

Lesson 4: Configuring Distributed File System (DFS)

MOAC 70-411: Administering
Windows Server 2012

Overview

- Exam Objective 2.1: Configure Distributed File System (DFS)
- Using Distributed File System

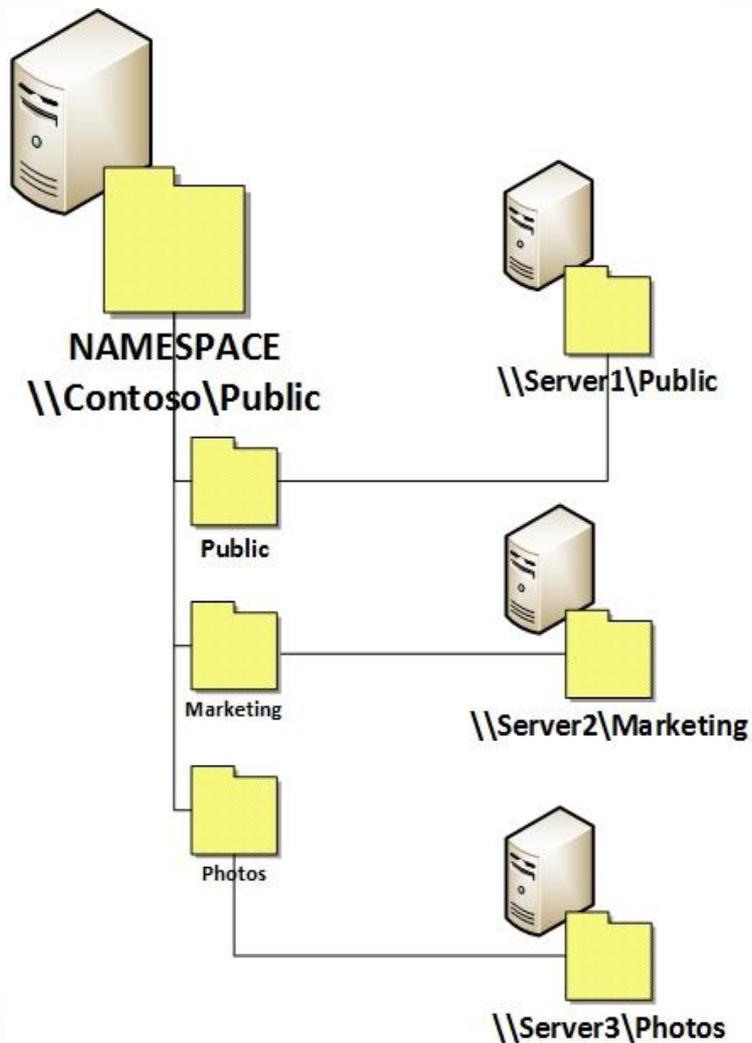
Using Distributed File System (DFS)

Lesson 4: Configuring Distributed File System (DFS)

DFS

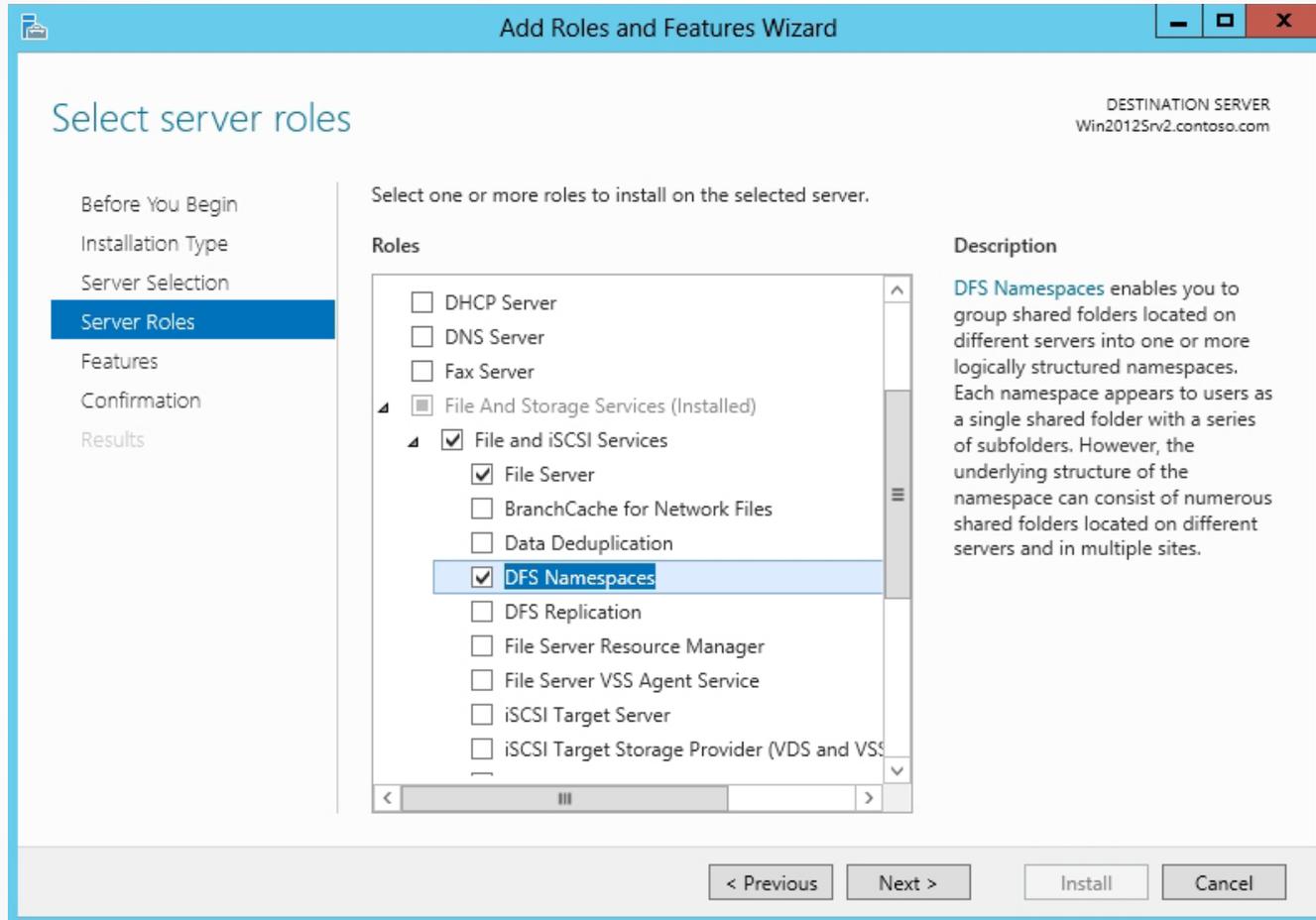
- A set of technologies that enable a Windows server to organize multiple distributed SMB file shares into a distributed file system.
- Although the shares can be on different servers, the location is transparent to the users.
- DFS can provide redundancy to improve data availability while minimizing the amount of traffic passing over the WAN links.
- The two technologies in DFS include:
 - DFS Namespaces
 - DFS Replication

Install/Configure DFS Namespace



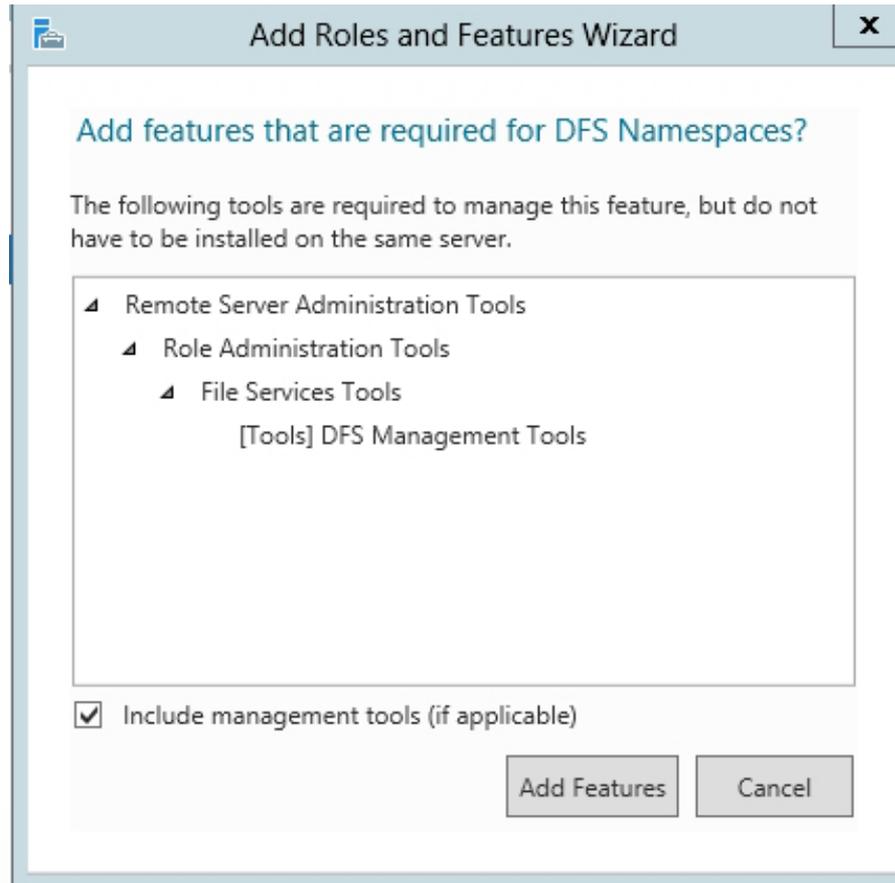
Linking to shared folders with DFS Namespace

Install DFS Namespace



Selecting File Server and DFS Namespace

Install DFS Namespace



Adding DFS-related features

Configuring DFS Namespaces

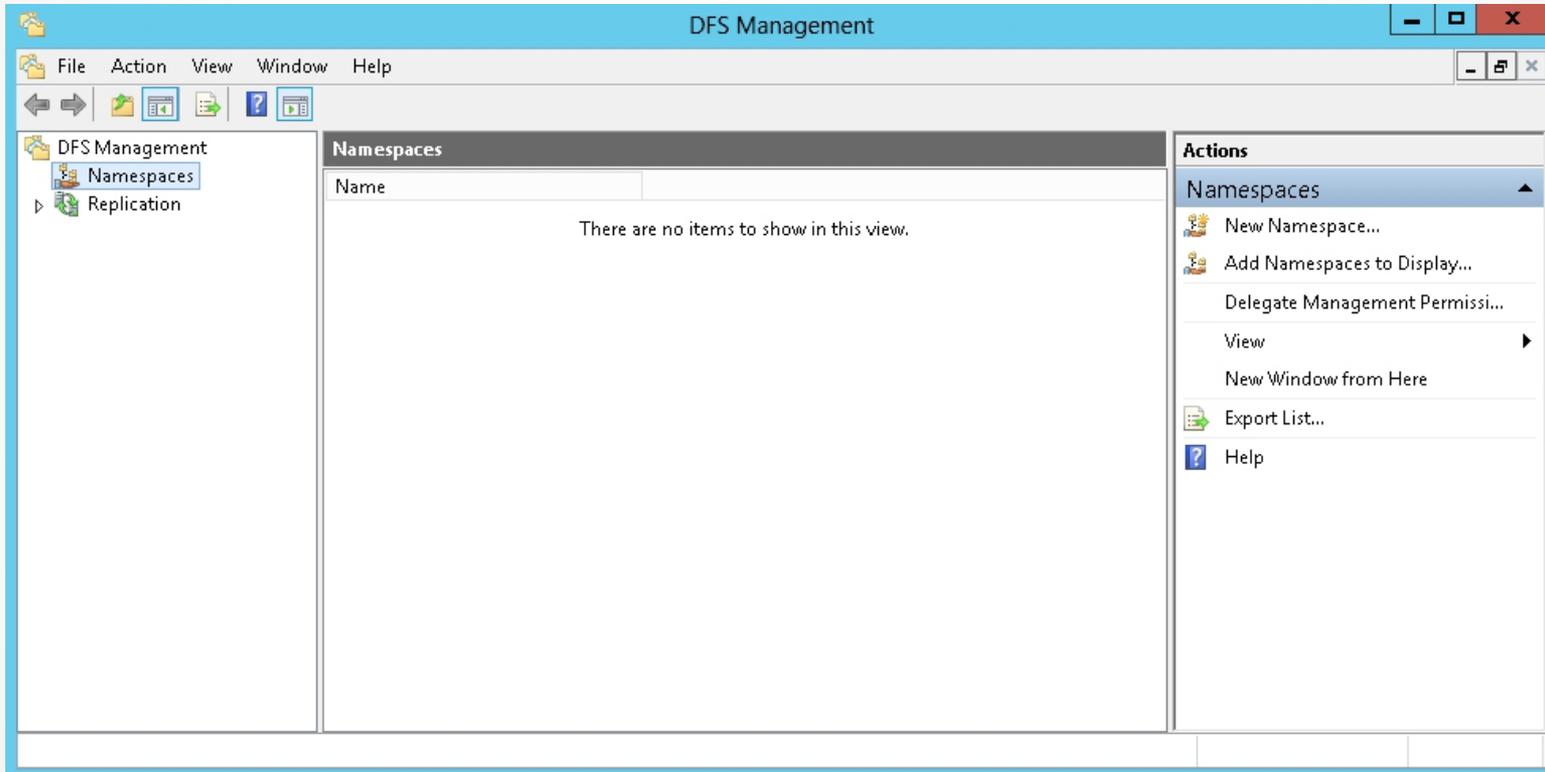
There are two types of DFS namespaces:

- **Domain-based namespace:** Configuration is stored in Active Directory, so you don't have to rely on a single server to provide the namespace information to your clients.
- **Stand-alone namespace:** Configuration is stored on the server and the server name becomes part of the main path to the namespace.

