SYSTEM\sysvol folder and confirm that the SYSTEM\sysvol folder is replicating properly. For more information, see **Create a Diagnostic Report for DFS Replication [Entry Point]**.
6. Type **repadmin /ReplSum** to verify that Active Directory replication is working properly.

The output should indicate no errors for all of the domain controllers in the domain.

7. Use the Registry Editor to verify that the value of the **SysvolReady** registry entry under the **HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\Netlogon\Parameter** subkey is still **1**.

To roll back from the Redirected state to an earlier state, the value of the **SysVol** subkey under the same subkey should be `[drive:]Windows_folder\SYSTEM\DFSR\sysvol`; to roll back from the Prepared state, the subkey should be `[drive:]Windows_folder\SYSTEM\sysvol`.

8. To increase your recovery options in the event of a problem during the rollback process, use the **Wbadmin start systemstatebackup** command to back up the system state of the domain controller prior to beginning the rollback. For information about the **Wbadmin** command, see (<http://go.microsoft.com/fwlink/?LinkId=121860>).

## Rolling back migration to a previous state

After you prepare to roll back migration by performing the previous procedure, you are ready to roll back migration.

### ► To roll back migration to a previous state

1. Type **dfsrmig /setglobalstate 1** to set the global migration state to prepared if you want to roll back from the Redirected state to the Prepared state.

or

Type **dfsrmig /setglobalstate 0** to set the global migration state to start if you want to roll back from the Prepared state or Redirected state to the Start state.

2. Type **dfsrmig /getglobalstate** to verify that the global migration state is the state you set in the previous step. The following output appears for this command.

```
Current DFSR global state: 'state'  
Succeeded.
```

3. Type **dfsrmig /getmigrationstate** to confirm that all the domain controllers have rolled back to the target migration state. The following output should appear when all domain controllers reach the target migration state.

```
All Domain Controllers have migrated successfully to Global state ('state').  
Migration has reached a consistent state on all Domain Controllers.  
Succeeded.
```

This step can take some time. The time needed for all of the domain controllers to reach the prepared state depends on Active Directory latencies and the amount of data that is present in the SYSVOL shared folder.



You should not begin migrating or rolling back to another state until the rollback process reaches a consistent state on all domain controllers.

4. On each domain controller in the domain, open a command prompt window and then type **net share** to verify that the SYSVOL shared folder is still shared and that this shared folder still maps to the [drive:]\Windows\_folder\SYSVOL folder that FRS is replicating.
5. Use the Ultrasound tool to verify that FRS replication of the original SYSVOL folder remains healthy. For information about using Ultrasound to monitor FRS replication, see the Ultrasound Help.

If you are not already using Ultrasound to monitor FRS, see the following blog post for a simpler method to check SYSVOL replication using the FRSDIAG tool

<http://go.microsoft.com/fwlink/?LinkId=137837>.

6. If you are rolling back from the Redirected state to the Prepared state, use the DFS Management snap-in to create a Diagnostic Report for SYSVOL\_DFSR folder and confirm that the SYSVOL\_DFSR folder is replicating properly. For more information, see **Create a Diagnostic Report for DFS Replication [Entry Point]**.
7. If you need additional confirmation that the state transition succeeded, perform the additional verification steps in [Appendix B: Verifying the State of SYSVOL Migration](#).

## Additional references

[Migrating to the Prepared State](#)

[Migrating to the Redirected State](#)

# SYSVOL Migration Reference Information

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The following topics provide additional reference information relevant to migrating SYSVOL replication from FRS to DFS Replication.

- [Appendix A: Supported SYSVOL Migration Scenarios](#)
- [Appendix B: Verifying the State of SYSVOL Migration](#)
- [Appendix C: Dfsrmig Command Reference](#)
- [Appendix D: SYSVOL Migration Tool Actions](#)

## Appendix A: Supported SYSVOL Migration Scenarios

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The SYSVOL migration process is designed to be robust enough to allow you to perform the migration without taking the domain offline, and can accommodate the following scenarios:

- Domain controllers going offline or online. Failure of individual domain controllers does not block the migration, and regular operations continue on all domain controllers during the migration. You can backup or restore domain controllers, as well as add or remove AD DS from domain controllers during the migration.

