

Installation Guide

Dynamic File Services 2.0

November 11, 2011

Novell.

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About This Guide

This guide describes the installation requirements and how to install or update Novell Dynamic File Services (DynamicFS) 2.0 software in a Microsoft Windows Workgroup or Active Directory Domain environment.

- ◆ Chapter 1, “What’s New for the Dynamic File Services Installation,” on page 9
- ◆ Chapter 2, “Planning the Installation,” on page 11
- ◆ Chapter 3, “Installing and Setting Up Dynamic File Services,” on page 17
- ◆ Chapter 4, “Installing, Setting Up, and Using Dynamic File Services in a Windows Cluster,” on page 23
- ◆ Chapter 5, “Upgrading to Dynamic File Services 2.0,” on page 35
- ◆ Chapter 6, “Upgrading to Dynamic File Services 2.0 in a Windows Cluster,” on page 39
- ◆ Chapter 7, “FAQs and Troubleshooting Install and Uninstall Issues,” on page 43
- ◆ Appendix A, “Silent Install Options for Dynamic File Services,” on page 45
- ◆ Appendix B, “Using the Uninstall Tool to Modify, Repair, or Remove Dynamic File Services,” on page 47
- ◆ Appendix C, “Using the Uninstall Tool to Modify, Repair, or Remove Dynamic File Services in a Windows Cluster,” on page 53
- ◆ Appendix D, “Dynamic File Services Components,” on page 57

Audience

This guide is designed to help storage solutions administrators install, update, modify, repair, or uninstall Novell Dynamic File Services.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

Documentation Updates

For the most recent version of the *Novell Dynamic File Services Installation Guide*, visit the [Dynamic File Services documentation Web site \(http://www.novell.com/documentation/dynamic_file_services/\)](http://www.novell.com/documentation/dynamic_file_services/).

Additional Documentation

Additional documentation is available on the [Dynamic File Services documentation Web site \(http://www.novell.com/documentation/dynamic_file_services/\)](http://www.novell.com/documentation/dynamic_file_services/):

- ◆ *Readme*
- ◆ *Administration Guide*

- ◆ *Client Commands and Utilities Reference*
- ◆ *Retention Review Quick Start*

1 What's New for the Dynamic File Services Installation

This section describes the new features and changes for the installation of Novell Dynamic File Services (DynamicFS).

- ♦ [Section 1.1, "What's New for Dynamic File Services 2.0," on page 9](#)
- ♦ [Section 1.2, "What's Next," on page 10](#)

1.1 What's New for Dynamic File Services 2.0

Dynamic File Services 2.0 provides the following changes for installation or upgrade:

- ♦ [Section 1.1.1, "Data Location," on page 9](#)
- ♦ [Section 1.1.2, "Product Evaluation and License Key Registration," on page 10](#)
- ♦ [Section 1.1.3, "Policy Schedules," on page 10](#)
- ♦ [Section 1.1.4, "Notification Events," on page 10](#)

1.1.1 Data Location

Dynamic File Services 2.0 stores program software and the data files it creates in the following locations by default when you accept the default install location:

Default Location	Description
C:\Program Files\Dynamic File Services	Program software, configuration files, log files, and documentation
C:\ProgramData\Dynamic File Services	Program data files and audit log files

The following data folders and their contents are now set up in the C:\ProgramData\Dynamic File Services folder:

audit
LocalDrives
Pairs
Policies
Schedules
SnapShot

For upgrades to version 2.0 from earlier releases, if the software is currently installed in the default location of C:\Program Files\Dynamic File Services, the program data files and audit log files are automatically relocated to the C:\ProgramData\Dynamic File Services folder.

You can use the Custom option during the install to specify a different location for the installation. Both the program files and program data are stored in the custom location. If you are installing Dynamic File Services in a cluster, you use the Custom option to specify the shared disk as the target location during the installation.

1.1.2 Product Evaluation and License Key Registration

Dynamic File Services 2.0 is installed in evaluation mode. Most product features will function normally. However, you are limited to one pair and one policy at a time until a key is registered on the system. You must register a key on each computer where the Service component is installed.

You can obtain a license key from the [Novell Customer Center \(http://www.novell.com/customercenter/\)](http://www.novell.com/customercenter/). The license key code is delivered in an .html file that is named with a globally unique ID (GUID).

You can enter a license key at any time after you install Dynamic File Services. After a successful key registration, all features of the product are immediately available. You do not need to reinstall the product. The policy and pair created during evaluation remain in effect, as do any configuration settings you have made to the Service.

For information about registering a license key, see “[Registering the License Key](#)” in the *Dynamic File Services 2.0 Administration Guide*.

1.1.3 Policy Schedules

Dynamic File Services 2.0 separates the Schedule function from the policy. If you upgrade to version 2.0 from an earlier version, the existing policies’ schedules are automatically created and associated with their original policies. A policy can have only one schedule at a time associated with it.

For information about creating schedules, see “[Creating and Managing Policy Schedules](#)” in the *Dynamic File Services 2.0 Administration Guide*.

1.1.4 Notification Events

Dynamic File Services 2.0 allows you to set Notification events for each configured e-mail address and Twitter account. Previously, events were set globally. If you upgrade from an earlier version, each user is automatically set to receive all events. For information about configuring events for each recipient, see “[Configuring the Notification Service](#)” in the *Dynamic File Services 2.0 Administration Guide*.

1.2 What’s Next

For information about current installation requirements, see [Chapter 2, “Planning the Installation,” on page 11](#).

2 Planning the Installation

Before you install Novell Dynamic File Services (DynamicFS), make sure you understand the supported configurations and installation requirements described in this section.

IMPORTANT: For general planning information, see “[Planning for Pairs and Policies](#)” in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).

For information about installing in Windows clusters, also see [Section 4.1, “Planning the Installation in a Windows Cluster,”](#) on page 23.

- ◆ [Section 2.1, “Supported Platforms,”](#) on page 11
- ◆ [Section 2.2, “Supported Storage,”](#) on page 12
- ◆ [Section 2.3, “Software Requirements,”](#) on page 13
- ◆ [Section 2.4, “Server Configuration Requirements,”](#) on page 14
- ◆ [Section 2.5, “Rights Needed for Installation in Active Directory Environments,”](#) on page 14
- ◆ [Section 2.6, “Installation Files,”](#) on page 15
- ◆ [Section 2.7, “Destination Location for the Dynamic File Services Software and Program Data,”](#) on page 15
- ◆ [Section 2.8, “Checking for Issues in the Readme,”](#) on page 15
- ◆ [Section 2.9, “Silent Install Options,”](#) on page 15
- ◆ [Section 2.10, “Cluster Install Requirements,”](#) on page 15

2.1 Supported Platforms

Dynamic File Services provides a Management component and a Service component to be installed. The Service component installs the main Service engine and utilities. The Management component installs the management tools.

- ◆ [Section 2.1.1, “Windows Servers,”](#) on page 12
- ◆ [Section 2.1.2, “Windows Workstations,”](#) on page 12

2.1.1 Windows Servers

You can install the Service and Management components of Dynamic File Services on your Windows servers in a Workgroup environment or an Active Directory environment.

Dynamic File Services supports both 32-bit and 64-bit architectures for the following Microsoft Windows Server operating systems with the latest service packs and patches applied:

- ♦ Windows Server 2008 R2
- ♦ Windows Server 2008 Service Pack 2 or later
- ♦ Windows Server 2003 R2
- ♦ Windows Server 2003 Service Pack 2 or later

2.1.2 Windows Workstations

You can also install the Management component of Dynamic File Services on a Windows workstation. This allows you to remotely manage pairs and policies on DynamicFS servers in the same domain.

DynamicFS supports both 32-bit and 64-bit architectures for the following Windows client operating systems with the latest service packs and patches applied:

- ♦ Windows 7
- ♦ Windows Vista Service Pack 1 or later
- ♦ Windows XP Service Pack 3 or later

Installation of the Service component is not supported on Windows workstations in a production environment. For testing purposes, you can install the Service component on the supported workstations. Some Service capabilities, such as those related to creating and managing pairs with remote shares, are unlikely to work when the Service is hosted on a workstation.

For information about configuration requirements for the Service on Windows XP, see [“Disabling Simple File Sharing on Windows XP”](http://www.novell.com/documentation/dynamic_file_services/dynamic_readme/data/dynamic_readme.html#bltz17z) (http://www.novell.com/documentation/dynamic_file_services/dynamic_readme/data/dynamic_readme.html#bltz17z) in the *Dynamic File Service: Readme* (http://www.novell.com/documentation/dynamic_file_services/dynamic_readme/data/dynamic_readme.html).

2.2 Supported Storage

- ♦ [Section 2.2.1, “File Systems,” on page 12](#)
- ♦ [Section 2.2.2, “Local Storage,” on page 13](#)
- ♦ [Section 2.2.3, “Remote Storage,” on page 13](#)

2.2.1 File Systems

Dynamic File Services supports the NTFS file system for the primary and secondary locations in pairs.

2.2.2 Local Storage

Devices that the system considers to be native storage devices can be used for the primary path and secondary path in a pair. This includes Fibre Channel, iSCSI, and direct-attached storage devices (internal or external). The devices must be online and available to the Dynamic File Services server when you create, manage, and use the pair.

For iSCSI devices that are hosted in a cloud, we recommend that the device be used only for secondary paths.

The native storage devices used in a pair must have a static drive letter assigned so that the drive letter remains the same through server restarts. If you plan to change the drive letters (or modify paths), you must unlink the paths by removing the pair definition, and create a new pair that uses the new locations.

Dynamic File Services does not support using CDs, DVDs, floppy drives, or flash drives in a pair. It also does not support using mapped drives.