Configuring DFS Namespaces

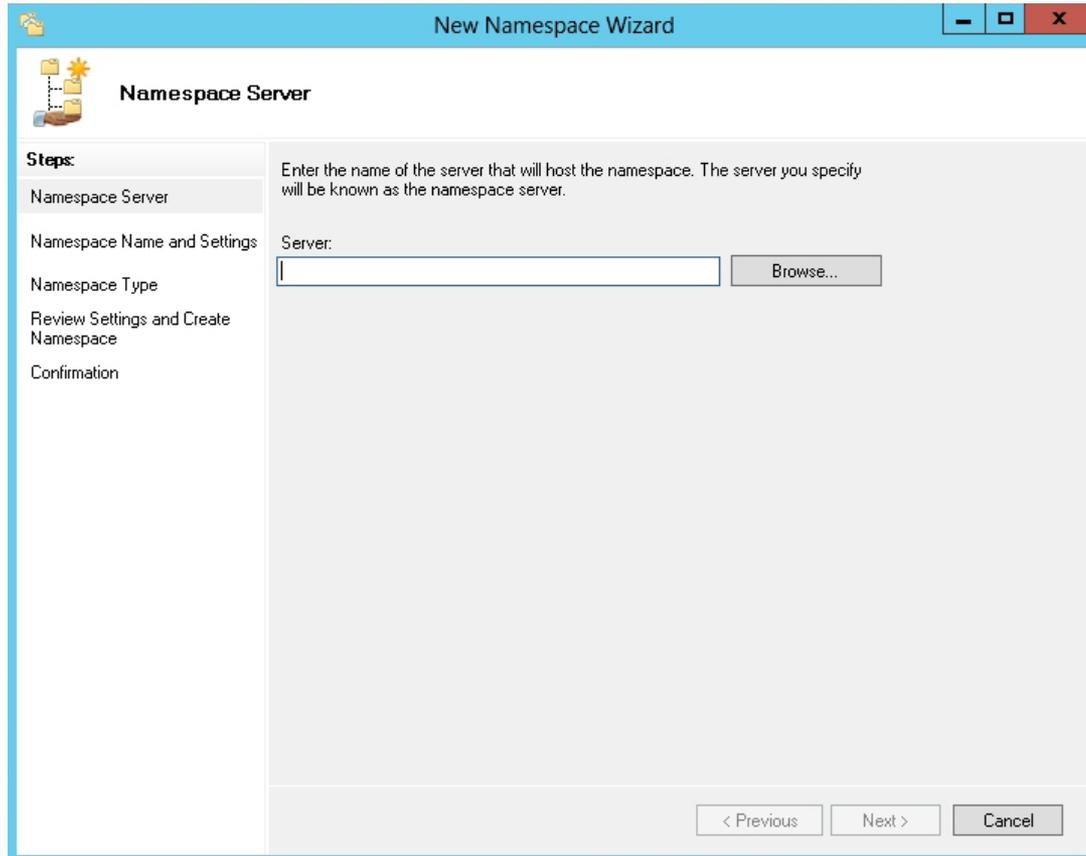
- When you create a namespace, the Windows Server 2008 mode is selected by default.
 - Supports up to 50,000 folders
- To use Windows Server 2008 mode, Active Directory must use the Windows Server 2008 domain functional level.

Create a DFS Namespace



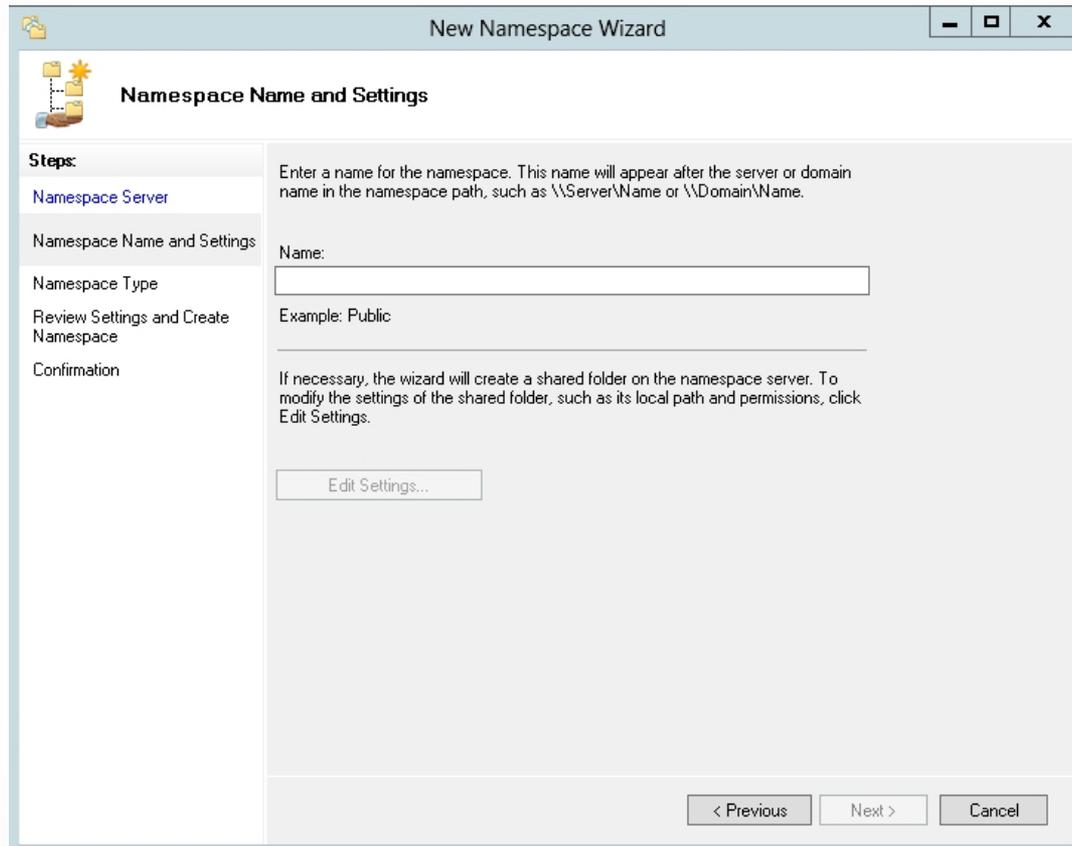
Using the DFS Management console

Create a DFS Namespace



Entering the name of the server on the Namespace Server page

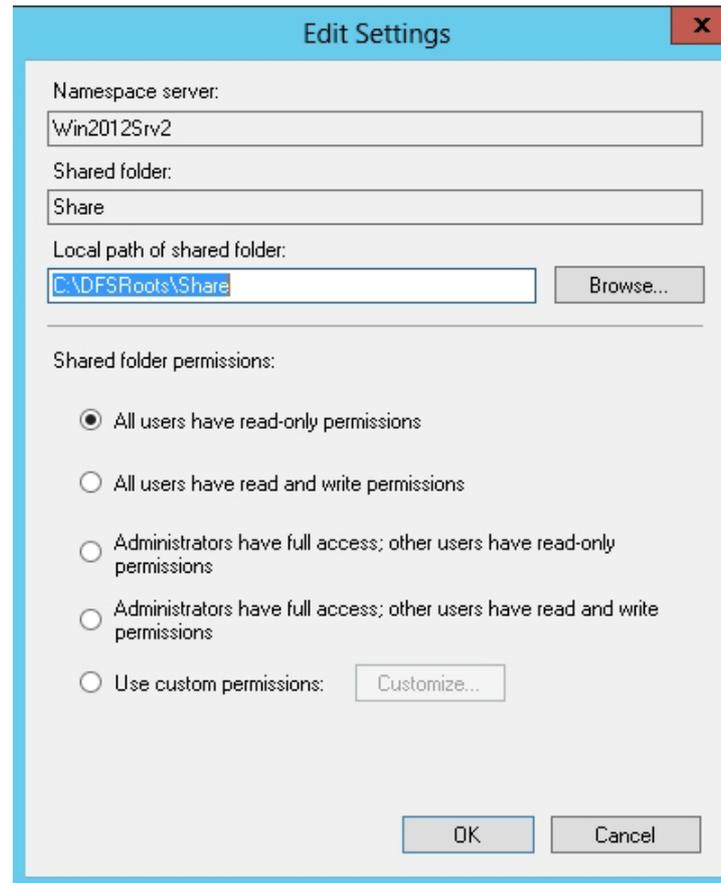
Create a DFS Namespace



The screenshot shows the 'New Namespace Wizard' window, specifically the 'Namespace Name and Settings' step. The window title is 'New Namespace Wizard'. The main area is titled 'Namespace Name and Settings'. On the left, there is a 'Steps' pane with the following items: 'Namespace Server', 'Namespace Name and Settings' (selected), 'Namespace Type', 'Review Settings and Create Namespace', and 'Confirmation'. The main content area contains the following text: 'Enter a name for the namespace. This name will appear after the server or domain name in the namespace path, such as \\Server\Name or \\Domain\Name.' Below this is a text input field labeled 'Name:'. An example 'Example: Public' is shown below the input field. Further down, there is a paragraph: 'If necessary, the wizard will create a shared folder on the namespace server. To modify the settings of the shared folder, such as its local path and permissions, click Edit Settings.' Below this paragraph is an 'Edit Settings...' button. At the bottom right of the window, there are three buttons: '< Previous', 'Next >', and 'Cancel'.

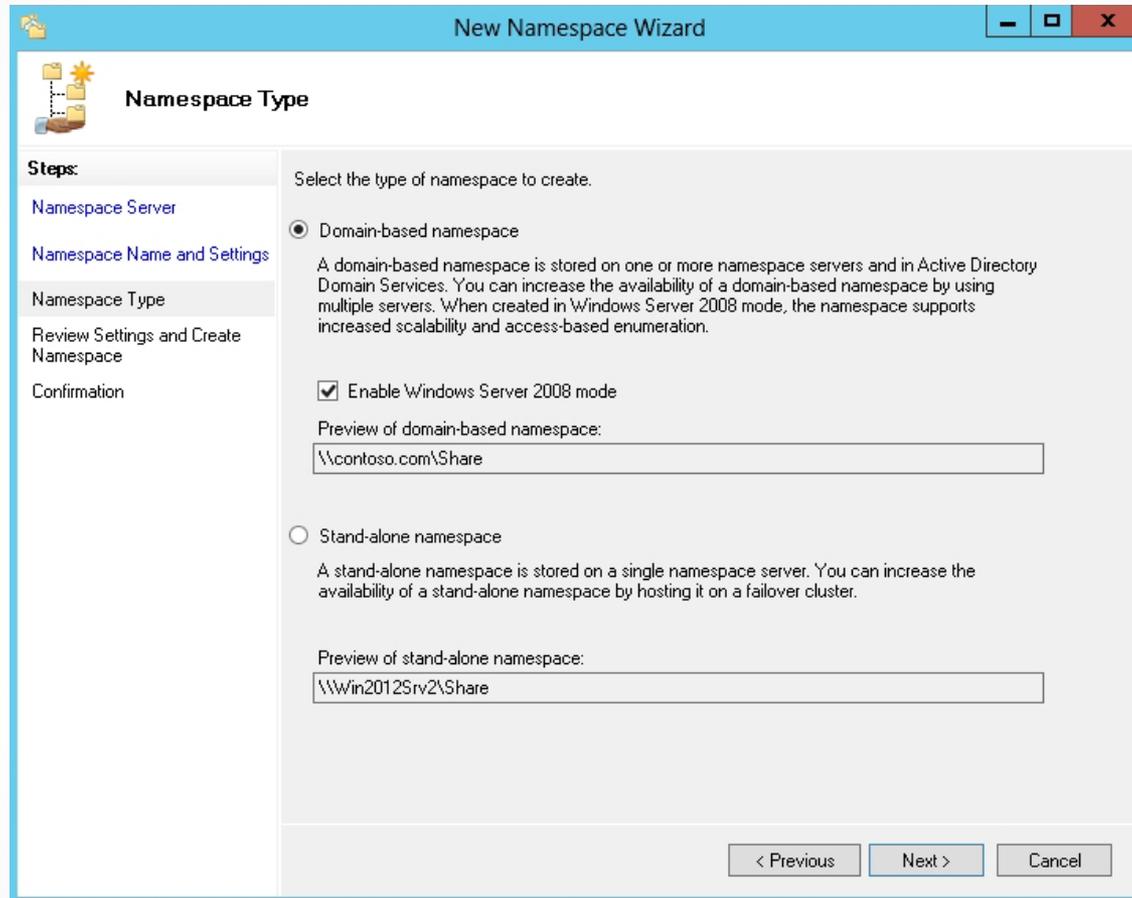
Entering the name of the namespace on the Namespace Name and Settings page