### Important

If you promote a new read-only domain controller during the migration before the domain is in the Eliminated state, then you must manually create the AD DS objects for DFS Replication as discussed in the “Migration stalls at the Preparing state on a RODC, or you promote a new RODC” section of [Troubleshooting Migration Issues](#).

- Rolling back the migration procedure at any point until the last step (when FRS is eliminated).
- High Active Directory replication latency. (DFS Replication handles instances in which some members may not know that the migration has been initiated because the domain controllers that they consult have not received the migration notification yet.)
- Branch offices with multiple domain controllers at one or more hub sites with high-bandwidth connections and slow periodic connections (less than 56 Kbps). The migration procedure does not assume that all of the servers that are participating in the replication will be simultaneously reachable during the migration.

To accommodate these scenarios, the migration process provides you with the ability to monitor and control the process, including verifying the correct operation before changes are committed.

This document does not cover the following migration procedures:

- Reversing the migration after it is complete. You cannot use FRS for SYSVOL replication after the final stage of the migration process.
- Migration from operating systems other than Windows Server 2008. Migration is possible only when all of the domain controllers run Windows Server 2008 and when the domain functional level is set to Windows Server 2008. For domain controllers that run earlier versions of the Windows operating system, upgrade the domain controllers to run Windows Server 2008 before you use the procedures in this document to migrate SYSVOL replication.

## Appendix B: Verifying the State of SYSVOL Migration

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Normally, migration proceeds smoothly and without problems. However, if you experience problems such as the local migration state on each computer not reaching the same setting as the global state, you may want to wait longer or perform the additional verification steps that follow to determine what could be wrong.


You can perform the following tasks to verify in more detail that migration to a given state has succeeded:

- [Check that the registry entries that are related to SYSVOL migration still exist and were updated](#)
- [Check whether the Active Directory objects for DFS Replication still exist](#)
- [Check whether the Active Directory objects for FRS Replication still exist](#)

For more information about how to troubleshoot migrating SYSVOL replication to DFS Replication, see [Troubleshooting SYSVOL Migration Issues](#) and [Appendix D: SYSVOL Migration Tool Actions](#).

### Check that the registry entries that are related to SYSVOL migration still exist and were updated

The **Dfsrmig** tool creates a series of registry entries on each domain controller that partially control the migration of SYSVOL to DFS Replication. To confirm that these registry entries were correctly created, use the following procedure.

 **To check that the registry entries that are related to SYSVOL migration still exist and were updated**

1. On each domain controller in the domain, use Registry Editor to verify that the registry entries in the following table were created under the **HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\DFSR\Parameters\SysVols\MigratingSysVols** subkey and have the correct values.

Registry Entry	Value
<b>DFS-R SYSVOL Path</b>	[drive:]Windows_folde\SYSVOL_DFSR\sysvol
<b>Local State</b>	The current local migration state for the domain controller should be as follows: Prepared: <b>1</b> Redirected: <b>2</b> Eliminated: <b>3</b> . Other values represent intermediate migration states, as discussed in the <a href="#">SYSVOL Migration States</a> topic.
<b>NTFRS SYSVOL Path</b>	[drive:]Windows_folde\SYSVOL\sysvol

2. Verify that the value of the **SysVol** registry entry under the **HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\Netlogon\Parameter** subkey is now [drive:]Windows\_folde\SYSVOL\_DFSR\sysvol, and that the value of the **SysvolReady** registry entry under the same subkey is **1**.

## Check whether the Active Directory objects for DFS Replication still exist

The **Dfsrmig** tool creates objects in AD DS for DFS Replication that partially control the migration of SYSVOL to DFS Replication. Use the following procedure to confirm that these objects were correctly created or deleted (depending on the migration or rollback phase).