2.2.3 Remote Storage

Remote storage is supported for the following pair configurations:

- ♦ **Standard Pair:** Secondary path. A local path is required for the primary in order to provide merged access to the files.
- ♦ **Retention Pair:** Primary path or secondary path.

The remote path can be a network share on either of the following target storage locations. It is not necessary for Dynamic File Services to be running on the target location.

- ♦ Any Windows Server running an operating system that is supported by DynamicFS
- ♦ Network attached storage or a network filer (such as NetApp and EMC)

IMPORTANT: To avoid potential data loss and conflicts, use only dedicated volumes when using remote paths.

A remote share must be online and available to the Dynamic File Services server when you create, manage, and use the pair.

For an Active Directory environment, the remote share must be published in Active Directory and must reside in the same domain/forest as the Dynamic File Services server. For information, see [“Using Remote Shares in an Active Directory Domain”](#) in the *Dynamic File Services 2.0 Administration Guide*.

For a Workgroup environment, the remote share must exist in the same workgroup as the Dynamic File Services server. For information, see [“Using Remote Shares in a Workgroup”](#) in the *Dynamic File Services 2.0 Administration Guide*.

2.3 Software Requirements

The following software should be installed and working properly before installing Dynamic File Services:

- ♦ Microsoft .NET 3.5 Service Pack 1

If .NET is not already installed on the computer, the Dynamic File Services InstallShield Wizard automatically attempts to install the following Microsoft .NET 3.5 SP1 download:

<http://download.microsoft.com/download/0/6/1/061f001c-8752-4600-a198-53214c69b51f/dotnetfx35setup.exe> (<http://download.microsoft.com/download/0/6/1/061f001c-8752-4600-a198-53214c69b51f/dotnetfx35setup.exe>)

An Internet connection is required. The download time varies based on your connection speed. A reboot might be required on some platforms.

If the InstallShield Wizard is unable to install .NET, the wizard halts the installation and returns an error. Manually install .NET, then start the InstallShield Wizard to install Dynamic File Services.

- ♦ Microsoft Network Sharing
- ♦ Microsoft Event Logger

2.4 Server Configuration Requirements

The following server configuration should be set up and working properly before installing Dynamic File Services:

- ♦ [Section 2.4.1, “SMB,” on page 14](#)
- ♦ [Section 2.4.2, “UTF-8,” on page 14](#)

2.4.1 SMB

Dynamic File services supports SMB2 and SMB1. You should use the same SMB version on the server, clients, and remote file systems.

2.4.2 UTF-8

The servers and filers used with Dynamic File Services must be Unicode capable and set up for UTF-8 (8-bit Unicode Transformation Format) encoding and character sets.

2.5 Rights Needed for Installation in Active Directory Environments

In Active Directory domains, the installation must be done by a domain user that has local Administrator privileges on the computer and Active Directory Domain Administrator rights. This allows the Installation Wizard to set up a Dynamic File Services group for managing pairs and policies on DynamicFS servers in the domain, the Dynamic File Services Storage Rights group and an `NDFS-servername` proxy user in the domain that are used to access and manage data on remote secondary paths, and the Dynamic File Services Retention Review group.

For information about managing the group’s membership, see [“Active Directory Domain Configuration for Dynamic File Services”](http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/plgroups.html) (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/plgroups.html) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).

2.6 Installation Files

Novell Dynamic File Services is available in the Novell File Management Suite. On the [Novell Downloads page \(http://www.novell.com/documentation/downloads\)](http://www.novell.com/documentation/downloads), search for the Novell File Management Suite, then download the Dynamic File Services software. Choose the install file based on the processor architecture of your computer:

Architecture	Install File
32-bit	DswSetup-x86-v2.0-<build>.exe
64-bit	DswSetup-x64-v2.0-<build>.exe

2.7 Destination Location for the Dynamic File Services Software and Program Data

Dynamic File Services 2.0 stores program software and the program data files it creates in the following locations by default when you accept the default install location:

Default Location	Description
C:\Program Files\Dynamic File Services	Program software, configuration files, log files, and documentation
C:\ProgramData\Dynamic File Services	Program data files and audit log files

You can use the Custom option during the install to specify a different location for the installation. Both the program files and program data are stored in the custom location. If you are installing Dynamic File Services in a cluster, you use the Custom option to specify the shared disk as the target location during the installation.

2.8 Checking for Issues in the Readme

The *Dynamic File Services Readme* (http://www.novell.com/documentation/dynamic_file_services/dynamic_readme/data/dynamic_readme.html) documents issues that Novell plans to address in a future release. Check the *Readme* to see if any installation or upgrade issues apply to your setup.

2.9 Silent Install Options

Dynamic File Services supports the InstallShield silent install options. For information, see [Appendix A, “Silent Install Options for Dynamic File Services,”](#) on page 45.

2.10 Cluster Install Requirements

Dynamic File Services can be used in a Windows cluster environment, but it is not cluster aware. For information about the cluster install requirements, see [Chapter 4, “Installing, Setting Up, and Using Dynamic File Services in a Windows Cluster,”](#) on page 23.

3 Installing and Setting Up Dynamic File Services

The Novell Dynamic File Services (DynamicFS) installation software provides separate files for 32-bit and 64-bit Windows platforms.

DynamicFS separates the features in two installation components: Service and Management. Install the Service component on the server where you want to create pairs and policies. Install the Management component any computer from which you want to manage the Dynamic File Services servers.

- ♦ [Section 3.1, “Installing Dynamic File Services,” on page 17](#)
- ♦ [Section 3.2, “Setting Up Administrators for Pair and Policy Management,” on page 19](#)
- ♦ [Section 3.3, “Getting Started,” on page 19](#)
- ♦ [Section 3.4, “Additional Information,” on page 22](#)
- ♦ [Section 3.5, “What’s Next,” on page 22](#)

3.1 Installing Dynamic File Services

- 1 Log in as the Administrator user or as a user with Administrators privileges.

In an Active Directory environment, log in as a Domain Admin user with Administrator rights in the domain and on the server.

- 2 Download the 32-bit (x86) or 64-bit (x64) architecture version of the `DswSetup-*.exe` file to a folder on the server or the client computer where you want to install it.
- 3 Double-click the file to start the InstallShield Wizard.

If you are prompted by the Windows User Account Control feature for permission, supply the necessary credentials and confirm.

- 4 Follow the on-screen instructions to install the software:

Wizard Page	Action
Welcome	Click <i>Next</i> .
License Agreement	Read and accept the terms of the License Agreement, then click <i>Next</i> . You can also click <i>Print</i> to output a copy of the License Agreement.

Wizard Page	Action
Setup Type	<p>Select one of the following setup options:</p> <p>Complete: Select <i>Complete</i> to accept the following default setup, then click <i>Next</i> to continue to the Ready to Install the Program page:</p> <ul style="list-style-type: none"> ◆ Service port: 8999 ◆ Allow an exception in the firewall for port 8999: Yes ◆ Destination folder for software: C:\Program Files\Dynamic File Services. The program files are written to C:\ProgramData\Dynamic File Services. ◆ Features installed: Service and Management <p>Custom: Select <i>Custom</i>, then click <i>Next</i> to continue to the Installation Details page where you can view and modify the setup options.</p>
Installation Details (Custom install only)	<p>Modify the following options if desired, then click <i>Next</i> to continue to the Select Features page:</p> <p>Allow an exception for the Dynamic File Services port in the Windows Firewall: Enable this option in order to remotely manage pairs and policies on this server from another computer. It is enabled by default.</p> <p>Service port: Specify the port number (default 8999) to use for the remote management communications.</p> <p>Destination software folder: Click <i>Browse</i> to locate and select the destination folder where you want to install the software, then click <i>OK</i>.</p> <p>The new location contains both the software and any program files it creates.</p>
Select Features (Custom install only)	<p>Specify which components to install on this computer, then click <i>Next</i> to continue to the Ready to Install the Program page.</p> <p>Management: The management tools are automatically selected for installation. This option cannot be deselected.</p> <p>Service: Select the Service for computers where you want to use pairs and policies.</p>
Ready to Install the Program	<p>Click <i>Install</i> to begin the installation.</p> <p>The Setup Status page shows the installation progress.</p> <p>If the server is in a Microsoft Active Directory environment, a group and proxy user are created to support using remote shares in pairs that you create later. This can take several seconds, depending on the size of your Active Directory setup. For information, see “Active Directory Domain Configuration for Remote Shares” in the <i>Dynamic File Services 2.0 Administration Guide</i>.</p> <p>After the install, you can view information about the Active Directory setup events in the <code>install.log</code>. For information, see “Viewing Logged Events” in the <i>Dynamic File Services 2.0 Administration Guide</i>.</p>
InstallShield Wizard Complete	<p>Specify whether to open the Readme and DynamicFS Management Console now, then click <i>Finish</i> to exit the wizard.</p>

- 5 (Optional) Verify the installation setup by inspecting the various Dynamic File Services components that are described in [“Key Components of Dynamic File Services”](#) in the *Dynamic File Services 2.0 Administration Guide*.
- 6 (Optional) Register a license key for Dynamic File Services 2.0.
For information, see [“Registering the License Key”](#) in the *Dynamic File Services 2.0 Administration Guide*.
Dynamic File Services is installed in evaluation mode. Most product features will function normally. However, you are limited to one pair and one policy at a time until a key is registered on the system.
- 7 Continue with setting up administrators for Dynamic File Services as described in [Section 3.2, “Setting Up Administrators for Pair and Policy Management,”](#) on page 19.

3.2 Setting Up Administrators for Pair and Policy Management

Pairs and policies can be managed by any user with sufficient rights to do so. Some administrators have rights automatically. For example, in a workgroup environment the Administrator user and local users with Administrator privileges can manage pairs and policies on the server. In an Active Directory environment, a Domain Admin user or a domain user with Domain Admin privileges can manage pairs and policies on Dynamic File Services services in the domain.