Create a DFS Namespace



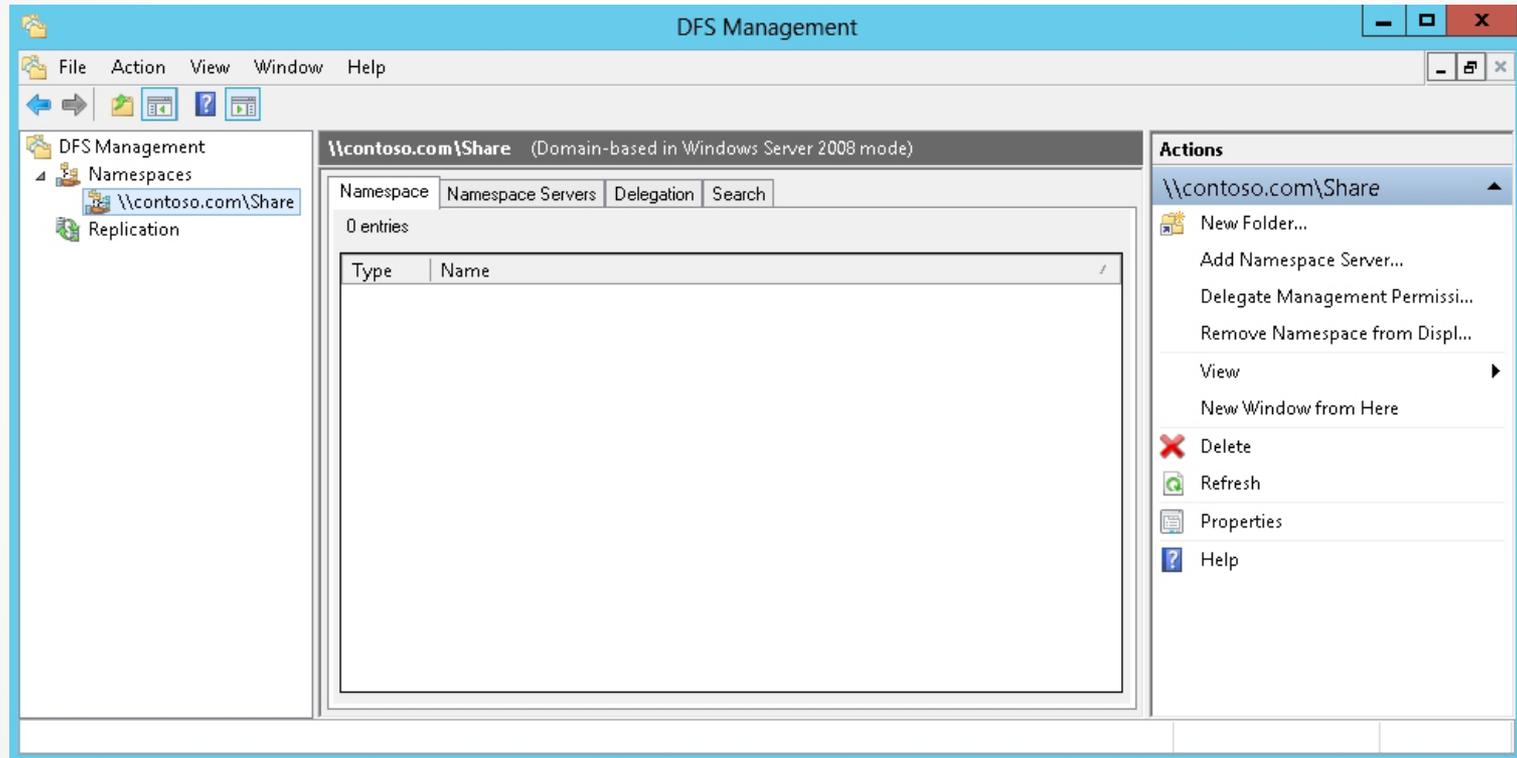
Opening the Edit Settings dialog box

Create a DFS Namespace



Selecting the namespace on the Namespace Type page

Add Folders to the Namespace



Opening the DFS Namespace in the DFS Management console

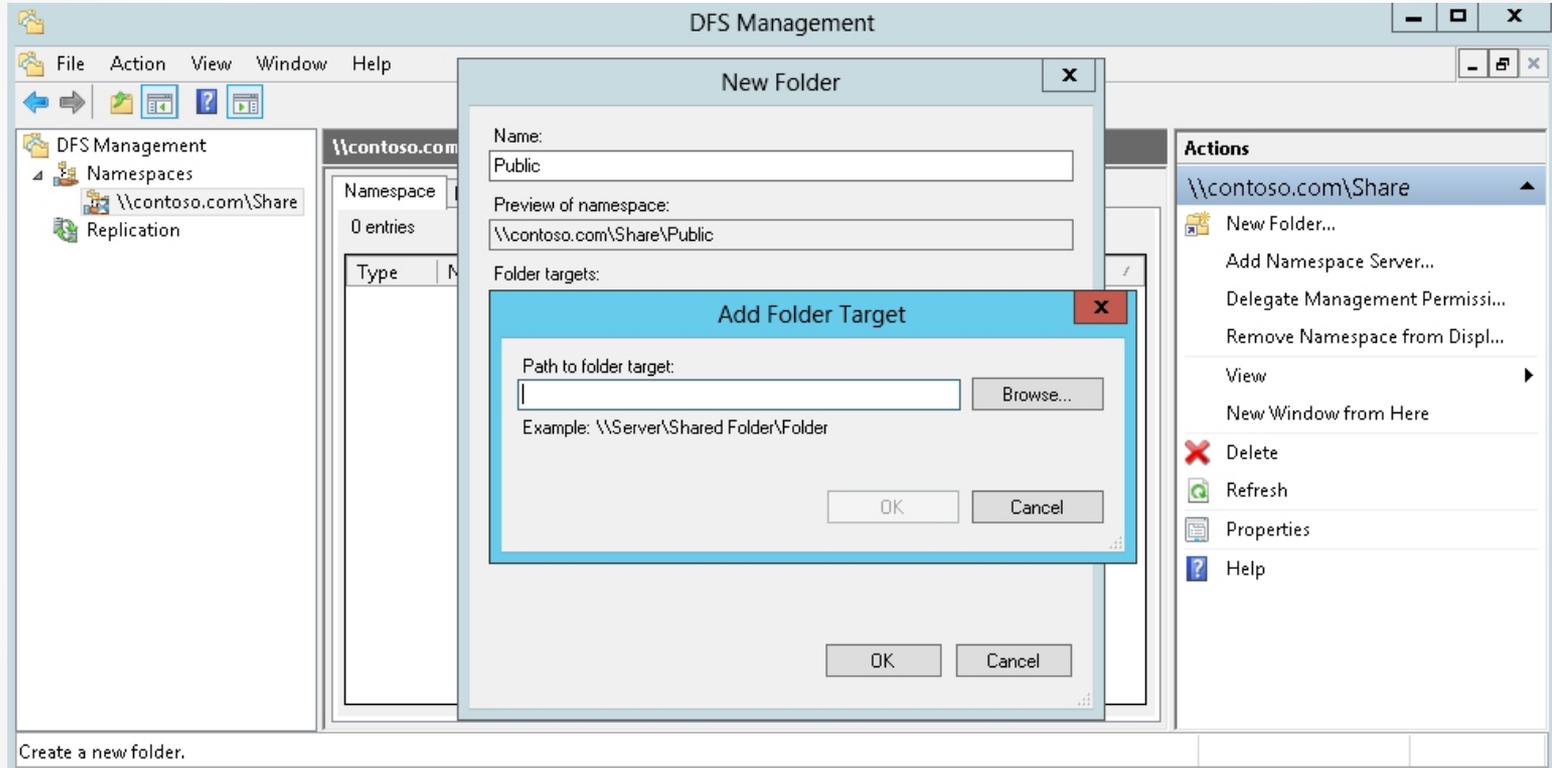
Add Folders to the Namespace

The image shows a Windows dialog box titled "New Folder". The dialog has a light blue title bar with a close button (X) in the top right corner. The main content area is light gray and contains the following elements:

- Name:** A text input field that is currently empty.
- Preview of namespace:** A text input field containing the path "\\contoso.com\Share".
- Folder targets:** A large, empty rectangular area intended for listing folder targets.
- Buttons:** Below the "Folder targets" area are three buttons: "Add..", "Edit..", and "Remove". At the bottom right of the dialog are "OK" and "Cancel" buttons.

Adding a folder to the namespace

Add Folders to the Namespace

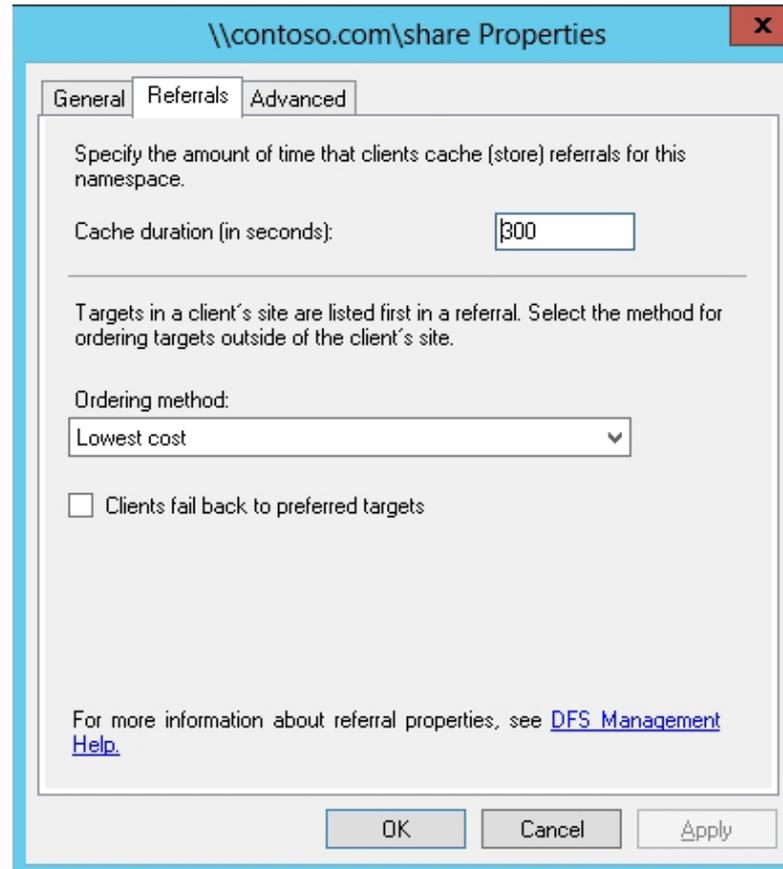


Adding a Folder Target to the namespace

Managing Referrals

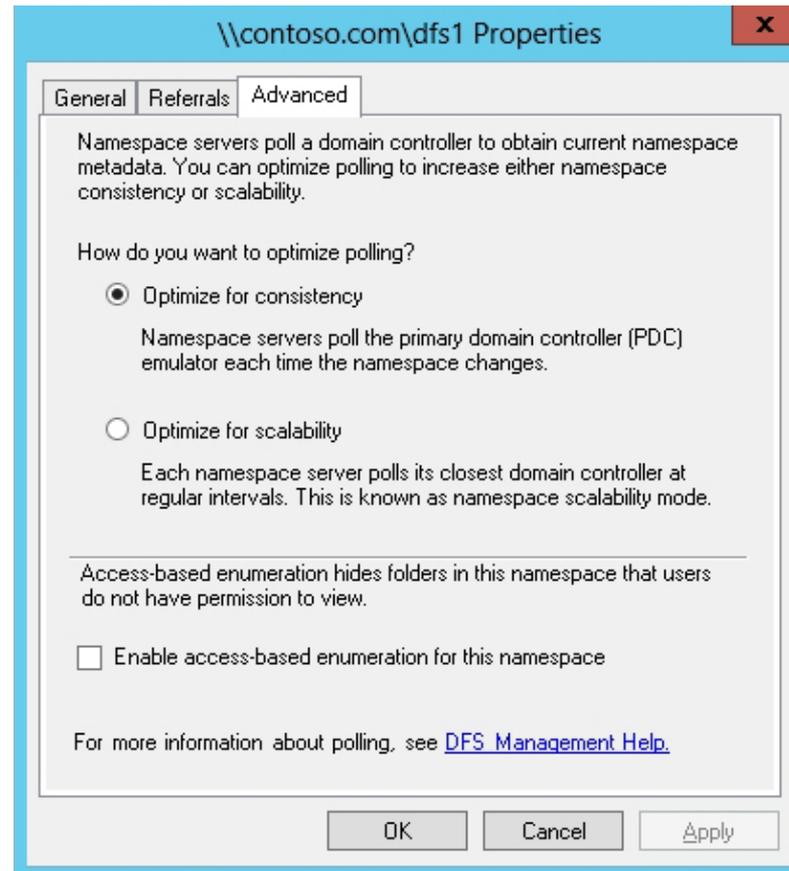
- A **referral** is an ordered list of servers or targets that a client computer receives from a domain controller or namespace server when the user accesses a namespace root or a DFS folder with targets.
- After a computer receives a referral, it reaches the first server on the list.
 - If server is not available, it tries to access the second server.
 - If that server is not available, it goes to the next server.