### ► To check whether Active Directory objects for DFS Replication still exist

1. On the PDC emulator, click **Start**, and then click **Run**.
2. In the **Run** dialog box, type **adsiedit.msc**, and then click **OK** to start the Active Directory Services Interfaces Editor (ADSI Edit).
3. On the **Action** menu of the **ADSI Edit** MMC snap-in, click **Connect to**.
4. In the **Connection Settings** dialog box, under **Connection Point**, click **Select a well known Naming Context**, select **Default naming context**, and then click **OK**.
5. In the console pane, double-click **Default Naming Context** [domain\_controller\_name.fully\_qualified\_domain\_name]. To see the Active Directory objects for the domain controllers in the domain, double-click **DC=first\_part\_of\_domain\_name,DC=second\_part\_of\_domain\_name**, and then double-click **OU=Domain Controllers**.

For example, if your domain controller is contoso-dc1 and your fully qualified domain name is corp.contoso.com, double-click **Default Naming Context [contoso-dc1.corp.contoso.com]**, double-click **DC=corp,DC=contoso,DC=com**, and then double-click **OU=Domain Controllers**.

6. Double-click a **CN=domain\_controller\_name** object that corresponds to one of the

domain controllers for your domain, and then verify that a **CN=DFSR-LocalSettings** object for the domain controller appears in the center pane.

If the domain is in the Start state, no **CN=DFSR-LocalSettings** object for the domain controller should appear.

7. Under the entry for the domain controller, double-click **CN=DFSR-LocalSettings**, and then verify that the **CN=Domain System Volume** object appears in the center pane.
8. Double-click **CN=Domain System Volume**, and then verify that the **CN=SYSVOL Subscription** object appears in the center pane.
9. Repeat steps 6 through 8 for each domain controller object listed under **OU=Domain Controllers**.
10. Double-click **CN=System**, and then verify that the **CN=DFSR-GlobalSettings** object appears in the center pane.
11. Under **CN=System**, double-click **CN=DFSR-GlobalSettings**, double-click **CN=Domain System Volume**, and then verify that the **CN=Content** and **CN=Topology** objects appear in the center pane.
12. Double-click **CN=Content**, and then verify that the **CN=SYSVOL Share** object appears in the center pane.
13. Under **CN=Domain System Volume**, double-click **CN=Topology**, and then verify that **CN=domain\_controller\_name** objects for each domain controller in the domain appear in the center pane.

If the domain is in the Start state, no **CN=domain\_controller\_name** object for a domain controller should appear.
14. Under **CN=System** in the console pane, right-click **CN=DFSR-GlobalSettings**, and then click **Properties**.
15. In the **CN=DFSR-GlobalSettings Properties** dialog box, click the **Attribute Editor** tab, and then verify that the value listed for the **msDFSR-Flags** attribute is appropriate for the migration state:
  - Start: **0**
  - Prepared: **16**
  - Redirected: **32**
  - Eliminated: **48**
16. Leave the **ADSI Edit** window open for the next procedure.



#### Notes

The local state of an individual domain controller is stored under **CN=DFSR-LocalSettings** on the **msDFSR-Flags** attribute. The local state can either be a stable migration state (listed above), or a local transition state (note that the Preparing state is only applicable to read-only domain controllers):

- Preparing: 64
- Waiting for initial sync: 80



- Redirecting: 96
- Eliminating: 112
- Undo redirecting: 128
- Undo preparing: 144

## Check whether the Active Directory objects for FRS Replication still exist

If the domain is in a state other than Eliminated, objects for SYSVOL replication using FRS should exist in AD DS. If the domain is in the Eliminated state, these objects should not exist. To confirm whether these objects exist, use the following procedure.

### ► To check whether the Active Directory objects for FRS Replication still exist

1. In the **ADSI Edit** MMC snap-in on the primary domain controller, under **OU=Domain Controllers** pane, double-click a **CN=domain\_controller\_name** object that corresponds to one of the domain controllers for your domain.
2. If the domain is in a state other than Eliminated, double-click the **CN=NTFRS Subscriptions** object for the domain controller appears in the center pane and then verify that the **CN=Domain System Volume (SYSVOL share)** object appears in the center pane.