You can allow other users to manage pairs and policies by adding them as members of the `Dynamic File Services` group. For information about the group and setting up administrators, see [“Configuring Administrators for Pair, Policy, and Schedule Management”](#) in the *Dynamic File Services 2.0 Administration Guide*.

3.3 Getting Started

After the install and administrator setup, you can begin using Dynamic File Services to create pairs and policies. This section provides an overview of the key tasks. For planning and use information, see the *Dynamic File Services 2.0 Administration Guide*.

- ◆ [Section 3.3.1, “Configuring Network and Remote Shares,”](#) on page 20
- ◆ [Section 3.3.2, “Connecting to a Server,”](#) on page 20
- ◆ [Section 3.3.3, “Creating the First Pair and Policy,”](#) on page 20
- ◆ [Section 3.3.4, “Creating More Pairs and Policies,”](#) on page 21
- ◆ [Section 3.3.5, “Running Policies,”](#) on page 21
- ◆ [Section 3.3.6, “Accessing Files on a Standard Pair,”](#) on page 21

3.3.1 Configuring Network and Remote Shares

Use the Windows Network Sharing feature to set up a network share for each path that you plan to use as a primary location in a Dynamic File Services pair. After you set up a standard pair, users can map to the network share on its primary location to get a merged view of the data on the primary and secondary locations. For a retention pair, users see only the data on the primary path; they use the Web interface to the Retention Review Service to view data in the retention repository.

Remote shares that you want to use as secondary paths must be created and published in Active Directory before you attempt to create the pair that uses the remote location. Add the `DFSStorageRights` group to the share, and grant all permissions for the group. For requirements, see [“Using Remote Shares in an Active Directory Domain”](#) in the *Dynamic File Services 2.0 Administration Guide*.

Continue with [Section 3.3.2, “Connecting to a Server,”](#) on page 20.

3.3.2 Connecting to a Server

Use the Dynamic File Services Management Console to connect to the server you want to manage.

- 1 [Open the Management Console](#), then open the Server Wizard.

When no pairs or policies are defined on the target server, a Server Wizard opens automatically to help you set up a connection to the server you want to manage.

- 2 Provide the following information:

- ♦ IP address or DNS name of the DynamicFS server you want to manage.

If you are managing the server locally (that is, you are logged in to the server), you can use `localhost` or the loopback IP address (`127.0.0.1`) to manage the server without enabling an exception in the firewall for the Service port.

- ♦ The Dynamic File Service port number (default 8999).
- ♦ The username and password credentials for a user that you added to the `Dynamic File Services` group or for the Administrator user on the target DynamicFS server.

- 3 Click *Connect*.

If you are connecting to a remote server, you are prompted to accept the Dynamic File Services SSL certificate. For information, see [“Accepting a Dynamic File Services Certificate”](#) in the *Dynamic File Services 2.0 Administration Guide*.

The server folder is created and appears in the left panel.

- 4 Continue with [Section 3.3.3, “Creating the First Pair and Policy,”](#) on page 20.

3.3.3 Creating the First Pair and Policy

In the Dynamic File Services Management Console, use the Setup Wizard to create a pair and a policy. The pair and policy are automatically associated.

If no pairs or policies have been defined on that server, the Setup Wizard opens automatically to help you to create a pair, to create a policy for the pair, and to associate the policy to the pair.

For information, see the following sections in the *Dynamic File Services 2.0 Administration Guide*:

1. [“Creating a Pair”](#)

2. [“Creating a Policy”](#)
3. [“Providing Users with a Merged View of the Files in a Standard Pair ”](#)

Continue with [Section 3.3.4, “Creating More Pairs and Policies,”](#) on page 21.

3.3.4 Creating More Pairs and Policies

Use any of the following methods to create additional Dynamic File Services pairs and policies:

- ♦ **Pair:** Right-click *Pairs* under the server in the left panel, then select *Pair Wizard*.
- ♦ **Policy:** Right-click *Policies* under the server in the left panel, then select *Policy Wizard*.
- ♦ **Pair and Policy:** Right-click the server in the left panel, then select *Setup Wizard*.

For information, see the following sections in the [Dynamic File Services 2.0 Administration Guide](#):

- ♦ [“Creating a Pair”](#)
- ♦ [“Creating a Policy”](#)

Continue with [Section 3.3.5, “Running Policies,”](#) on page 21.

3.3.5 Running Policies

The policies for a Dynamic File Services pair run at their next scheduled time, but you can run a policy at any time by right-clicking a pair and selecting the *Execute Now* option.

Run a single policy at a time on a pair to enforce its rules for moving data. A file is moved if it meets all of the filter options specified in the rule.

Configure multiple policies to run at the same time on a pair to enforce alternative rules for moving data. When the group of policies moves files in both directions, the primary-to-secondary policies are grouped and enforced, then the secondary-to-primary policies are grouped and enforced. A file is moved if it meets the rules for any one of the policies.

Continue with [Section 3.3.6, “Accessing Files on a Standard Pair,”](#) on page 21.

3.3.6 Accessing Files on a Standard Pair

Dynamic File Services allows users to access data for both paths of a standard pair via a network share that you create on the primary path. They see files on the primary and secondary locations as if the files are all stored on a single device.

The native access control of the underlying file systems controls user access to the data. All user access to the secondary path is made via the merged view of the data. Dynamic File Services does not need to relocate the data to give the user access to data on the secondary path.

In order to set access control on data in the pair, you should access the merged view of the data via the network share on the primary path, then set the access control for files and directories as you normally would.

3.4 Additional Information

See the following resources for additional information about installing, modifying, and uninstalling Dynamic File Services:

- ♦ [Appendix A, “Silent Install Options for Dynamic File Services,” on page 45](#)
- ♦ [Appendix 4, “Installing, Setting Up, and Using Dynamic File Services in a Windows Cluster,” on page 23](#)
- ♦ [Appendix B, “Using the Uninstall Tool to Modify, Repair, or Remove Dynamic File Services,” on page 47](#)
- ♦ [Appendix C, “Using the Uninstall Tool to Modify, Repair, or Remove Dynamic File Services in a Windows Cluster,” on page 53](#)

3.5 What’s Next

See the following sections in the *Dynamic File Services 2.0 Administration Guide*:

- ♦ [“Setting Up a Server in the Management Console”](#)
- ♦ [“Creating a Pair”](#)
- ♦ [“Creating a Policy”](#)

4 Installing, Setting Up, and Using Dynamic File Services in a Windows Cluster

Novell Dynamic File Services (DynamicFS) supports using pairs and policies in a Windows failover cluster. However, DynamicFS is not cluster aware.

This section provides general guidelines for installing, setting up, and using DynamicFS on servers in a Windows cluster.

IMPORTANT: The Windows cluster configuration, management, terminology, and tools can vary depending on the version of Windows Server you are running and on how you set up your cluster and cluster resources. Adjust the instructions in this section as needed for your cluster environment.

For all issues related to Windows cluster configuration and management, see the Microsoft documentation for your Windows Server operating system in the [Microsoft TechNet Library \(http://technet.microsoft.com/en-us/library/default.aspx\)](http://technet.microsoft.com/en-us/library/default.aspx).

- ♦ [Section 4.1, “Planning the Installation in a Windows Cluster,” on page 23](#)
- ♦ [Section 4.2, “Installing and Setting Up Dynamic File Services in a Cluster,” on page 26](#)
- ♦ [Section 4.3, “Using Dynamic File Services in a Windows Cluster,” on page 32](#)
- ♦ [Section 4.4, “Additional Information,” on page 34](#)

4.1 Planning the Installation in a Windows Cluster

Make sure that your system meets the requirements for Dynamic File Services in [Chapter 2, “Planning the Installation,” on page 11](#).

Consider the additional requirements in this section when installing and setting up DynamicFS in a Windows cluster.

- ♦ [Section 4.1.1, “Windows Cluster,” on page 24](#)
- ♦ [Section 4.1.2, “Shared Disks,” on page 24](#)
- ♦ [Section 4.1.3, “Destination Folder for Installation,” on page 24](#)
- ♦ [Section 4.1.4, “Active Directory Domain,” on page 24](#)
- ♦ [Section 4.1.5, “Dynamic File Services SSL Certificates,” on page 24](#)
- ♦ [Section 4.1.6, “Cluster-Managed Network Shares,” on page 25](#)
- ♦ [Section 4.1.7, “Dynamic File Service,” on page 25](#)
- ♦ [Section 4.1.8, “Dynamic File Service Cluster Resource,” on page 25](#)
- ♦ [Section 4.1.9, “Dynamic File Service Dependencies,” on page 25](#)

4.1.1 Windows Cluster

The operating system used in the Windows cluster must be one of the supported Windows Server operating systems listed in [Section 2.1, “Supported Platforms,” on page 11](#). All nodes should run the same version of the operating system.

IMPORTANT: For information about Windows cluster requirements, refer to the Microsoft documentation in the [Microsoft TechNet Library \(http://technet.microsoft.com/en-us/library/default.aspx\)](http://technet.microsoft.com/en-us/library/default.aspx).

4.1.2 Shared Disks

Your Windows cluster must provide shared disks to use for DynamicFS as follows:

- ♦ The DynamicFS software and its related program files and log files must be stored in a folder on a shared disk.
- ♦ The primary path and secondary path in a DynamicFS pair must reside on shared drives, or reside on a remote share paths (where supported) that are accessible to the nodes in the cluster.
- ♦ Each of the shared disks that are used with DynamicFS must be configured so that the disk is assigned the same drive letter on each server in the cluster.
- ♦ All shared disks that are used with DynamicFS must be configured in the cluster to fail over in conjunction with the Dynamic File Service.