Managing Referrals



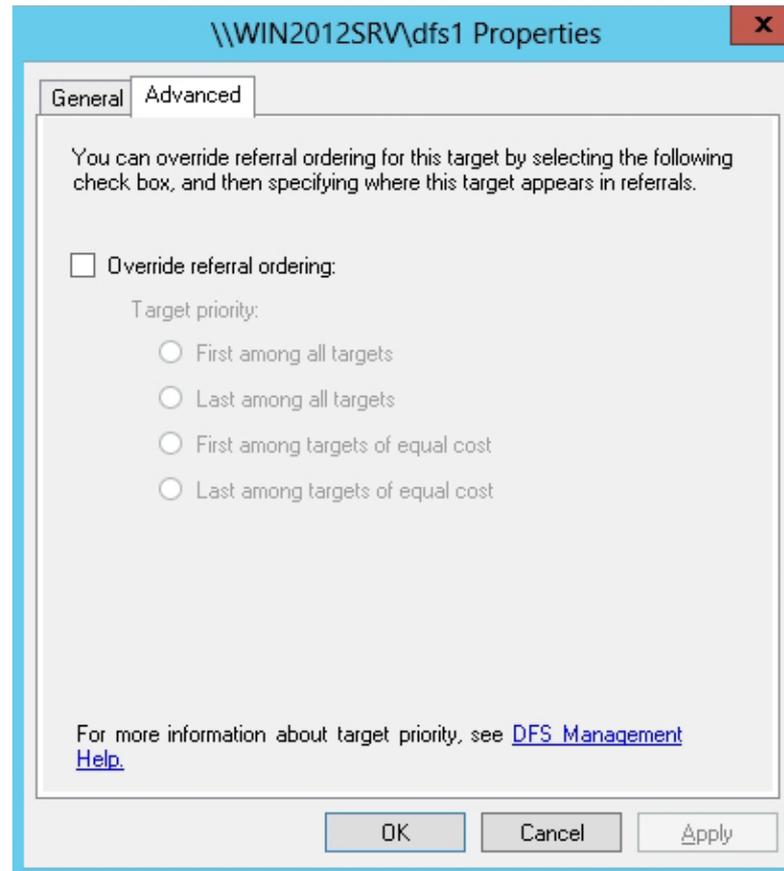
Configuring the referrals for a namespace

Managing Referrals



Optimizing namespace servers polling options

Set Target Priority on a Root Target for a Domain-Based Namespace



Overriding referral ordering

Managing DFS Security

- DFS Namespace is a specialized shared folder of shared folders.
- You secure these folders with share permissions and NTFS permissions.
- It is recommended that you first configure the share and NTFS permissions on folders that host namespace roots and folder targets before configuring DFS.
- To control access-based enumeration of files and folders in folder targets, enable access-based enumeration on each shared folder.

Install/Configure DFS Replication

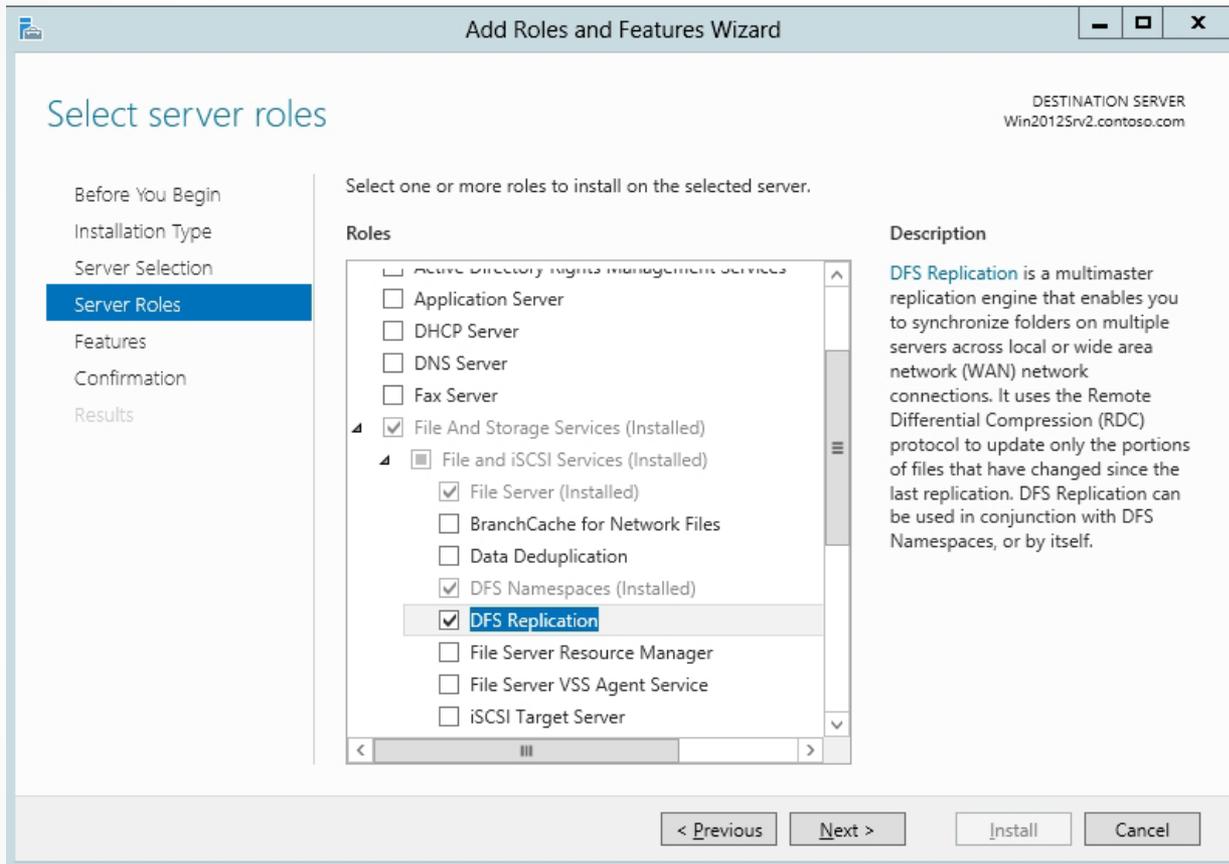
- Before enabling replication between multiple targets, create a replication group.
- The **replication group** is a collection of servers, each of which holds a target of a DFS folder.
 - At least two targets required to perform DFS Replication
- Designate one server as the primary member of the replication group.

Install/Configure DFS Replication

Limitations when using DFS Replication:

- A replication group can have up to 256 members with 256 replicated folders.
- Each server can be a member of up to 256 replication groups, with as many as 256 connections (128 incoming and 128 outgoing).
- A member server can support up to 1 TB of replicated files.
- You can have up to 8 million replicated files per volume.

Install DFS Replication



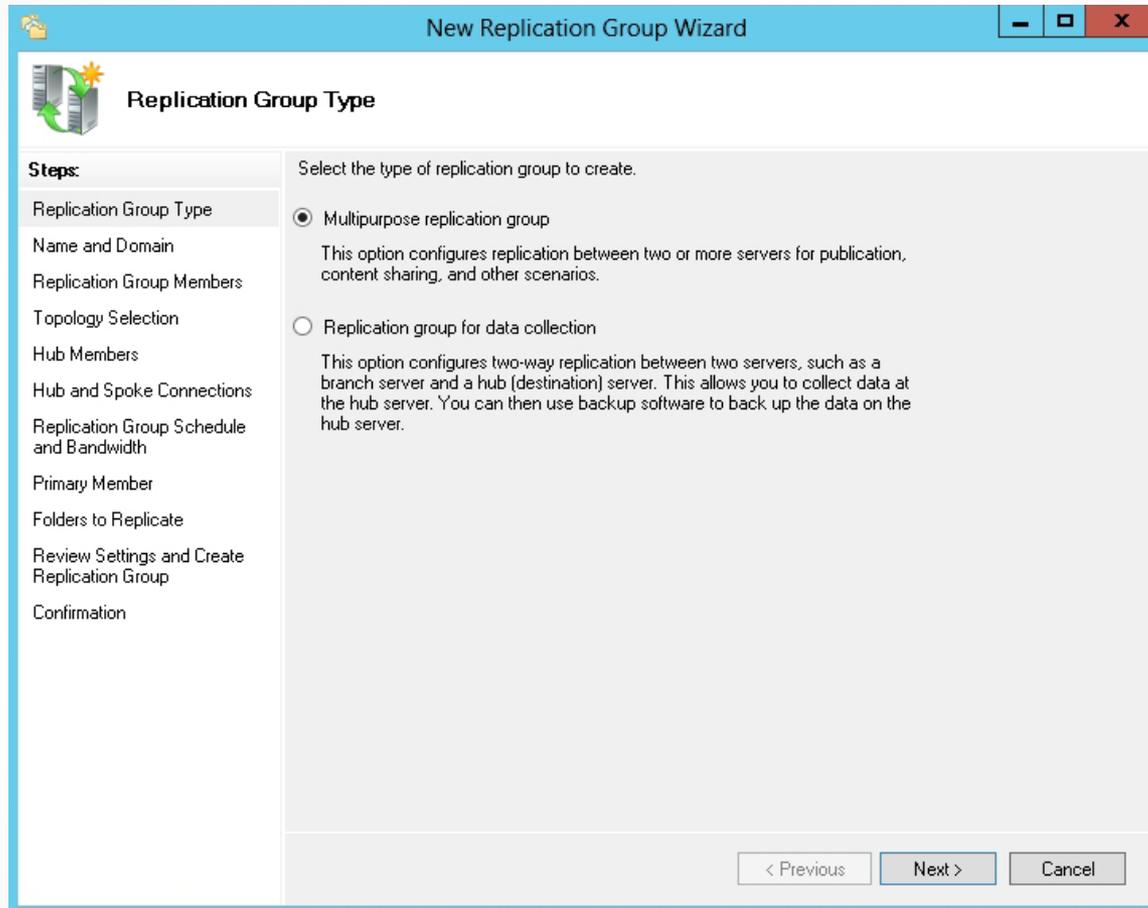
Selecting DFS Replication

Configuring DFS Replication Targets

With DFS Replication, you can configure these settings:

- Bidirectional or unidirectional
- Percentage of available bandwidth
- Schedule when replication will occur

Create a DFS Replication Group



Selecting the replication group type

Create a DFS Replication Group

The screenshot shows the 'New Replication Group Wizard' window with the 'Name and Domain' step selected. The window title is 'New Replication Group Wizard'. The left sidebar lists the steps: 'Replication Group Type', 'Name and Domain', 'Replication Group Members', 'Topology Selection', 'Hub Members', 'Hub and Spoke Connections', 'Replication Group Schedule and Bandwidth', 'Primary Member', 'Folders to Replicate', 'Review Settings and Create Replication Group', and 'Confirmation'. The main area contains the following text and fields:

Type a name and domain for the replication group. The name of the replication group must be unique in the domain that hosts the replication group.

Name of replication group:

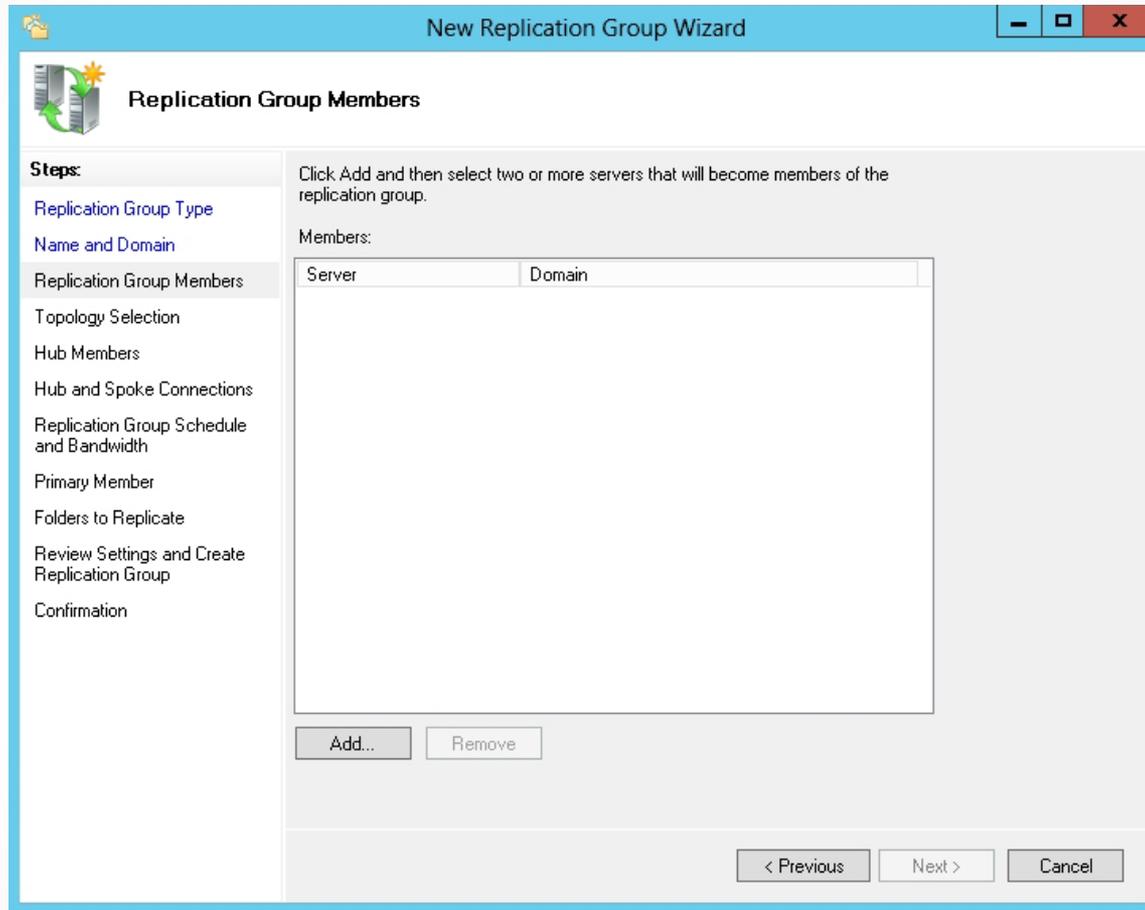
Optional description of replication group:

Domain:

< Previous Next > Cancel

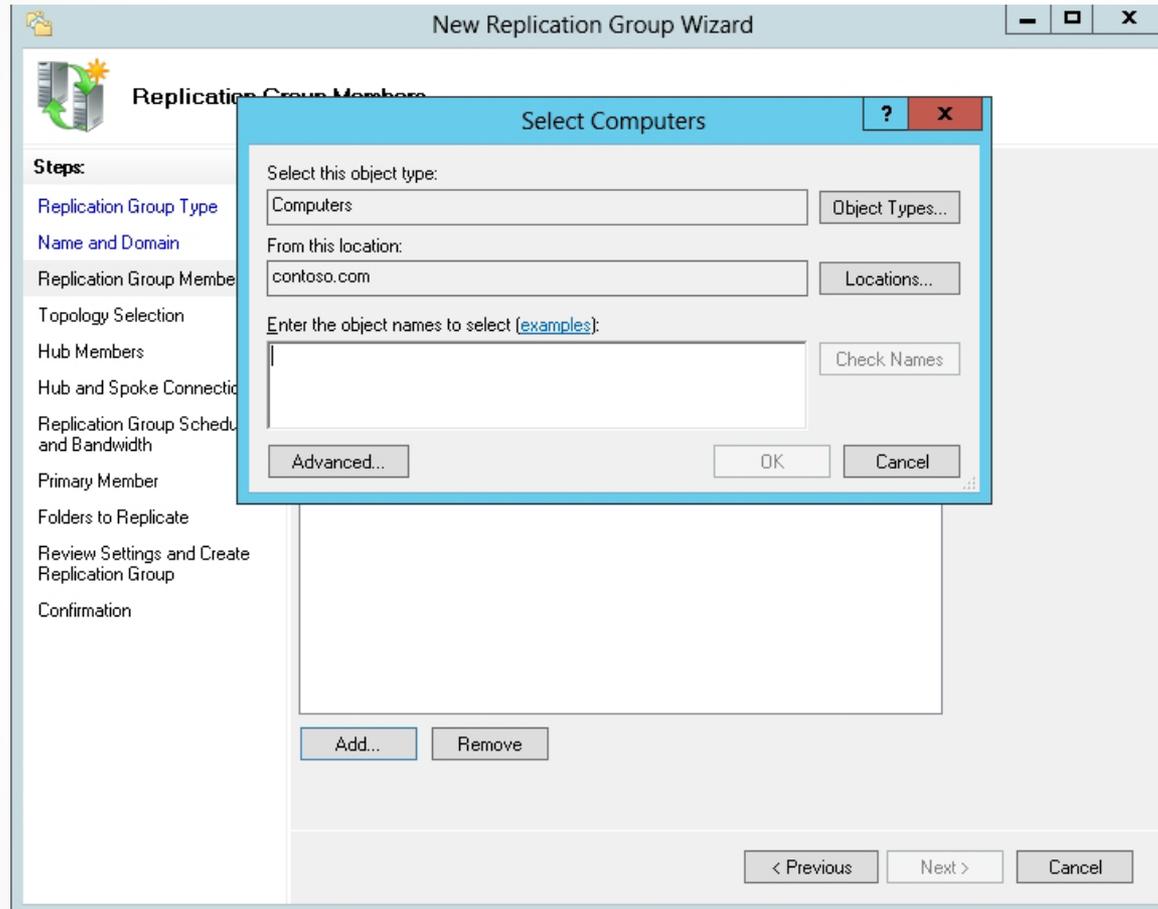
Specifying a name and domain used in DFS Replication

Create a DFS Replication Group



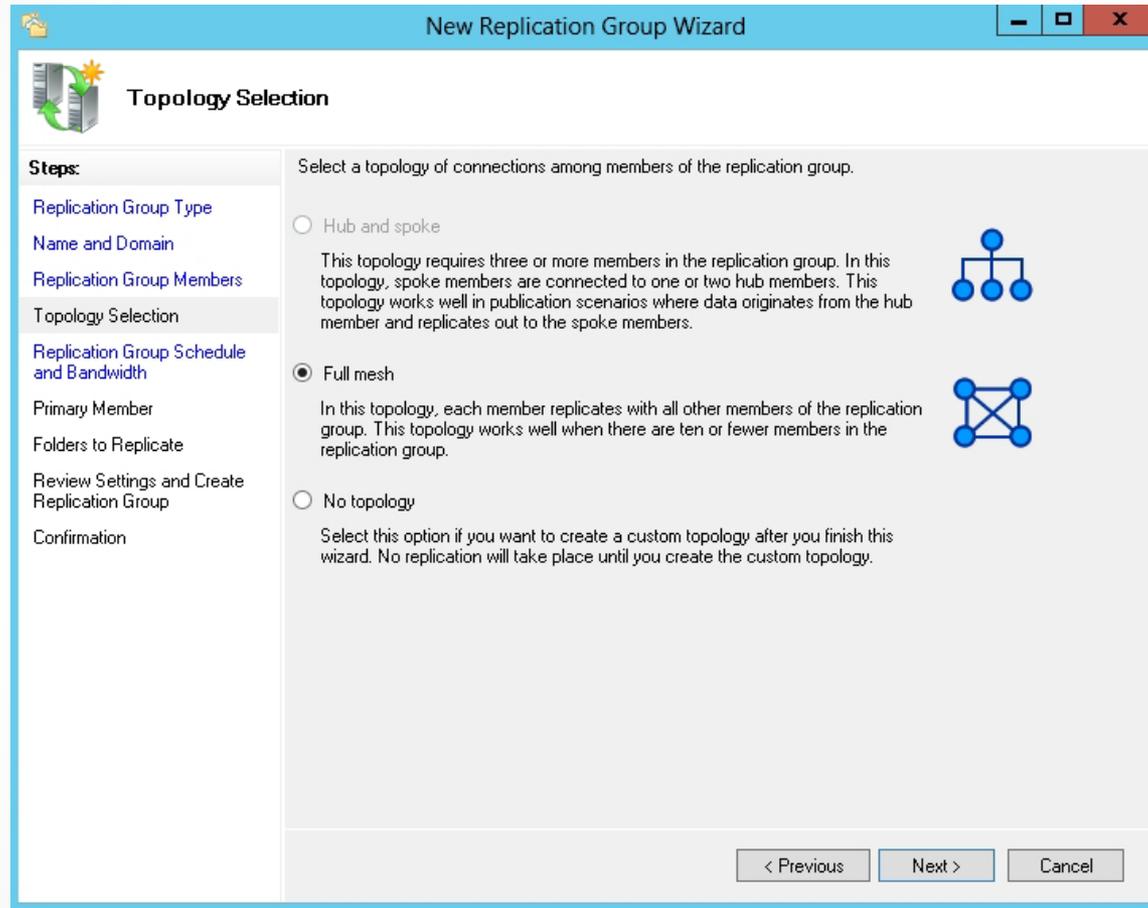
Defining replication group members

Create a DFS Replication Group



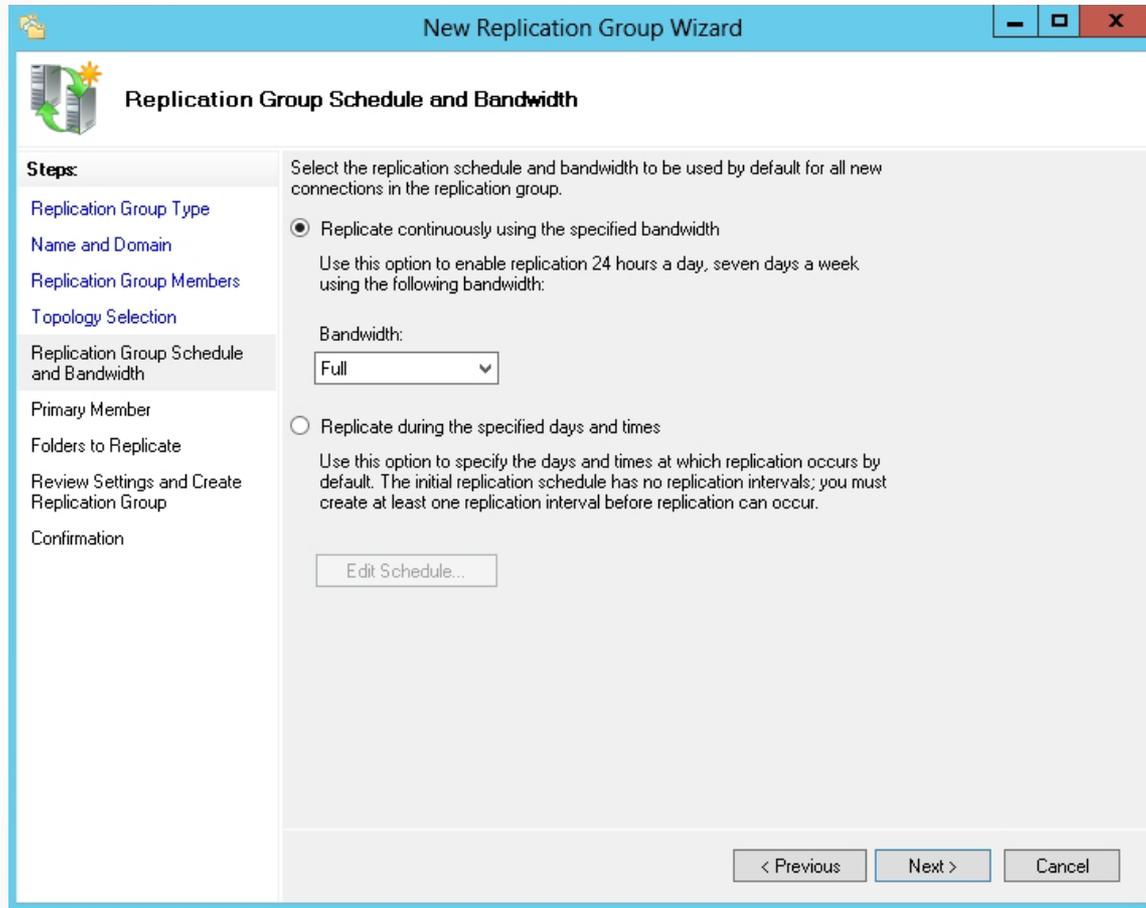
Select computers used in replication

Create a DFS Replication Group



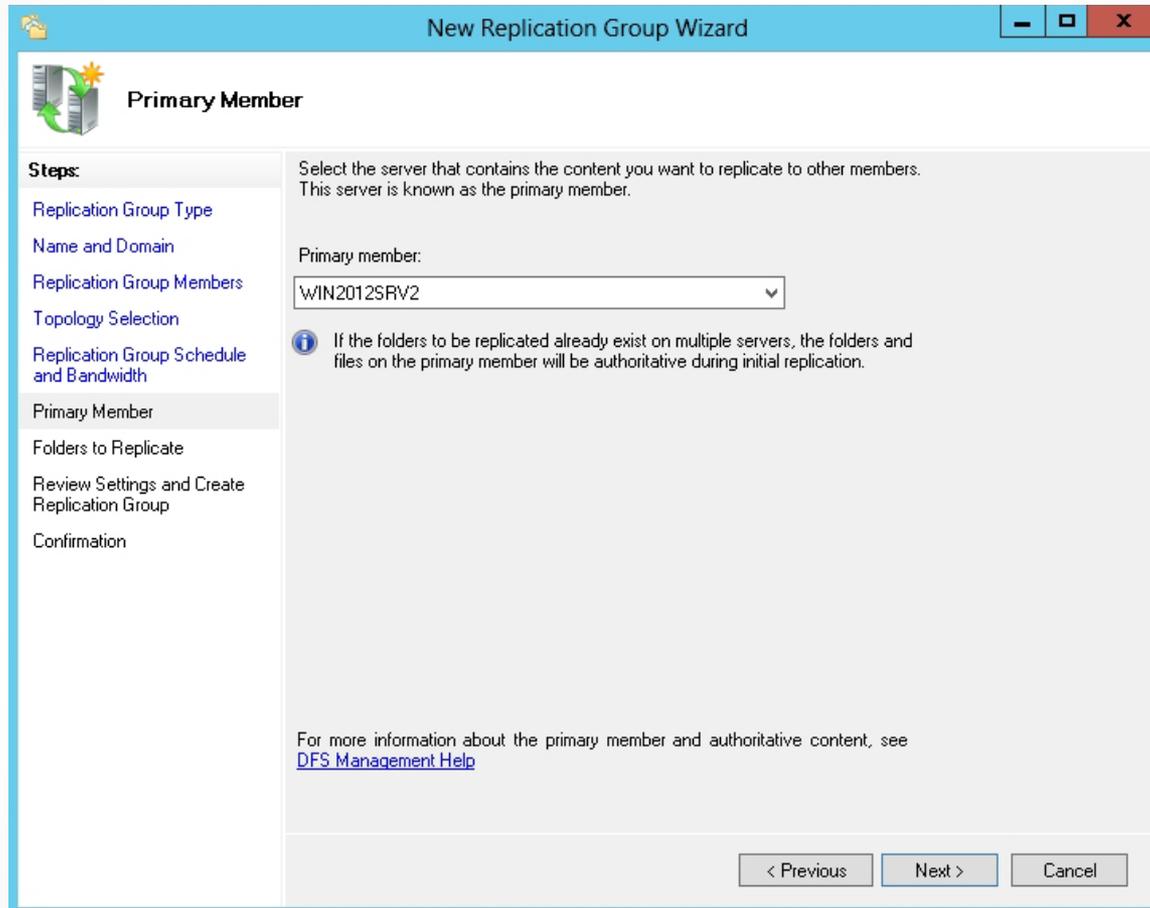
Selecting a topology for the replication group