If the domain is in the Eliminated state, there should not be a **CN=NTFRS Subscriptions** object here.

3. Repeat steps 6 and 7 for each domain controller object that is listed under **OU=Domain Controllers**.
4. Double-click **CN=System**, and then verify that the **CN=File Replication Service** object appears in the center pane.
5. Double-click **CN=File Replication Service**, and then double-click **CN=Domain System Volume (SYSVOL share)**.

If the domain is in a state other than Eliminated, objects for each domain controller in the domain should appear in the center pane. If the domain is in the Eliminated state, no domain controller objects should be listed here.

## Additional references

[SYSVOL Replication Migration Guide: FRS to DFS Replication](#)

[SYSVOL Migration Reference Information](#)

# Appendix C: Dfsrmig Command Reference

The `dfsrmig` command migrates SYSVOL replication from File Replication Service (FRS) to Distributed File System (DFS) Replication, provides information about the progress of the migration, and modifies Active Directory Domain Services (AD DS) objects to support the migration.

For examples of how to use this command, see the [Examples](#) section later in this document.


## Syntax

```
dfsrmig [/SetGlobalState <state> | /GetGlobalState | /GetMigrationState |  
/CreateGlobalObjects |  
/DeleteRoNtfrsMember [<read_only_domain_controller_name>] | /DeleteRoDfsrMember  
[<read_only_domain_controller_name>] | /?]
```

## Parameters

Parameter	Description
<code>/SetGlobalState &lt;state&gt;</code>	<p>Sets the desired global migration state for the domain to the state that corresponds to the value specified by <i>state</i>.</p> <p>To proceed through the migration or the rollback processes, use this command to cycle through the valid states. This option enables you to initiate and control the migration process by setting the global migration state in AD DS on the PDC emulator. If the PDC emulator is not available, this command fails.</p> <p>For information about the states for migration and rollback, see <a href="#">SYSVOL Migration States</a>. You can only set the global migration state to a stable state. The valid values for <i>state</i>, therefore, are <b>0</b> for the Start state, <b>1</b> for the Prepared state, <b>2</b> for the Redirected state, and <b>3</b> for the Eliminated state.</p> <p>Migration to the Eliminated state is irreversible and rollback from that state is not possible, so use a value of <b>3</b> for <i>state</i> only when you are fully committed to using DFS Replication for SYSVOL replication.</p>

Parameter	Description
/GetGlobalState	<p>Retrieves the current global migration state for the domain from the local copy of the AD DS database, when run on the PDC emulator.</p> <p>Use this option to confirm that you set the correct global migration state. Only stable migration states can be global migration states, so the results that the <b>dfsrmig</b> command reports with the <b>/GetGlobalState</b> option correspond to the states you can set with the <b>/SetGlobalState</b> option.</p> <p>You should run the <b>dfsrmig</b> command with the <b>/GetGlobalState</b> option only on the PDC emulator. Active Directory replication replicates the global state to the other domain controllers in the domain, but replication latencies can cause inconsistencies if you run the <b>dfsrmig</b> command with the <b>/GetGlobalState</b> option on a domain controller other than the PDC emulator. To check the local migration status of a domain controller other than the PDC emulator, use the <b>/GetMigrationState</b> option instead.</p>
/GetMigrationState	<p>Retrieves the current local migration state for all domain controllers in the domain, and determines whether those local states match the current global migration state.</p> <p>Use this option to determine if all domain controllers have reached the global migration state. The output of the <b>dfsrmig</b> command when you use the <b>/GetMigrationState</b> option indicates whether or not migration to the current global state is complete, and it lists the local migration state for any domain controllers that have not reached the current global migration state. Local migration state for domain controllers can include transition states for domain controllers that have not reached the current global migration state.</p>
/CreateGlobalObjects	<p>Creates the global objects and settings in AD DS that DFS Replication uses.</p> <p>You should not need to use this option during a</p>