4.1.3 Destination Folder for Installation

DynamicFS must be installed on each node of the cluster in turn. The destination folder for each installation uses the same path on a shared disk.

4.1.4 Active Directory Domain

In an Active Directory domain, the active cluster node uses its own `NDFS-servername` proxy user to access files on remote shares that are used in pairs.

4.1.5 Dynamic File Services SSL Certificates

When you install DynamicFS on a cluster node, a self-signed certificate is created for the Dynamic File Service on that node. You do not associate the certificate with the Dynamic File Service cluster resource. That is, each node of the cluster has a different self-signed certificate.

When the Management Console connects to a Dynamic File Service cluster resource for remote management, DynamicFS uses the certificate that is configured on the active node in the cluster. You are prompted to accept the certificate for the active server if you have not previously logged in to the Dynamic File Service on that server.

4.1.6 Cluster-Managed Network Shares

Use the Windows cluster administration tool to configure cluster-managed network shares on the primary path of a DynamicFS pair. This allows users to connect to a single share and see the merged file-tree view regardless of the node where the shared primary path currently resides. Workstations must be in the same Active Directory domain to access the cluster-managed network shares.

4.1.7 Dynamic File Service

- ♦ The Dynamic File Service and other components run only on the active node in a cluster.
- ♦ Instead of using the Dynamic File Service Controller menu to start or stop the Service, use the Windows cluster administration tool to take the Dynamic File Service cluster resource offline and to bring it online.

4.1.8 Dynamic File Service Cluster Resource

The Dynamic File Service cluster resource should include all of the resources that are needed for DynamicFS to run in a cluster, such as:

- ♦ A unique IP address for the cluster resource
- ♦ The Dynamic File Service application (`DswService.exe`)
- ♦ The shared disk resource that contains the `Dynamic File Services` folder, which contains the DynamicFS pair and policies databases, logs, and program files
- ♦ A cluster managed share for the `Dynamic File Services` folder
- ♦ The domain-level share (such as `SHARENET`)
- ♦ The shared disk resources that contain the primary paths or secondary paths that will be used in pairs
- ♦ The cluster-managed network shares that you create for the primary paths in DynamicFS pairs

Do not add the Dynamic File Service Controller and other DynamicFS executable files to the cluster resource.

- ♦ The Dynamic File Service Controller starts automatically at the beginning of each session when you log in to the active node of the cluster.
- ♦ Other DynamicFS executable files are automatically called from the Dynamic File Service.
- ♦ DynamicFS commands can be started manually on the active node by users in the `Dynamic File Services` group or as the Administrator user on that node.

4.1.9 Dynamic File Service Dependencies

Specify dependencies for the Dynamic File Service so that it is not started until the related resources are started and available. DynamicFS requires that the cluster group IP address, cluster disk drives, and shares are mounted and available when the Dynamic File Service begins.

4.2 Installing and Setting Up Dynamic File Services in a Cluster

You must install Dynamic File Services on each node in turn in order to lay down the information that is stored locally on each server. Specify the same path for the destination folder on a shared drive when you install on each node.

IMPORTANT: The Windows cluster configuration, management, terminology, and tools can vary depending on the version of Windows Server you are running and on how you set up your cluster and cluster resources. Adjust the instructions in this section as needed for your cluster environment.

For all issues related to Windows cluster configuration and management, see the Microsoft documentation for your Windows Server operating system in the [Microsoft TechNet Library \(http://technet.microsoft.com/en-us/library/default.aspx\)](http://technet.microsoft.com/en-us/library/default.aspx).

The following installation description assumes a two-node failover cluster with servers named Node1 and Node2. Modify the procedure as necessary if you have more nodes.

- ◆ [Section 4.2.1, “Installing and Setting Up Dynamic File Services on Node1,” on page 26](#)
- ◆ [Section 4.2.2, “Moving the Shared Drive from Node1 to Node2,” on page 27](#)
- ◆ [Section 4.2.3, “Installing and Setting Up Dynamic File Services on Node2,” on page 27](#)
- ◆ [Section 4.2.4, “Configuring a Cluster Resource for the Dynamic File Service,” on page 28](#)
- ◆ [Section 4.2.5, “Creating Pairs and Policies in a Cluster,” on page 32](#)

4.2.1 Installing and Setting Up Dynamic File Services on Node1

Use the following procedure to install and set up DynamicFS on the currently active node (Node1).

- 1 Log in to Node1 as the Administrator user or as a user with Administrator privileges.
In an Active Directory environment, log in as a domain user that also has Active Directory Domain Administrator rights.
- 2 Use the Windows cluster administration tool to create a cluster disk resource for the drive where you want to install the DynamicFS software, such as S:\.
- 3 Install DynamicFS by using the *Custom* option, and specify the following settings:
 - ◆ **Allow an exception for the Dynamic File Services port in the firewall:** Enable this option in order to remotely manage pairs and policies on this server from another computer. It is enabled by default.
 - ◆ **Service port:** Specify the port number (default 8999) to use for the remote management communications.
 - ◆ **Destination software folder:** Click *Browse* to locate and select the destination folder on a shared device where you want to install the software, then click *OK*.
For example, specify the *Destination folder* as S:\Dynamic File Services
 - ◆ **Destination data folder:** Click *Browse* to locate and select the destination folder on a shared device where you want to store database files that are created by Dynamic File Services, then click *OK*.
For example, specify the *Destination folder* as U:\ProgramData\Dynamic File Services

For detailed installation instructions, see [Section 3.1, “Installing Dynamic File Services,” on page 17](#).

- 4 Set up the DynamicFS administrator users for Node1 by adding their usernames as members of the `Dynamic File Services` group.

For information, see the following references in the [Dynamic File Services 2.0 Administration Guide](#):

- ♦ [“Setting Up Administrators in a Domain”](#)
- ♦ [“Setting Up Administrators in a Workgroup”](#)

IMPORTANT: You later assign the same users to the `Dynamic File Services` group on each node.

- 5 Stop the Dynamic File Service and Service Controller:
 - 5a Log in as the Administrator user or as a user with Administrator privileges.
 - 5b Right-click the Service Controller icon in the notification area, then select *Stop service* to disable the Dynamic File Service.
 - 5c Right-click the Service Controller icon in the notification area and verify that the Dynamic File Service status is *Service Disabled*.
 - 5d Right-click the Service Controller icon in the notification area, then select *Exit*.
- 6 Continue with [Section 4.2.2, “Moving the Shared Drive from Node1 to Node2,”](#) on page 27.

4.2.2 Moving the Shared Drive from Node1 to Node2

- 1 On Node1, use the Windows cluster administration tool to move the shared drive from Node1 to Node2.
- 2 Make sure that the same drive letters are used to mount the shared disks for software and program data on Node2 that were used for Node1, such as `S:\` and `U:\`.
- 3 Continue with [“Installing and Setting Up Dynamic File Services on Node2”](#) on page 27.

4.2.3 Installing and Setting Up Dynamic File Services on Node2

Use the following procedure to install DynamicFS on the currently active node (Node2).

- 1 Log in to Node2 as the Administrator user or as a user with Administrator privileges.
In an Active Directory environment, log in as a domain user with Administrator rights.
- 2 Install DynamicFS by using the *Custom* option, and specify the *Destination software folder* and the *Destination data folder* as paths on shared devices. Specify the same settings for the port and firewall that you used on Node1.

For example, specify the *Destination software folder* as `S:\Dynamic File Services`, and the *Destination data folder* as `U:\ProgramData\Dynamic File Services`.

For detailed instructions, see [Section 3.1, “Installing Dynamic File Services,”](#) on page 17.
- 3 Set up the DynamicFS administrator users for Node1 by adding their usernames as members of the `Dynamic File Services` group.

IMPORTANT: Assign the same users to the `Dynamic File Services` group that you used on Node1.

- 4 (Optional) On Node2, use the Windows cluster administration tool to move the shared drive from Node2 to Node1.
- 5 Continue with [Section 4.2.4, “Configuring a Cluster Resource for the Dynamic File Service,”](#) on page 28.

4.2.4 Configuring a Cluster Resource for the Dynamic File Service

Configure cluster resources for the Dynamic File Service and the shared disks that you want to use for pairs and policies. Use the guidelines in [Section 4.1, “Planning the Installation in a Windows Cluster,”](#) on page 23. When the cluster setup is complete, continue with [Section 4.2.5, “Creating Pairs and Policies in a Cluster,”](#) on page 32.

IMPORTANT: It is beyond the scope of this guide to provide detailed instructions about Windows cluster resources configuration, management, and best practices. To illustrate the process, this section provides one possible scenario. It also lists some helpful links to clustering topics in the [Microsoft TechNet Library](http://technet.microsoft.com/en-us/library/default.aspx) (<http://technet.microsoft.com/en-us/library/default.aspx>).

- ♦ [“Example: Setting Up a Cluster Resource for Dynamic File Services in a Windows 2003 Cluster”](#) on page 28
- ♦ [“Windows Cluster References”](#) on page 31

Example: Setting Up a Cluster Resource for Dynamic File Services in a Windows 2003 Cluster

This section provides one example of how to set up a DynamicFS cluster resource in a two-node Windows Server 2003 failover cluster.

- ♦ [“Example Cluster Configuration”](#) on page 28
- ♦ [“Configuring the Dynamic File Service for Clustering”](#) on page 29

Example Cluster Configuration

The example cluster configuration uses the following setup for a Windows Server 2003 cluster.