Create a DFS Replication Group



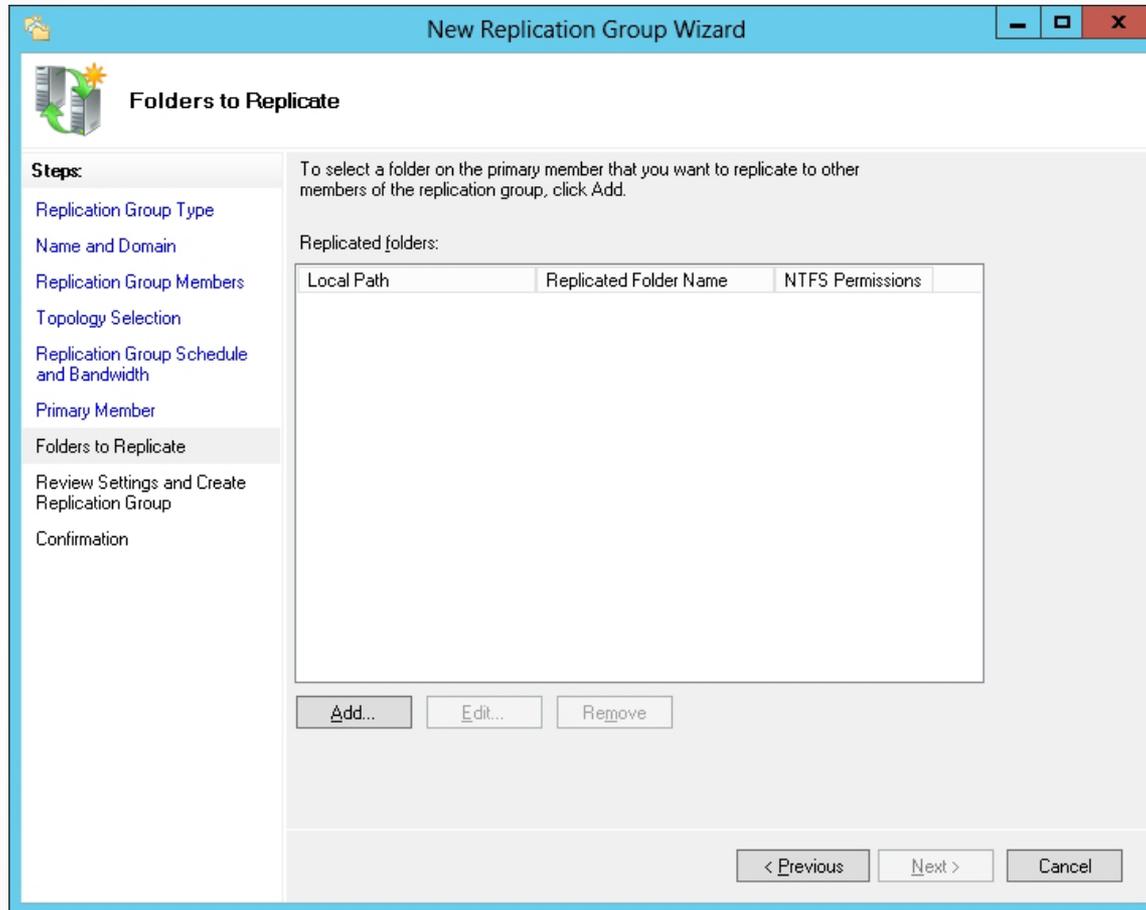
Specifying the bandwidth and schedule

Create a DFS Replication Group



Specifying the primary member server

Create a DFS Replication Group



Adding folders to replicate

Create a DFS Replication Group

Add Folder to Replicate [X]

Member:
WIN2012SRV2

Local path of folder to replicate:
[] Browse...

Example: C:\Documents

Select or type a name to represent this folder on all members of the replication group. This name is known as the replicated folder name.

Use name based on path:
[]

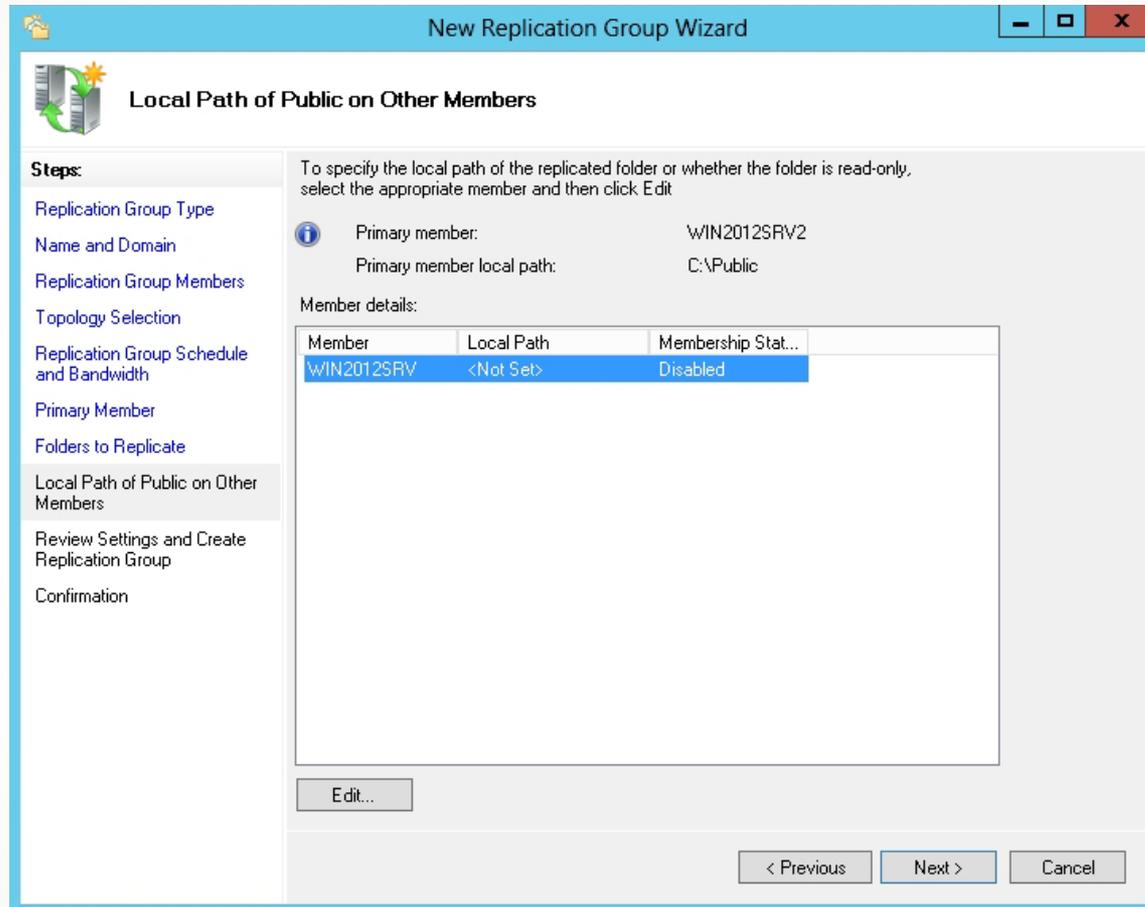
Use custom name:
[]

Example: Documents

Permissions >> OK Cancel

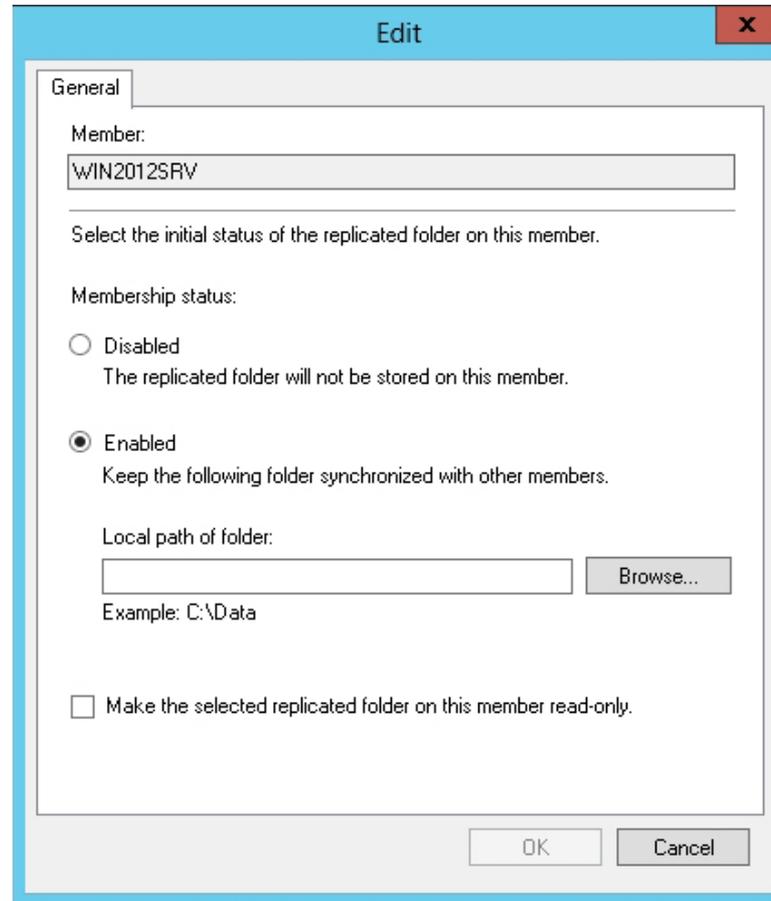
Specifying the local folders to replicate

Create a DFS Replication Group



Adding the remote folder to replicate

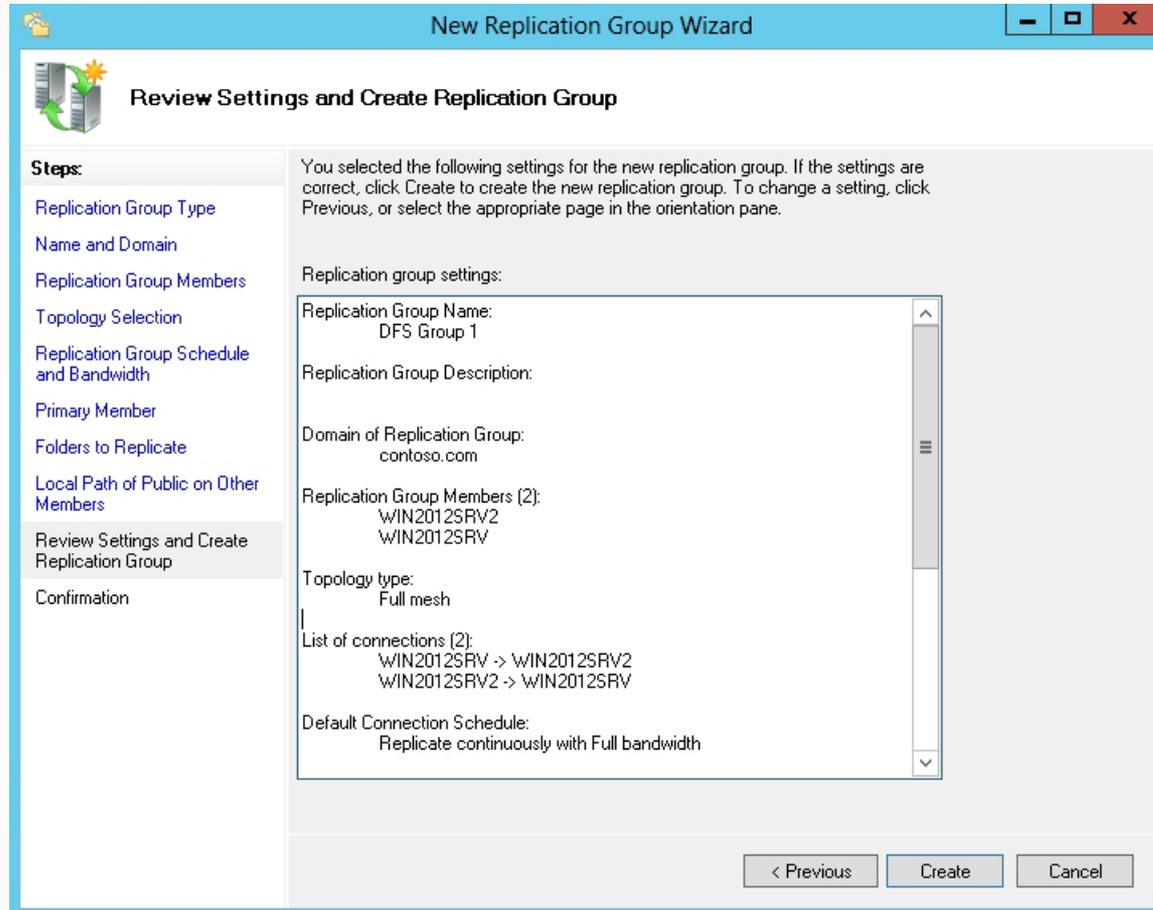
Create a DFS Replication Group



The image shows a Windows dialog box titled "Edit" with a close button (X) in the top right corner. The dialog has a "General" tab selected. Inside the dialog, there is a "Member:" label followed by a text box containing "WIN2012SRV". Below this is a horizontal line and the text "Select the initial status of the replicated folder on this member." Underneath is the "Membership status:" label, followed by two radio button options: "Disabled" (unselected) with the subtext "The replicated folder will not be stored on this member." and "Enabled" (selected) with the subtext "Keep the following folder synchronized with other members." Below the radio buttons is the "Local path of folder:" label, followed by an empty text box and a "Browse..." button. Underneath the text box is the text "Example: C:\Data". At the bottom of the dialog area is a checkbox labeled "Make the selected replicated folder on this member read-only." which is currently unchecked. At the very bottom of the dialog are "OK" and "Cancel" buttons.