Parameter	Description
	<p>normal migration process, because the DFS Replication service automatically creates these AD DS objects and settings during the migration from the Start state to the Prepared state. Use this option to manually create these objects and settings in the following situations:</p> <ul style="list-style-type: none"> <li>• <b>A new read-only domain controller is promoted during migration.</b> The DFS Replication service automatically creates the AD DS objects and settings for DFS Replication during the migration from the Start state to the Prepared state. If a new read-only domain controller is promoted in the domain after this transition, but before migration to the Eliminated state, then the objects that correspond to the newly activated read-only domain controller are not created in AD DS causing replication and migration to fail.</li> <li>• In this case, you can run the <b>dfsrmig</b> command with the <b>/CreateGlobalObjects</b> option to manually create the objects on any read-only domain controllers that do not already have them. Running this command does not affect the domain controllers that already have the objects and settings for the DFS Replication service.</li> <li>• <b>The global settings for the DFS Replication service are missing or were deleted.</b> If these settings are missing for a particular domain controller, migration from the Start state to the Prepared state stalls at the Preparing transition state for the domain controller. In this case, you can use the <b>dfsrmig</b> command with the <b>/CreateGlobalObjects</b> option to manually create the settings.</li> </ul> <p> <b>Note</b> Because the global AD DS settings for</p>

Parameter	Description
	<p>the DFS Replication service for a read-only domain controller are created on the PDC emulator, these settings need to replicate to the read-only domain controller from the PDC emulator before the DFS Replication service on the read-only domain controller can use these settings. Because of Active Directory replication latencies, this replication can take some time to occur.</p>
<p>/DeleteRoNtfrsMember [&lt;read_only_domain_controller_name&gt;]</p>	<p>Deletes the global AD DS settings for FRS replication that correspond to the specified read-only domain controller, or deletes the global AD DS settings for FRS replication for all read-only domain controllers if no value is specified for <i>read_only_domain_controller_name</i>.</p> <p>You should not need to use this option during a normal migration process, because the DFS Replication service automatically deletes these AD DS settings during the migration from the Redirected state to the Eliminated state. Because read-only domain controllers cannot delete these settings from AD DS, the PDC emulator performs this operation, and the changes eventually replicate to the read-only domain controllers after the applicable latencies for Active Directory replication.</p> <p>You use this option to manually delete the AD DS settings only when the automatic deletion fails on a read-only domain controller and stalls the read-only domain controller for a long time during the migration from the Redirected state to the Eliminated state.</p>
<p>/DeleteRoDfsrMember [&lt;read_only_domain_controller_name&gt;]</p>	<p>Deletes the global AD DS settings for DFS Replication that correspond to the specified read-only domain controller, or deletes the global AD DS settings for DFS Replication for all read-only domain controllers if no value is</p>

Parameter	Description
	<p>specified for <i>read_only_domain_controller_name</i>.</p> <p>Use this option to manually delete the AD DS settings only when the automatic deletion fails on a read-only domain controller and stalls the read-only domain controller for a long time when rolling back the migration from the Prepared state to the Start state.</p>
/?	<p>Displays Help at the command prompt. Equivalent to running <b>dfsrmig</b> without any options.</p>

## Remarks

- Dfsrmig.exe, the migration tool for the DFS Replication service, is installed with the DFS Replication service.  
For a new Windows Server 2008 server, Dcpromo.exe installs and starts the DFS Replication service when you promote the computer to a domain controller. When you upgrade a server from Windows Server 2003 to Windows Server 2008, the upgrade process installs and starts the DFS Replication service. You do not need to install the DFS Replication role service to have the DFS Replication service installed and started.
- The **dfsrmig** tool is supported only on domain controllers that run at the Windows Server 2008 domain functional level, because SYSVOL migration from FRS to DFS Replication is only possible on domain controllers that operate at the Windows Server 2008 domain functional level.
- You can run the **dfsrmig** command on any domain controller, but operations that create or manipulate AD DS objects are only allowed on read-write capable domain controllers (not on read-only domain controllers).
- Running **dfsrmig** without any options displays Help at the command prompt.