Component	Sample Value
First node in the Windows cluster	Node1
Second node in the Windows cluster	Node2
Domain share	SHARENET
Cluster drive resource for DynamicFS program files, databases, and log files	S:\
Install destination path	S:\Dynamic File Services
Program data destination path	U:\ProgramData\Dynamic File Services
Share for the S:\Dynamic File Services path	DYNAMICFS_SHARE \\SHARENET\DYNAMICFS_SHARE

Component	Sample Value
Share for the U:\ProgramData\Dynamic File Services path	DYNAMICFS_PD_SHARE \\SHARENET\DYNAMICFS_PD_SHARE
Cluster drive resource for a primary path	S:\
The same drive is used for the Dynamic File Services folder.	
Cluster drive resource for a secondary path	T:\
Cluster drive resource for program data	U:\
Primary path for DATA_PAIR	S:\DATA
Secondary path for DATA_PAIR	T:\Secondary\DATA
Share for S:\DATA, which will be used as the primary path for DATA_PAIR	DATA_SHARE \\SHARENET\DATA_SHARE
Cluster drive resource for a primary path	K:\
Cluster drive resource for a secondary path	M:\
Primary path for PROJECTS_PAIR	K:\PROJECTS
Secondary path for PROJECTS_PAIR	M:\Secondary\PROJECTS
Share for K:\PROJECTS, which will be used as the primary path for PROJECTS_PAIR	PROJECTS_SHARE \\SHARENET\PROJECTS_SHARE

Configuring the Dynamic File Service for Clustering

- 1 Use the Windows Cluster Administrator tool to create cluster-managed network shares for the domain, the Dynamic File Services folder, and the folders that you plan to use as primary paths in DynamicFS pairs.

For example, in our scenario, we set up the following shares:

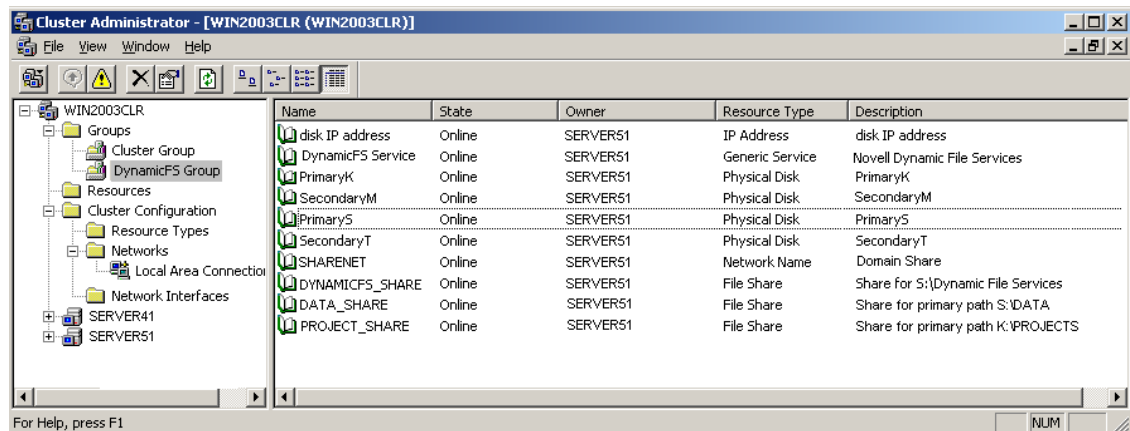
Component	Sample Value
Domain share	SHARENET
Share for the S:\Dynamic File Services path	DYNAMICFS_SHARE
Share for the U:\ProgramData\Dynamic File Services path	DYNAMICFS_PD_SHARE
Share for S:\DATA, which will be used as the primary path for DATA_PAIR	DATA_SHARE
Share for K:\PROJECTS, which will be used as the primary path for PROJECTS_PAIR	PROJECTS_SHARE

- 2 Use the Windows Cluster Administrator tool to create a DynamicFS Group cluster resource where you will later add all of the resources needed to run and use DynamicFS.

- 3 Use the Windows Cluster Administrator tool to add the following resources in the DynamicFS Group cluster resource. Right-click the Dynamic File Services group that you have created, select *Add a Resource > Client Access Point*, enter the IP address that you want the group to use, then follow the prompts to complete the remaining fields.

Resource Type	Description
Client Access Point (IP Address)	A unique IP address for the DynamicFS Group cluster resource
Generic Service	The Dynamic File Service application (<i>DswService.exe</i>)
Physical Disk	The shared disk that contains the Dynamic File Services folder where you installed Dynamic File Services The shared disk that contains the \ProgramData\Dynamic File services folder for the program data
File Share	A cluster share for the Dynamic File Services folder A cluster share for the \ProgramData\Dynamic File Services folder
Domain Share	The domain-level cluster share (such as SHARENET)
Physical Disk	The shared disk that contains the Dynamic File Services folder where you installed Dynamic File Services and the disk that contains the primary share that will be managed by DynamicFS. The shared disk that contains the secondary path that will be managed by Dynamic File Services. The shared disk that contains the \ProgramData\Dynamic File Services folder for the program data.
File Share	The shares that you create for the primary path in each of the DynamicFS pairs

For example, the setup might look like this in the Windows Cluster Administrator tool:



- 4 Use the Windows Cluster Administrator tool to specify dependencies for the Dynamic File Service cluster resource:
 - 4a In the `DynamicFS Group` cluster resource, take the Dynamic File Service resource offline.
 - 4b Open the Properties page for the Dynamic File Service cluster resource, then select the *Dependencies* tab.
 - 4c Specify the other resources in the `DynamicFS Group` as dependencies for the Dynamic File Service resource.

The Dynamic File Service resource is not started until all of the other resources in the `DynamicFS Group` are started and are online.
 - 4d Click *OK* or *Apply* to save your changes.
 - 4e In the `DynamicFS Group` cluster resource, bring the Dynamic File Service resource online.
- 5 Use the *Move Group* option of the Windows Cluster Administrator tool to verify that the `DynamicFS Group` can move between the two nodes, and that the Dynamic File Service starts automatically after the other resources in the group are available.

Windows Cluster References

The Microsoft references listed in this section can be helpful in using the Windows cluster administration tool to set up the Dynamic File Service resource:

- ♦ [“Windows Server 2008 Cluster” on page 31](#)
- ♦ [“Windows Server 2003 Cluster” on page 31](#)

Windows Server 2008 Cluster

- ♦ *Failover Clusters* ([http://technet.microsoft.com/en-us/library/dd197477\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd197477(WS.10).aspx))
- ♦ *Configure a Service or Application for High Availability* ([http://technet.microsoft.com/en-us/library/dd197590\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd197590(WS.10).aspx))
- ♦ *Add a Resource to a Clustered Service or Application* ([http://technet.microsoft.com/en-us/library/dd197494\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd197494(WS.10).aspx))
- ♦ *Create a Shared Folder in a Clustered File Server* ([http://technet.microsoft.com/en-us/library/dd197480\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd197480(WS.10).aspx))
- ♦ *Verify the Configuration and Failover of a Clustered Service or Application* ([http://technet.microsoft.com/en-us/library/dd197543\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd197543(WS.10).aspx))
- ♦ *<Resource> Properties: Dependencies Tab* (<http://technet.microsoft.com/en-us/library/cc772430.aspx>)
- ♦ *Managing a Failover Cluster* (<http://technet.microsoft.com/en-us/library/cc731618.aspx>)

Windows Server 2003 Cluster

- ♦ *Windows Clustering* (<http://technet.microsoft.com/en-us/library/cc757731%28WS.10%29.aspx>)
- ♦ *Checklist: Creating a New Group* ([http://technet.microsoft.com/en-us/library/cc780721\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc780721(WS.10).aspx))
- ♦ *Checklist: Creating a New Resource* ([http://technet.microsoft.com/en-us/library/cc757479\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc757479(WS.10).aspx))
- ♦ *Checklist: Installing Server Cluster Resources* ([http://technet.microsoft.com/en-us/library/cc736636\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc736636(WS.10).aspx))

- ♦ [Setting Resource Properties](http://technet.microsoft.com/en-us/library/cc783522(WS.10).aspx) ([http://technet.microsoft.com/en-us/library/cc783522\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc783522(WS.10).aspx))
- ♦ [Manage Server Cluster Groups](http://technet.microsoft.com/en-us/library/cc780778(WS.10).aspx) ([http://technet.microsoft.com/en-us/library/cc780778\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc780778(WS.10).aspx))
- ♦ [Manage Resources](http://technet.microsoft.com/en-us/library/cc787285(WS.10).aspx) ([http://technet.microsoft.com/en-us/library/cc787285\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc787285(WS.10).aspx))

4.2.5 Creating Pairs and Policies in a Cluster

After the Dynamic File Service has been set up as a cluster resource, use the Management Console to connect to its cluster resource IP address to create pairs and policies. Make sure that the primary path and secondary path of each pair reside on shared storage that can be failed over together between the cluster nodes.

For information about creating DynamicFS pairs and policies, see the following sections in the *Dynamic File Services 2.0 Administration Guide*:

- ♦ “Setting Up a Server in the Management Console”
- ♦ “Creating a Pair”
- ♦ “Creating a Policy”

4.3 Using Dynamic File Services in a Windows Cluster

Dynamic File Services supports using pairs and policies in a Windows failover cluster. However, DynamicFS is not cluster aware.

This section describes known issues for using DynamicFS in a Windows cluster.

- ♦ [Section 4.3.1, “Dynamic File Services Management Console,” on page 32](#)
- ♦ [Section 4.3.2, “Dynamic File Service Controller,” on page 32](#)
- ♦ [Section 4.3.3, “Dynamic File Service and Executable Files,” on page 33](#)
- ♦ [Section 4.3.4, “Dynamic File Services Enforcer and Registry Information,” on page 33](#)
- ♦ [Section 4.3.5, “Moving the Dynamic File Service Cluster Resource Between Nodes,” on page 33](#)

4.3.1 Dynamic File Services Management Console

When you use the Management Console to manage the Dynamic File Service in a cluster, use the cluster resource IP address of the Service to connect to the cluster instead of the server node’s IP address.