Configuring the membership status

Create a DFS Replication Group



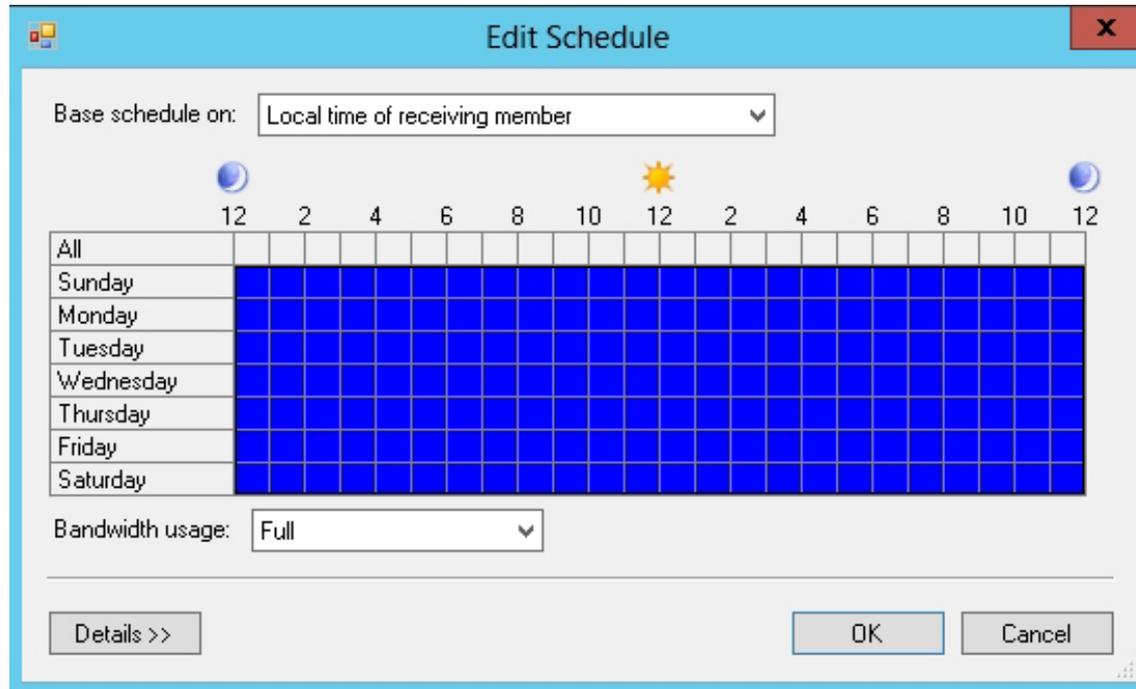
Reviewing the selected settings

Scheduling Replication

When the replication group is created:

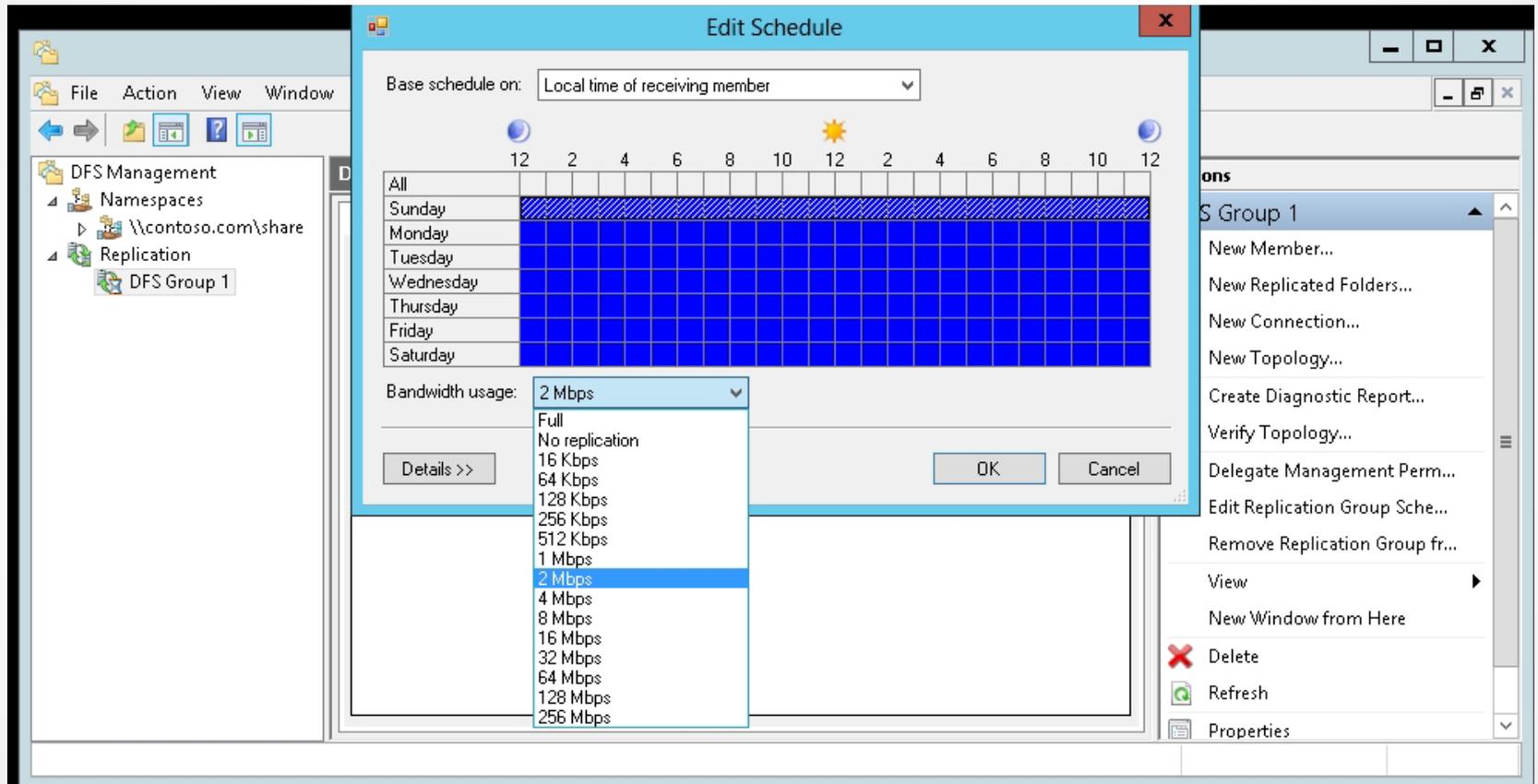
- You can define the scheduled group.
- You can modify the schedule after the replication group is created.

Scheduling Replication



Editing a replication schedule

Scheduling Replication

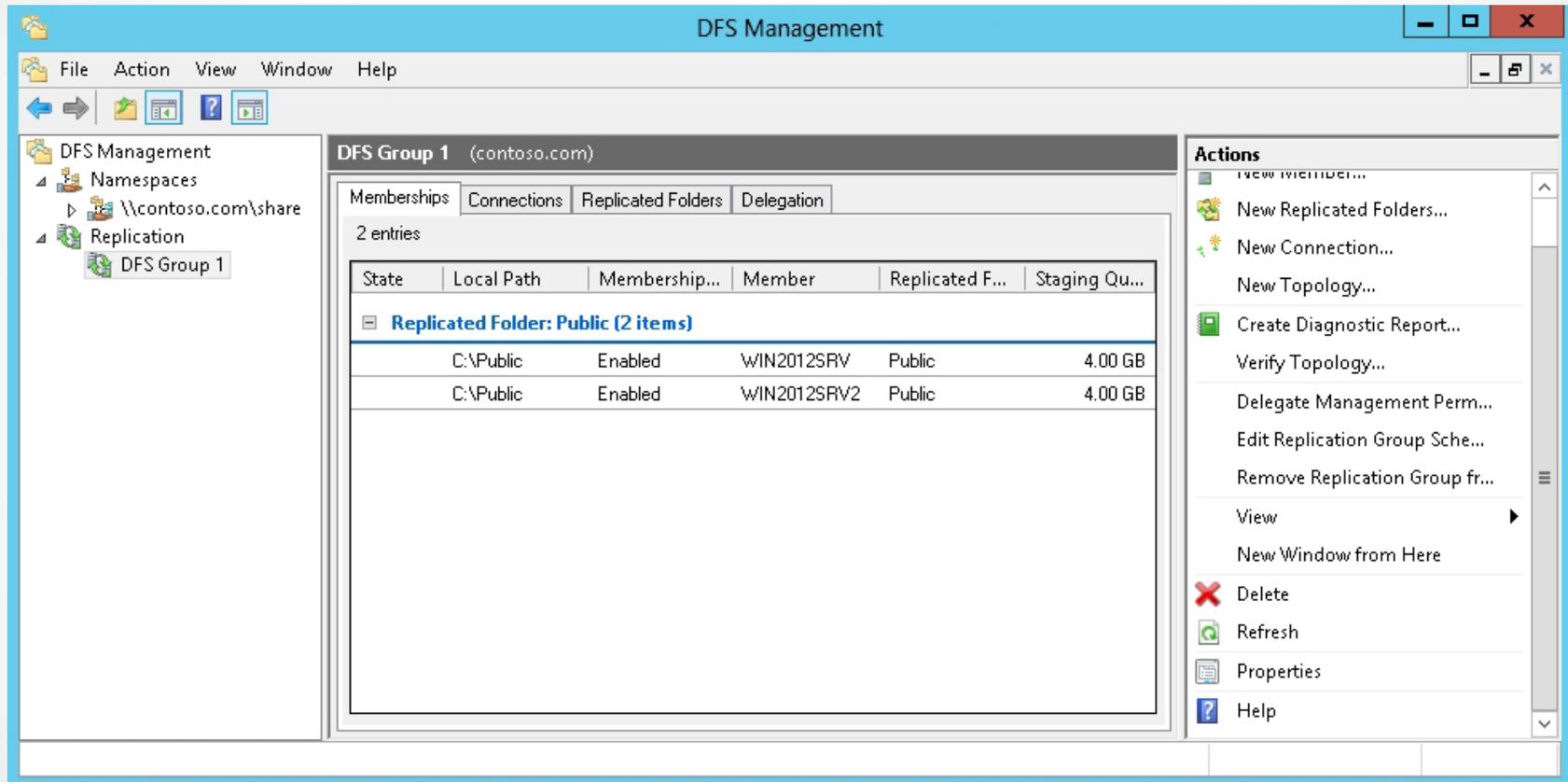


Specifying the scheduled bandwidth for replication

Configuring Remote Differential Compression

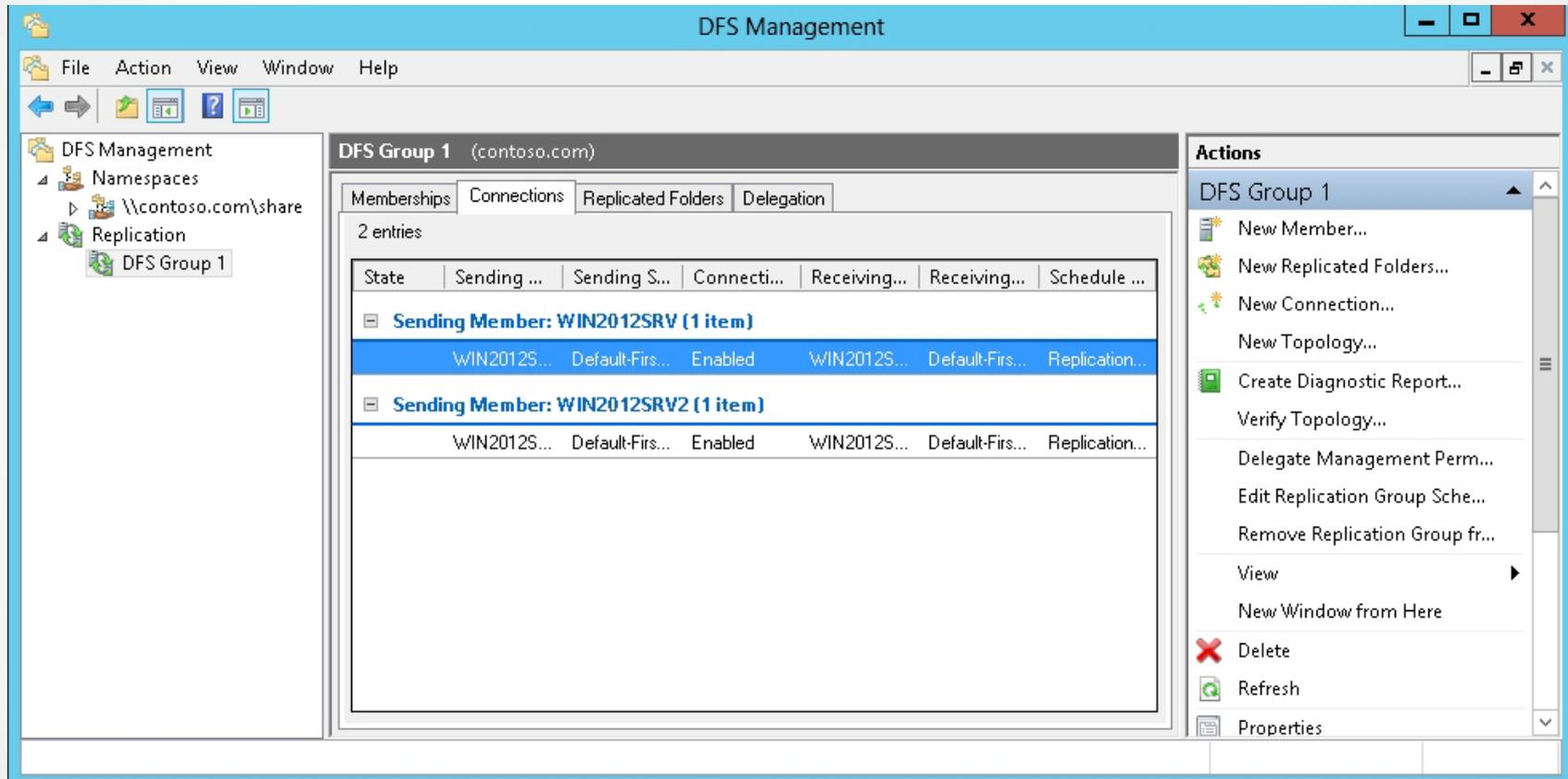
- DFS Replication:
 - Is a multiple-master replication engine that synchronizes DFS folders and replicates Active Directory Domain Services (AD DS) SYSVOL folder on domain controllers.
 - Replaced the File Replication Service (FRS).
 - Uses the remote differential compression (RDC) compression algorithm to minimize the amount of data that needs to be transferred during replication.