## Examples

To set the global migration state to prepared (**1**) and initiate migration to or rollback from the Prepared state, type:

```
dfsrmig /SetGlobalState 1
```

To set the global migration state to start (**0**) and initiate rollback to the Start state, type:

```
dfsrmig /SetGlobalState 0
```

To display the global migration state, type:

```
dfsrmig /GetGlobalState
```

This example shows typical output from the **dfsrmig /GetGlobalState** command.

```
Current DFSR global state: 'Prepared'
```

```
Succeeded.
```

To display the information about whether the local migration states on all of the domain controllers match the global migration state and the local migration states for any domain controllers where the local state does not match the global state, type:

```
dfsrmig /GetMigrationState
```

This example shows typical output from the **dfsrmig /GetMigrationState** command when the local migration states on all of the domain controllers match the global migration state.

```
All Domain Controllers have migrated successfully to Global state ('Prepared').
```

```
Migration has reached a consistent state on all Domain Controllers.
```

```
Succeeded.
```

This example shows typical output from the **dfsrmig /GetMigrationState** command when the local migration states on some domain controllers do not match the global migration state.

```
The following Domain Controllers are not in sync with Global state ('Prepared'):
```

```
Domain Controller (Local Migration State) - DC Type
```

```
=====
```

```
CONTOSO-DC2 ('Start') - ReadOnly DC
```

```
CONTOSO-DC3 ('Preparing') - Writable DC
```

```
Migration has not yet reached a consistent state on all domain controllers
```

```
State information might be stale due to AD latency.
```

To create the global objects and settings that DFS Replication uses in AD DS on domain controllers where those settings were not created automatically during migration or where those settings are missing, type:

```
dfsrmig /CreateGlobalObjects
```

To delete the global AD DS settings for FRS replication for a read-only domain controller named contoso-dc2 if those settings were not deleted automatically by the migration process, type:

```
dfsrmig /DeleteRoNtfrsMember contoso-dc2
```

To delete the global AD DS settings for FRS replication for all read-only domain controllers if those settings were not deleted automatically by the migration process, type:

```
dfsrmig /DeleteRoNtfrsMember
```

To delete the global AD DS settings for DFS Replication for a read-only domain controller named contoso-dc2 if those settings were not deleted automatically by the migration process, type:

```
dfsrmig /DeleteRoDfsrMember contoso-dc2
```

To delete the global AD DS settings for DFS Replication for all read-only domain controllers if those settings were not deleted automatically by the migration process, type:

```
dfsrmig /DeleteRoDfsrMember
```

## **Additional references**

[Command-Line Syntax Key](#)

[SYSVOL Replication Migration Guide: FRS to DFS Replication](#)

[Migrating to the Prepared State](#)

[Migrating to the Redirected State](#)

[Migrating to the Eliminated State](#)

[Rolling Back SYSVOL Migration to a Previous Stable State](#)

[SYSVOL Migration Series: Part 2–Dfsrmig.exe: The SYSVOL Migration Tool](#)



# Appendix D: SYSVOL Migration Tool Actions

---

This appendix describes in detail the steps taken by the migration tool (DfsrMig.exe) and the Distributed File System (DFS) Replication service during the different phases of the SYSVOL migration. You can use this information to help troubleshoot issues that occur during migration.

For information about migration states and the different phases of SYSVOL migration, see [SYSVOL Migration States](#). For more information about troubleshooting SYSVOL migration, see [Troubleshooting SYSVOL Migration Issues](#).

## Migrating to the Prepared state

The goal of migrating SYSVOL replication to the Prepared state is to configure the DFS Replication service to replicate a copy of the original SYSVOL folder. When all domain controllers reach the Prepared state, DFS Replication is properly configured and it has completed an initial synchronization. If any domain controller fails to reach the Prepared state, you must diagnose and correct the issue. In the Prepared state, the replication of the SYSVOL shared folder still depends on the File Replication Service (FRS).

For information about the steps that you must perform to migrate SYSVOL replication to the Prepared state, see [Migrating to the Prepared State](#).