When you create pairs and policies, make sure that the primary path and secondary path of each pair reside on shared storage that can be failed over together between the cluster nodes.

4.3.2 Dynamic File Service Controller

The Dynamic File Service Controller starts automatically at the beginning of each session when you log in to the active node where the disk that contains the `Dynamic File Services` folder is currently mounted. The controller does not start if you log in to the failover node because the shared disk is not mounted there.

4.3.3 Dynamic File Service and Executable Files

The Dynamic File Service is started automatically by the Windows cluster management tool when it brings the Dynamic File Service cluster resource online. The Dynamic File Service is stopped when the Windows cluster management tool brings the resource offline. Make sure to use the Windows cluster management tool to start and stop the Service, not the Dynamic File Service controller.

Other DynamicFS executable files are called from the Dynamic File Service, or can be started manually when you are logged in as a user with Administrator privileges on that computer. Conversely, you cannot start the executable files on the failover node because the cluster drive resource that contains the files is not attached to it.

4.3.4 Dynamic File Services Enforcer and Registry Information

Policy moves and previews should work correctly on the active node, regardless of which node is active, if the install location is correct in the registry. If policy runs and preview runs do not work after you set up your DynamicFS cluster resource group, ensure that the node's registry contains the right install location.

4.3.5 Moving the Dynamic File Service Cluster Resource Between Nodes

Before initiating a non-failover move of the Dynamic File Service cluster resource from the active node to a failover node, you must quiesce the Service as described in “Prerequisites for Stopping or Restarting the Service” (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#reqstopserv) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).

You should not issue a cluster move while a policy run is in progress. If a policy is running when the move is initiated, the resource enters an *Offline Pending* state until DynamicFS can gracefully complete the in-progress file copies, shut down the policy run, and go offline for the move. This process can take up to 10 minutes. During this time, the failover cluster File Server and IP address for the Dynamic File Service are unavailable, and users cannot access the files.

If the active node crashes when a policy run is in progress, the Dynamic File Service also crashes. The Dynamic File Service cluster resource immediately goes offline and fails over to the failover node. The following issues must be addressed after the Dynamic File Service cluster resource is back online:

- ♦ The policy run does not automatically resume or start over after the failover.
- ♦ There is no ability to gracefully complete any file copies that are in progress for the policy run. There is no data loss, but duplicate files might exist, where the original file is good but the copy of the file that was being moved by a policy is only a sparse file in the target location.

To resolve this problem:

1. Run the Pair Synchronization utility on each pair to check for duplicate files in the pairs where the policy was running. For information, see “Reporting Conflicts for Duplicate Files” in the *Dynamic File Services 2.0 Administration Guide*.
2. For each reported duplicate file conflict, delete the copy of the file in the target location of the policy move.
3. After all duplicate file conflicts have been resolved, you can start the policy run manually, or let the policy run at its next scheduled time.

4.4 Additional Information

- ♦ [Chapter 3, “Installing and Setting Up Dynamic File Services,”](#) on page 17
- ♦ [Appendix A, “Silent Install Options for Dynamic File Services,”](#) on page 45
- ♦ [Appendix C, “Using the Uninstall Tool to Modify, Repair, or Remove Dynamic File Services in a Windows Cluster,”](#) on page 53

5 Upgrading to Dynamic File Services 2.0

Novell Dynamic File Services (DynamicFS) provides the option of upgrading an existing system to the new version without completely reinstalling it. A server reboot is required. Existing configuration files are retained, such as the configuration for the Service, the pairs database, and the policies database. The format of the pair and policy databases and log files is automatically updated to include any new or modified fields.

- ♦ [Section 5.1, “Supported Upgrade Paths,” on page 35](#)
- ♦ [Section 5.2, “Planning for the Upgrade,” on page 35](#)
- ♦ [Section 5.3, “Upgrading Dynamic File Services with the InstallShield GUI,” on page 37](#)
- ♦ [Section 5.4, “After the Upgrade,” on page 37](#)

5.1 Supported Upgrade Paths

The following paths are supported for upgrading the Management and Service components to Novell Dynamic File Services 2.0:

Source	Destination
Dynamic File Services (32-bit)	Dynamic File Services 2.0 (32-bit)
Dynamic File Services 1.5 (32-bit)	
Dynamic File Services 1.6 (32-bit)	
Dynamic File Services (64-bit)	Dynamic File Services 2.0 (64-bit)
Dynamic File Services 1.5 (64-bit)	
Dynamic File Services 1.6 (64-bit)	

5.2 Planning for the Upgrade

In addition to the requirements described in [Chapter 2, “Planning the Installation,” on page 11](#), make sure your system meets the requirements in this section.

- ♦ [Section 5.2.1, “Administrator Permissions,” on page 36](#)
- ♦ [Section 5.2.2, “Stopping the Service,” on page 36](#)
- ♦ [Section 5.2.3, “Changes to Expect After the Upgrade,” on page 36](#)

5.2.1 Administrator Permissions

To update Dynamic File Services software, you need Administrator user privileges on the computer that is being updated.

In an Active Directory environment, you also need to be a domain user with Domain Admin rights. This allows the installation to set up the following domain groups and user:

- ♦ Dynamic File Services group
- ♦ Dynamic File Services Retention Review group
- ♦ Dynamic File Services Storage Rights group

NDFS-*servername* user

5.2.2 Stopping the Service

Before you begin an upgrade, stop the Novell Dynamic File Service and exit the Service Controller. A reboot of the server is required. During the service outage, users cannot access the merged file tree view of their files.

For information about stopping the Service, see “Prerequisites for Stopping or Restarting the Service” in the *Dynamic File Services 2.0 Administration Guide*.

5.2.3 Changes to Expect After the Upgrade

Dynamic File Services 2.0 makes changes to the file layout and policies. For details, see [Section 1.1, “What’s New for Dynamic File Services 2.0,”](#) on page 9.

Change	Description
Default data location	<p>If the software is currently located in the default install location, the program data files and audit log files are relocated to C:\ProgramData\Dynamic File Services.</p> <p>If the software is located in a custom location, the upgraded files are written to the same location.</p>
Registration	<p>After the upgrade, your existing license key is automatically registered.</p> <p>If you uninstall the product and re-install the product, you must register the key by using the <i>Register License Key</i> option in <i>Service Controller</i> menu.</p>
Notification	<p>Events are now managed separately for each e-mail address. All events are assigned by default to each configured e-mail address. You can use the Notification tool to modify the events assigned for each user.</p>

5.3 Upgrading Dynamic File Services with the InstallShield GUI

- 1 Make sure that the Dynamic File Service and the Service Controller are not running, as explained in [Section 5.2, “Planning for the Upgrade,”](#) on page 35.
- 2 Log in as the Administrator user or as a user with Administrator privileges.
In an Active Directory environment, log in as a domain user with Domain Admin rights.
- 3 Download the 32-bit (x86) or 64-bit (x64) architecture version of the `DswSetup-*.exe` file to a folder on the server or the client computer where you want to install it.
- 4 Double-click the file to start the InstallShield Wizard, then click *Yes* to permit the upgrade.
- 5 In the InstallShield Wizard, click *Next* to begin the upgrade.
- 6 If you are notified that files are in use for the Dynamic File Service and Service Controller, click *OK* to allow them to be automatically closed.
- 7 Click *Finish*.
Dynamic File Services automatically modifies the format of the pair and policy databases and log files to use any new or modified fields.
- 8 Click *Yes* to automatically restart the computer now.
- 9 After the reboot is complete, continue with [Section 5.4, “After the Upgrade,”](#) on page 37.

5.4 After the Upgrade

- 1 If you uninstalled and re-installed as your upgrade approach, re-register the license key for Dynamic File Services 2.0.
For information, see [“Registering the License Key”](#) in the *Dynamic File Services 2.0 Administration Guide*.
- 2 Launch the Management Console, then visually verify the pairs, policies, and schedules.
On the Policies Properties page, there is a new *Schedule* tab that lists the schedule that is currently associated with the policy.
- 3 (Optional) Configure the notification events for each e-mail address.
For information, see [“Configuring the Notification Service”](#) in the *Dynamic File Services 2.0 Administration Guide*.
- 4 Allow users to access data on the pairs.

6 Upgrading to Dynamic File Services 2.0 in a Windows Cluster

Novell Dynamic File Services (DynamicFS) supports upgrading in a Windows failover cluster.

IMPORTANT: The Windows cluster configuration, management, terminology, and tools can vary depending on the version of Windows Server you are running and on how you set up your cluster and cluster resources. Adjust the instructions in this section as needed for your cluster environment.

For all issues related to Windows cluster configuration and management, see the Microsoft documentation for your Windows Server operating system in the [Microsoft TechNet Library \(http://technet.microsoft.com/en-us/library/default.aspx\)](http://technet.microsoft.com/en-us/library/default.aspx).

- ♦ [Section 6.1, “Planning the Upgrade in a Windows Cluster,” on page 39](#)
- ♦ [Section 6.2, “Upgrading Dynamic File Services in a Cluster,” on page 40](#)

6.1 Planning the Upgrade in a Windows Cluster

Before upgrading Dynamic File Services in a cluster environment, make sure your system meets the requirements in the following sections:

- ♦ [Chapter 2, “Planning the Installation,” on page 11](#)
- ♦ [Section 4.1, “Planning the Installation in a Windows Cluster,” on page 23](#)
- ♦ [Section 5.2, “Planning for the Upgrade,” on page 35](#)

You can expect some changes with the upgrade. For information, see [Section 5.2.3, “Changes to Expect After the Upgrade,” on page 36](#).