Disable Remote Differential Compression



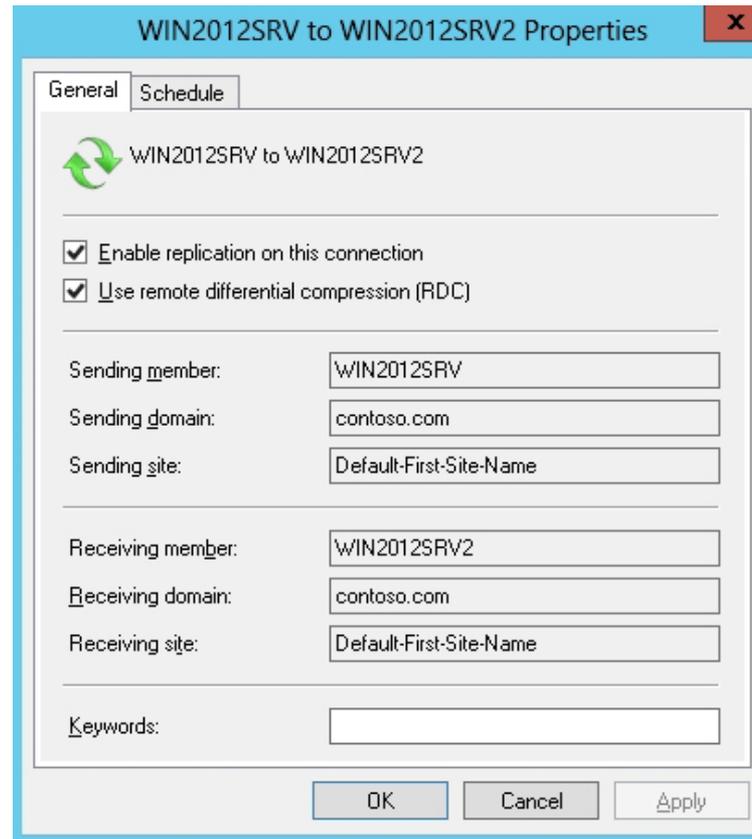
Showing a created DFS Replication Group

Disable Remote Differential Compression



Showing the connections used in DFS Replication

Disable Remote Differential Compression



Enabling replication and remote differential compression (RDC)

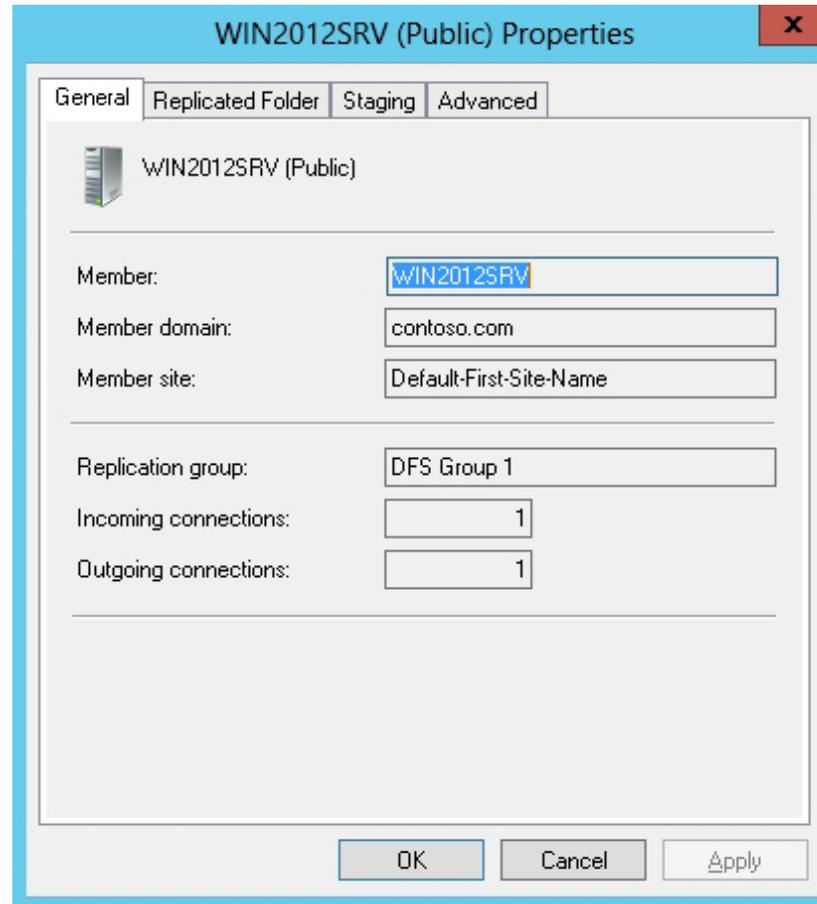
Configuring Staging

- DFS uses staging folders.
- The **staging folder** acts as a cache for new and changed files that need to be replicated.
- The default size of each staging folder is 4,096 MB, which is determined by a quota.
- When the staging folder reaches 90 percent, it purges the oldest staged file until it reaches 60 percent.
 - The staging folder quota does not determine the largest file that can be replicated.

Configuring Staging

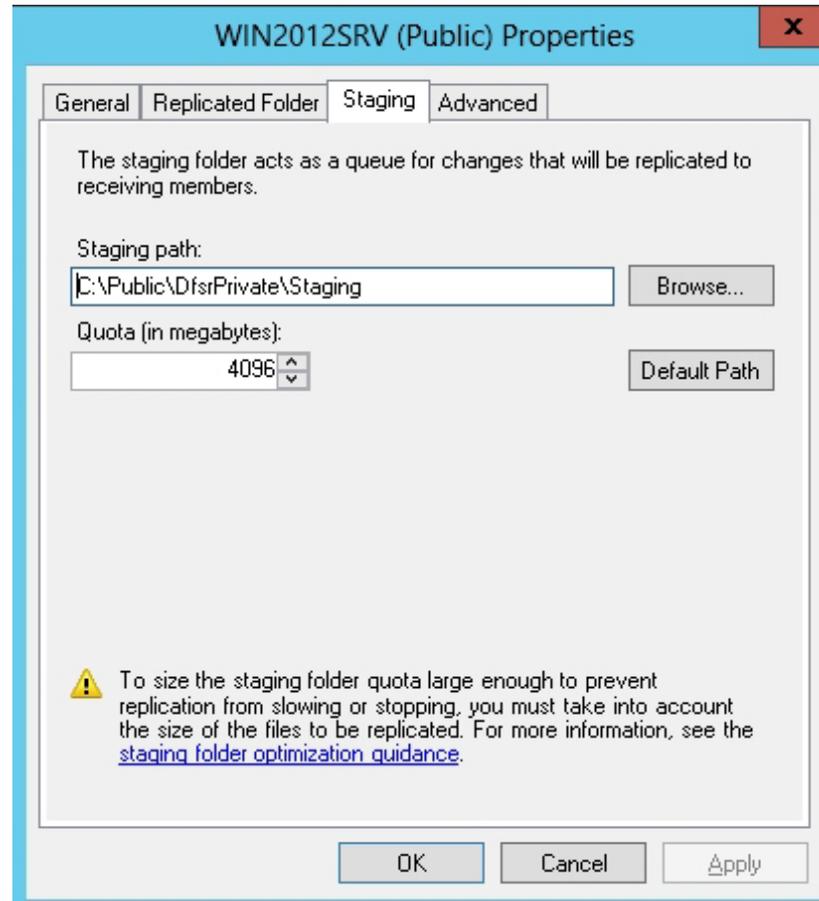
- Each replicated folder has its own **Conflict and Deleted folder**.
 - The quota size of the folder is 660 MB.
- The access control lists (ACLs) on the conflicted files are preserved.
 - Only members of the local Administrators group can access the files.

Manage the Staging Folder and Conflict and Deleted Folder



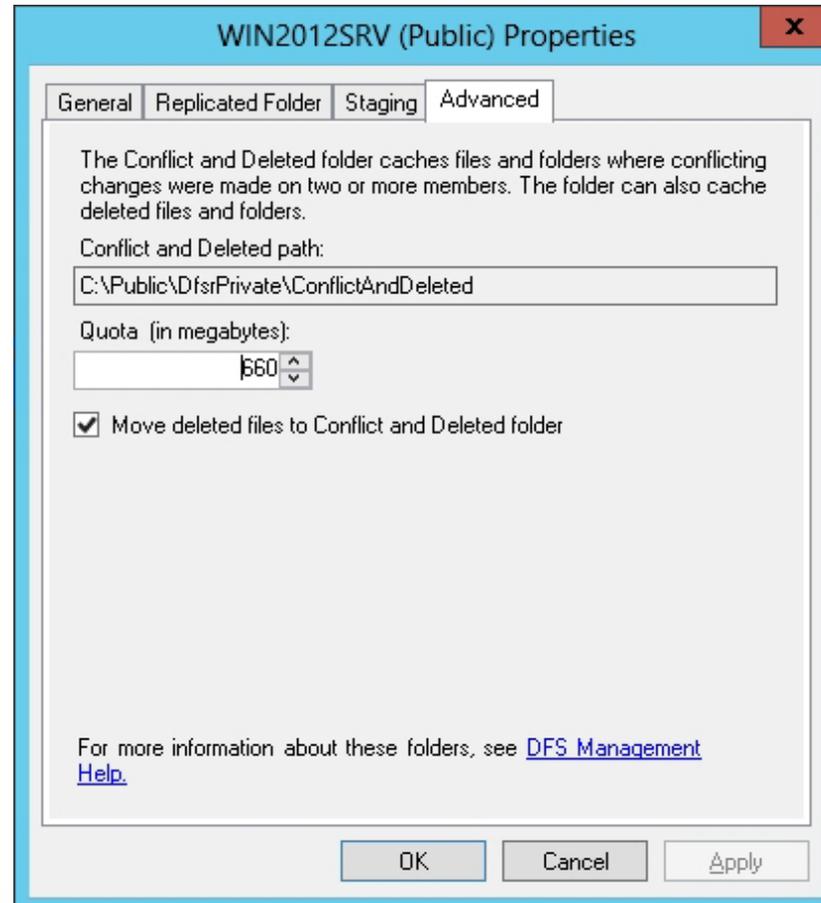
Viewing the properties of a DFS replicated folder

Manage the Staging Folder and Conflict and Deleted Folder



Specifying the staging path and quota

Manage the Staging Folder and Conflict and Deleted Folder



Specifying the Conflict and Deleted path and quota

Configuring Fault Tolerance Using DFS

To build network fault tolerance with DFS Namespace and DFS Replication:

1. Create the same folder on multiple servers.
2. Share the folders.
3. Configure DFS Replication between the folders on the various servers.
4. Create a DFS Namespace that includes targets of all target folders for a replication group.

Lesson Summary

- Distributed File System (DFS) is a set of technologies that enable a Windows server to organize multiple distributed SMB file shares into a distributed file system.
- DFS Namespace enables you to group shared folders into a single logical structure.
- With domain-based namespaces, the configuration is stored in Active Directory, which means that you don't have to rely on a single server to provide the namespace information to your clients.
- A referral is an ordered list of servers or targets that a client computer receives from a domain controller or namespace server when the user accesses a namespace root or a DFS folder with targets.

Lesson Summary

- The replication group is a collection of servers, each of which holds a target of a DFS folder. You need to have a minimum of two targets to perform DFS Replication.
- By default, replication groups use a full mesh topology, which means that all members replicate to all other members.
- You can schedule DFS Replication to occur only during the night when the WAN links are not used as much or you can specify the bandwidth used by DFS Replication.
- DFS Replication uses the remote differential compression (RDC) compression algorithm.
- The staging folder acts as a cache for new and changed files that need to be replicated.
- To make shared files fault-tolerant, you need to use DFS Namespace and DFS Replication.

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