During the migration to the Prepared state, the migration tool and DFS Replication service perform the following actions when the DFS Replication service notices the migration directive in AD DS that indicates that the global migration state has changed to Prepared:

1. The migration tool creates and populates the **HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\DFSR\Parameters\SysVols\Migrating SysVols** registry key, which contains the value of the local migration state for that domain controller. The migration tool also sets the local migration state to Preparing (4).
2. The DFS Replication service creates the %WINDIR%\SYSVOL\_DFSR folder to serve as a copy of the %WINDIR%\SYSVOL folder (where %WINDIR% is the folder in which Windows is installed).

The DFS Replication service also copies the domain subfolder of the SYSVOL folder to the new SYSVOL\_DFSR folder and replicates the permissions for the SYSVOL folder to the SYSVOL\_DFSR folder. The DFS Replication service does not copy the Staging and Staging Areas subfolders to the new SYSVOL\_DFSR folder.

To complete the migration successfully, the volume that hosts the SYSVOL folder must have enough space to also host a copy of that folder.

3. The DFS Replication service uses the **robocopy** command to copy the contents of the %WINDIR%\SYSVOL\*domain* folder to the %WINDIR%\SYSVOL\_DFSR\*domain* folder. The output of the **robocopy** command is saved in %WINDIR%\Debug\DFSR CopyLog\*.txt.

 **Note**

The DFS Replication service replicates all files and folders under the %WINDIR%\SYSVOL\_DFSR\domain folder only.

4. The DFS Replication service creates the SYSVOL junction point under %WINDIR%\SYSVOL\_DFSR\sysvol. This junction point maps to the %WINDIR%\SYSVOL\_DFSR\domain folder.
5. The DFS Replication service creates global objects and settings in AD DS. These settings configure the DFS Replication service to run on the domain controller and replicate the %WINDIR%\SYSVOL\_DFSR folder among its peer domain controllers. On the PDC emulator, the DFS Replication service creates member objects in AD DS for each read-only domain controller that exists at that time.
6. The DFS Replication service sets the local migration state to Waiting for initial sync (5).
7. The DFS Replication service performs an initial synchronization of the %WINDIR%\SYSVOL\_DFSR folder among the domain controllers and adds entries for all files in this folder to its database.
8. The DFS Replication service sets the local migration state to Prepared (1) when the initial synchronization finishes.

During the migration to the Prepared state, the local migration state on each domain controller moves through the intermediate states Preparing (4) and Waiting for initial sync (5) before reaching the Prepared state (1). After all domain controllers reach the Prepared state, you can proceed to migrate to the Redirected state.

When you roll back this migration phase by setting the global migration state back to Start (0), the DFS Replication service carries out this set of migration steps in reverse and deletes the %WINDIR%\SYSVOL\_DFSR folder. Between the Prepared state (1) and the Start state (0), rollback proceeds through the Undo preparing transition state (9).

## Migrating to the Redirected state

The goal of migrating SYSVOL replication to the Redirected state is to map the live SYSVOL share folder from the old SYSVOL folder that FRS replicates to the new copy of the SYSVOL folder that the DFS Replication service replicates. From this point onward, SYSVOL replication depends on DFS Replication.

For information about the steps that you must perform to migrate SYSVOL replication to the Redirected state, see [Migrating to the Redirected State](#).

During the migration to the Redirected state, the DFS Replication service performs the following actions on every domain controller when the DFS Replication service notices the migration directive in AD DS that indicates that the global migration state has changed to Redirected:

1. Sets the local migration state to Redirecting (6).
2. Updates the contents of the %WINDIR%\SYSVOL\_DFSR folder on the PDC emulator to match the contents of the %WINDIR%\SYSVOL folder.

The DFS Replication service performs this update because the SYSVOL and SYSVOL\_DFSR folders can become unsynchronized if you make any Group Policy changes after migration to the Prepared state. This occurs because Group Policy changes during this phase of migration only affect the SYSVOL shared folder that FRS replicates and not the SYSVOL\_DFSR folder that DFS Replication replicates.

The DFS Replication service only updates the contents of the SYSVOL\_DFSR folder on the PDC emulator, because DFS Replication then replicates these changes to the other domain controllers.