In addition, your setup must meet the following prerequisites that are discussed below:

- ♦ [Section 6.1.1, “Quiescing the Service,” on page 39](#)
- ♦ [Section 6.1.2, “Windows Cluster,” on page 40](#)
- ♦ [Section 6.1.3, “Active Directory Domain,” on page 40](#)

6.1.1 Quiescing the Service

A reboot is required for the upgrade. Before you begin the upgrade process, make sure to quiesce the Service as described in see “[Prerequisites for Stopping or Restarting the Service](#)” in the *Dynamic File Services 2.0 Administration Guide*.

IMPORTANT: Do not allow users to access the files again until the upgrade process is completed.

6.1.2 Windows Cluster

The operating system used in the Windows cluster must be one of the supported Windows Server operating systems listed in [Section 2.1, “Supported Platforms,” on page 11](#). All server nodes in the cluster should be running the same operating system version and architecture.

IMPORTANT: For information about Windows cluster requirements, refer to the Microsoft documentation in the [Microsoft TechNet Library \(http://technet.microsoft.com/en-us/library/default.aspx\)](http://technet.microsoft.com/en-us/library/default.aspx).

6.1.3 Active Directory Domain

In an Active Directory domain, the active cluster node uses its own `NDFS-servername` proxy user to access files on remote shares that are used in pairs.

6.2 Upgrading Dynamic File Services in a Cluster

You must upgrade Dynamic File Services on each node in turn in order to lay down the information that is stored locally on each server. Specify the same path for the destination folder on a shared drive when you install on each node.

IMPORTANT: The Windows cluster configuration, management, terminology, and tools can vary depending on the version of Windows Server you are running and on how you set up your cluster and cluster resources. Adjust the instructions in this section as needed for your cluster environment.

For all issues related to Windows cluster configuration and management, see the Microsoft documentation for your Windows Server operating system in the [Microsoft TechNet Library \(http://technet.microsoft.com/en-us/library/default.aspx\)](http://technet.microsoft.com/en-us/library/default.aspx).

The following installation description assumes a two-node failover cluster with servers named Node1 and Node2. Modify the procedure as necessary if you have more nodes.

- ♦ [Section 6.2.1, “Upgrading Dynamic File Services on Node1,” on page 40](#)
- ♦ [Section 6.2.2, “Moving the Shared Drive from Node1 to Node2,” on page 41](#)
- ♦ [Section 6.2.3, “Upgrading Dynamic File Services on Node2,” on page 41](#)

6.2.1 Upgrading Dynamic File Services on Node1

Use the following procedure to upgrade DynamicFS on the currently active node (Node1):

- 1 Log in to Node 1 as the Administrator user or as a user with Administrator privileges.
In an Active Directory environment, log in as a domain user with Domain Admin rights.
- 2 Download the 32-bit (x86) or 64-bit (x64) architecture version of the `DswSetup-*.exe` file to a folder on the server or the client computer where you want to install it.
- 3 Double-click the file to start the InstallShield Wizard, then click *Yes* to permit the upgrade.
- 4 In the InstallShield Wizard, click *Next* to begin the upgrade.
- 5 If you are notified that files are in use for the Dynamic File Service and Service Controller, click *OK* to allow them to be automatically closed and restarted.

- 6 Click *Finish*.
Dynamic File Services automatically modifies the format of the pair and policy databases and log files to use any new or modified fields.
- 7 Click *Yes* to automatically restart the computer now.
- 8 Use the Windows cluster administration tool to stop the Dynamic File Service by taking its cluster resource offline.
- 9 Continue with [Section 4.2.2, “Moving the Shared Drive from Node1 to Node2,”](#) on page 27.

6.2.2 Moving the Shared Drive from Node1 to Node2

- 1 On Node1, use the Windows cluster administration tool to move the following cluster resources from Node1 to Node2:
 - ♦ The shared disk that contains the Dynamic File Services software
 - ♦ The Dynamic File Service
- 2 Make sure that the same drive letter is used to mount the shared disk on Node2 that was used for Node1, such as S:\.
- 3 Continue with [“Installing and Setting Up Dynamic File Services on Node2”](#) on page 27.

6.2.3 Upgrading Dynamic File Services on Node2

Use the following procedure to upgrade DynamicFS on the currently active node (Node2):

- 1 Log in to Node2 as the Administrator user or as a user with Administrator privileges.
In an Active Directory environment, log in as a domain user with Domain Admin rights.
- 2 Upgrade DynamicFS on Node2 as described in [Step 2 to Step 8](#) in [Section 4.2.1, “Installing and Setting Up Dynamic File Services on Node1,”](#) on page 26.
- 3 (Optional) On Node2, use the Windows cluster administration tool to move the Dynamic File Service and disk resources from Node2 to Node1.
- 4 Log in to the active cluster node as the Administrator user or as a user with Administrator privileges.
- 5 Use the Windows cluster administration tool to start the Dynamic File Service by bringing its cluster resource online.
- 6 Perform the steps described in [Section 5.4, “After the Upgrade,”](#) on page 37.

7 FAQs and Troubleshooting Install and Uninstall Issues

This section answers frequently asked questions about Novell Dynamic File Services (DynamicFS) install and uninstall issues. It also describes workarounds for known issues.

- ♦ [Section 7.1, “Error 1923 Occurs During a Reinstallation,” on page 43](#)

7.1 Error 1923 Occurs During a Reinstallation

If the Dynamic File Service is running when you attempt to uninstall the software and the Uninstall tool cannot stop the Service, the Service and related files might not be removed. This can cause a 1923 error when a reinstall is attempted.

Because of the 1923 error, the Service does not start automatically and it cannot be started manually by using the Service Controller. The Windows Event Viewer shows a Warning message: *Service not running*.

- 1 Click *Ignore* and continue with the installation.
The installation appears to finish with no further errors.
- 2 If you are prompted to do so, restart the computer.
- 3 After the restart, check to see if the Service is running.
- 4 If the Service does not start automatically and cannot be started manually by using the Service Controller, uninstall Dynamic File Services as described in [Section B.4, “Removing Dynamic File Services,” on page 49](#).
This cleans up the files and folders that prevent the Service from starting.
- 5 Reinstall Dynamic File Services as described in [Chapter 3, “Installing and Setting Up Dynamic File Services,” on page 17](#).

A Silent Install Options for Dynamic File Services

The Novell Dynamic File Services (DynamicFS) InstallShield Wizard application supports InstallShield silent install options.

- ♦ [Section A.1, “InstallShield Silent Install Options,”](#) on page 45
- ♦ [Section A.2, “Creating the Silent Install Answer File for Dynamic File Services,”](#) on page 45
- ♦ [Section A.3, “Silently Installing Dynamic File Services,”](#) on page 46

A.1 InstallShield Silent Install Options

The following table identifies commonly used silent install options for InstallShield:

InstallShield Option	Description
<code>/r</code>	Records installation responses in an answer file. Use this option with the graphical installer to create the answer file (such as <code>C:\Windows\setup.iss</code>) that is needed to perform a silent install.
<code>/s</code>	Silently installs the application.
<code>/sms</code>	Causes the installer to pause until the installation finishes.
<code>/fl"answer_file_filename.iss"</code>	Specifies the filename of the answer file.

For information about other InstallShield silent and unattended install options, see [Unattended/Silent Installation Switches](http://unattended.sourceforge.net/installers.php) (<http://unattended.sourceforge.net/installers.php>) on the SourceForge.Net Web site.

A.2 Creating the Silent Install Answer File for Dynamic File Services

- 1 Log in as the Administrator user or as a user with Administrator privileges.
- 2 Create the InstallShield answer file on the same platform and hardware setup where you plan to use the silent install.
 - 2a In a *Command Prompt* console, start the GUI install and use the `/r` option to record your responses.

Architecture	Enter
32-bit	DswSetup-x86-v2.0-<build>.exe /r
64-bit	DswSetup-x64-v2.0-<build>.exe /r

The answer file is saved to the Windows System root folder, such as
C:\Windows\setup.iss.

- 2b** Use the InstallShield GUI to install Dynamic File Services as described in [Section 3.1, “Installing Dynamic File Services,”](#) on page 17.

Your responses to the install options in the GUI are captured to the answer file, such as
C:\Windows\setup.iss.

- 2c** Copy setup.iss to the same location as the DynamicFS GUI install executable file.

You can rename the answer file to a name that indicates the install scenario.

- 2d** Repeat the process for each additional install scenario you need to create for the current platform and hardware setup.

A.3 Silently Installing Dynamic File Services

- 1 On the machine where you want to silently install Dynamic File Services, copy the DynamicFS setup file and answer file into a folder.
- 2 In a Windows Command Prompt console on the machine, enter

```
DswSetup-<platform>-v2.0-<build>.exe /s /f1"answer_file_filename"
```

Replace *platform* with x86 (for 32-bit platforms) or x64 (for 64-bit platforms). Replace *answer_file_filename* with the InstallShield answer file, such as setup.iss.

For example, to install DynamicFS on a 32-bit platform, use the DswSetup-x86-v2.0-<build>.exe file, and specify the answer file that you want to use, enter the following at the command prompt:

```
DswSetup-x86-v2.0-<build>.exe /s /f1"setup.iss"
```

The following command assumes the file is named setup.iss and is in the C:\Windows directory or in the same directory as the install executable:

```
DswSetup-x86-v2.0-<build>.exe /s
```

You can also use the /sms option to cause the installer to pause until the installation completes:

```
DswSetup-x86-v2.0-<build>.exe /s /sms
```

B Using the Uninstall Tool to Modify, Repair, or Remove Dynamic File Services

You can use the Uninstall tool to modify, repair, or uninstall Novell Dynamic File Services (DynamicFS).