3. Sets the value of the **HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\Netlogon\Parameters\SysvolReady** registry entry to **0** (false), which causes the Netlogon service to stop sharing the SYSVOL shared folder on the domain controller.
4. Sets the SYSVOL shared folder path and the value of the **HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\Netlogon\Parameters\Sysvol** registry entry to the %WINDIR%\SYSVOL\_DFSR folder. This operation redirects SYSVOL replication from FRS to DFS Replication.
5. Sets the value of the **HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\Netlogon\Parameters\SysvolReady** registry entry to **1** (true), which causes the Netlogon service to resume the sharing of the SYSVOL shared folder.
6. Adds a dependency so that directory services depend on the DFS Replication service. This step ensures that the DFS Replication service starts with directory services when the domain controller reboots.
7. Sets the local migration state to Redirected (**2**).

From this point onward, the SYSVOL shared folder that the domain controller advertises maps to the copy of the SYSVOL folder that DFS Replication replicates.

During migration to the Redirected state, the local migration state on each domain controller moves through the Redirecting transition state (**6**) before reaching the Redirected (**2**) state. After all domain controllers reach the Redirected state, you can proceed to migrate to the Eliminated state.

When you roll back this migration phase by setting the global migration state back to Prepared (**1**), the DFS Replication service carries out this set of migration steps in reverse. Between the Redirected state (**2**) and the Prepared state (**1**), the rollback proceeds through the Undo redirecting transition state (**8**).

When the domain controllers remain in the Redirected state for an extended period of time, any Group Policy changes made during that time are reflected only in the %WINDIR%\SYSVOL\_DFSR folder. The original %WINDIR%\SYSVOL folder that FRS still replicates does not remain synchronized with the %WINDIR%\SYSVOL\_DFSR folder. When you roll back migration to the Prepared state, the DFS Replication service resynchronizes the contents of the original SYSVOL folder with the contents of the SYSVOL\_DFSR folder on the

PDC emulator. FRS then replicates these updates to the SYSVOL folder on the other domain controllers.

You can also roll back migration to the Start state (0) from the Redirected state (2). In this case, roll back proceeds through the Undo redirecting transition state (8) and the Undo preparing transition state (9) before reaching the Start state (0).

## Migrating to the Eliminated state

The goal of migrating SYSVOL replication to the Eliminated state is to delete the FRS SYSVOL replica set and to delete the old SYSVOL folder.

For information about the steps that you must perform to migrate SYSVOL replication to the Eliminated state, see [Migrating to the Eliminated State](#).

The DFS Replication service performs the following actions on every domain controller when the DFS Replication service notices the migration directive in AD DS that indicates that the global migration state has changed to Eliminated:

1. Sets the local migration state to Eliminating (7).
2. Removes the dependency between directory services and FRS.
3. Stops FRS if it is running on the domain controller, and then deletes the AD DS settings and objects that FRS requires to replicate the SYSVOL shared folder between domain controllers.
4. Deletes the %WINDIR%\SYSVOL folder that FRS previously replicated. If a user has the folder open at the time of migration, DFS Replication does not delete the folder because of sharing violations, but it deletes all of the files in the folder that are not open.
5. Restarts the FRS service if FRS was replicating content sets other than the SYSVOL folder on the domain controller.
6. Sets the local migration state to Eliminated (3).

From this point onward, the SYSVOL shared folder that the domain controller advertises maps to the copy of the SYSVOL folder that DFS Replication replicates, and FRS no longer replicates any copy of the SYSVOL folder on the domain controller.

During the migration to the Eliminated state, the local migration state on each domain controller moves through the Eliminating transition state (7) before reaching the Eliminated state (3).

After SYSVOL migration reaches the Eliminated state, you can no longer roll back the migration.

## Additional references

[Troubleshooting SYSVOL Migration Issues](#)

[Migrating to the Prepared State](#)

[Migrating to the Redirected State](#)

[Migrating to the Eliminated State](#)

[SYSVOL Migration States](#)

[SYSVOL Replication Migration Guide: FRS to DFS Replication](#)