- ♦ [Section B.1, “Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software,” on page 47](#)
- ♦ [Section B.2, “Modifying Dynamic File Services,” on page 47](#)
- ♦ [Section B.3, “Repairing Dynamic File Services,” on page 48](#)
- ♦ [Section B.4, “Removing Dynamic File Services,” on page 49](#)

B.1 Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software

Before you use the Uninstall tool, make sure you meet the following requirements:

- ♦ The Service must be stopped before you attempt to modify, repair, or remove the Dynamic File Services software. Before you disable the Service, you must quiesce the Service as described in [“Prerequisites for Stopping or Restarting the Service”](http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#reqstopserv) (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#reqstopserv) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).
- ♦ In an Active Directory environment, the user who runs the Uninstall tool must be a domain user with local Administrator privileges and Active Directory Domain Administrator rights.

B.2 Modifying Dynamic File Services

The *Modify* option in the Dynamic File Services Uninstall tool allows you to add or remove the Service component of the Dynamic File Services software on a computer. The Service component is typically installed only on those servers where you want to create pairs and policies.

IMPORTANT: Before you begin, make sure you meet the “Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software” on page 47.

- 1 Log in as the Administrator user or as a user with Administrator privileges.
- 2 Disable the Dynamic File Service as described in “Stopping the Dynamic File Service” (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#svcstop) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).
- 3 Select *Start > Programs > Dynamic File Services > Uninstall Dynamic File Services*.
If you are prompted by the Windows User Account Control feature for permission, supply the necessary credentials and confirm. The InstallShield Wizard opens.
- 4 Select *Modify*, then click *Next*:
- 5 Select *Custom*, then do one of the following:
 - ♦ Select the *Service* check box to add the Service to the computer.
 - ♦ Deselect (clear) the *Service* check box to remove the Service from the computer.
- 6 Click *Next* and follow the on-screen instructions to complete the software change.
- 7 After the change is complete, click *Finish* to close the wizard.
- 8 Enable the Dynamic File Service as described in “Starting the Dynamic File Service” (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#svcstart) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).

B.3 Repairing Dynamic File Services

The *Repair* option in the Dynamic File Services Uninstall tool allows you to reinstall the currently installed components of the Dynamic File Services software on a computer.

IMPORTANT: Before you begin, make sure you meet the “Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software” on page 47.

- 1 Log in as the Administrator user or as a user with Administrator privileges.
- 2 Disable the Dynamic File Service as described in “Stopping the Dynamic File Service” (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#svcstop) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).
- 3 Select *Start > Programs > DynamicFS > Uninstall DynamicFS*.
If you are prompted by the Windows User Account Control feature for permission, supply the necessary credentials and confirm. The InstallShield Wizard opens.
- 4 Select *Repair*, then click *Next* and follow the on-screen instructions to complete the software repair.
If a valid certificate exists, a new certificate is not created and an error message on the creation is returned. Click *OK* to dismiss the message.

- 5 After the repair is complete, click *Finish* to close the wizard.
- 6 Enable the Dynamic File Service as described in “Starting the Dynamic File Service” (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#svcstart) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).

B.4 Removing Dynamic File Services

The *Remove* option in the Dynamic File Services Uninstall tool automatically does the following:

- ♦ Removes the Dynamic File Services program files.
- ♦ Clears the Dynamic File Services entries in the computer registry.
- ♦ Removes the SSL certificate from the local personal computer store.
- ♦ Removes the local `Dynamic File Services` group.
- ♦ In an Active Directory environment, it removes the domain user `NDFS-servername` from the domain. If this is the only proxy user in the Dynamic File Services Storage Rights (`DFSStorageRights`) group, it also removes the domain group.

You can separately specify whether you want to also remove all of the files in the `Dynamic File Services` folder that were created since the install, which includes the pair and policy database files. The files on the primary paths and secondary paths are untouched.

- ♦ [Section B.4.1, “Planning to Uninstall Dynamic File Services,” on page 49](#)
- ♦ [Section B.4.2, “Uninstalling Dynamic File Services,” on page 50](#)

B.4.1 Planning to Uninstall Dynamic File Services

In addition to the requirements in [Section B.1, “Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software,” on page 47](#), make sure your system meets the uninstall guidelines in this section.

- ♦ [“Locating Files on the Two Paths” on page 49](#)
- ♦ [“Keeping the Pair and Policy Database Configuration Files” on page 50](#)
- ♦ [“Notifying Users” on page 50](#)

Locating Files on the Two Paths

Before uninstalling Dynamic File Services, you should verify that the primary path and secondary path contain the files that you intend. You can create policies or use the *Move Files* option on a pair to move the files to their desired final destinations.

Keeping the Pair and Policy Database Configuration Files

If you plan to reinstall Dynamic File Services, you can reuse the existing pair and policy databases if you specify that you want to keep them during the uninstall.

When you uninstall the Dynamic File Services software, you are prompted with an option to *Remove all files created by Dynamic File Services*. The option is disabled by default. Use the option to achieve either of the following outcomes:

- ♦ **Keep Pair and Policy Database Files:** To keep the existing pair and policy database files, deselect the *Remove all files created by Dynamic File Services* check box. You typically retain the files if you plan to reinstall the software.

The pair and policy database files are not removed from the computer. The files in a pair remain on the two paths.

- ♦ **Discard Pair and Policy Database Files:** To discard the existing pair and policy database files, select the *Remove all files created by Dynamic File Services* check box. You typically discard the files if you do not plan to reinstall the software on the computer, or if you plan to create all new pairs and policies after reinstalling the software.

The two paths in a pair are automatically unlinked, and the pair and policy database files are deleted. The files in a pair remain on the two paths.

If you reinstall the software, you can create pairs and policies again. If you previously exported a policy, you can also use the *Import policy* option to add it.

Notifying Users

After you uninstall the software, the merged view of files is no longer available to users. When users access a network share on a primary path, they see only the files on the primary location. The data on a secondary path remains on its disk, but the users can no longer access the files via the share. You should notify the users of the changes you are making to assure them that their files are not lost.

B.4.2 Uninstalling Dynamic File Services

Before you begin an uninstall, make sure you have prepared the system as described in [Section B.4.1, “Planning to Uninstall Dynamic File Services,”](#) on page 49.

IMPORTANT: On some Windows platforms, a reboot is required after the uninstall.

- 1 Log in as the Administrator user or as a user with Administrator privileges.
- 2 Stop the Dynamic File Service.
 - 2a Disable the Dynamic File Service as described in “Stopping the Dynamic File Service” (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#svcstop) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).
 - 2b Right-click the Service Controller icon in the Windows notification area, and verify that the Service state is *Service Disabled*.
- 3 Stop the Service Controller by right-clicking the Service Controller icon, then selecting *Exit*.
- 4 Select *Start > All Programs > Dynamic File Services > Uninstall Dynamic File Services*.

If you are prompted by the Windows User Account Control feature for permission, supply the necessary credentials and confirm. The InstallShield Wizard opens.

- 5 Select *Remove*, then click *Next*.
- 6 In the confirmation dialog box, specify whether you want to *Remove all files created by Dynamic File Services*. These are files in the `Dynamic File Services` folder that were created since the install, which includes the pair and policy database files.

Do one of the following:

- ◆ Deselect the check box to keep the files. This is the default.
 - ◆ Select the check box to remove the files.
- 7 Click *OK* to confirm the uninstall.
 - 8 After the uninstall is complete, click *Finish* to close the Uninstall tool.
 - 9 If you are prompted to do so, restart the computer.

C Using the Uninstall Tool to Modify, Repair, or Remove Dynamic File Services in a Windows Cluster

You can use the Novell Dynamic File Services (DynamicFS) Uninstall tool to modify, repair, or remove the software components. This section provides general guidelines for modifying, repairing, or removing DynamicFS on servers in a Windows cluster.

IMPORTANT: The Windows cluster configuration, management, terminology, and tools can vary depending on the version of Windows Server you are running and on how you set up your cluster and cluster resources. Adjust the instructions in this section as needed for your cluster environment.

For all issues related to Windows cluster configuration and management, see the Microsoft documentation for your Windows Server operating system in the [Microsoft TechNet Library \(http://technet.microsoft.com/en-us/library/default.aspx\)](http://technet.microsoft.com/en-us/library/default.aspx).

- ♦ [Section C.1, “Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software,” on page 53](#)
- ♦ [Section C.2, “Modifying Dynamic File Services in a Cluster,” on page 54](#)
- ♦ [Section C.3, “Repairing Dynamic File Services in a Cluster,” on page 54](#)
- ♦ [Section C.4, “Removing Dynamic File Services in a Cluster,” on page 55](#)

C.1 Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software

Before you use the Uninstall tool, make sure you meet the following requirements:

- ♦ The Service must be stopped before you attempt to modify, repair, or remove the Dynamic File Services software. Before you take the Service cluster resource offline, you must quiesce the Service as described in [“Prerequisites for Stopping or Restarting the Service” \(http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#reqstopserv\)](http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/serviceconfig.html#reqstopserv) in the *Dynamic File Services Administration Guide* (http://www.novell.com/documentation/dynamic_file_services/dynamic_admin_win/data/bookinfo.html).
- ♦ In an Active Directory environment, the user who runs the Uninstall tool must be a domain user with local Administrator privileges and Active Directory Administrator rights.

C.2 Modifying Dynamic File Services in a Cluster

The *Modify* option in the Dynamic File Services Uninstall tool allows you to add or remove the Dynamic File Service component on a computer. The Dynamic File Service is typically installed only on those servers where you want to create pairs and policies.

In a cluster, you must modify the software on each node in turn in order to update the information stored locally on each server. The following procedure assumes a two-node failover cluster. Modify the steps as necessary if you have more nodes.

IMPORTANT: Before you begin, make sure you meet the [“Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software”](#) on page 53.

- 1 Modify the installation setup on the active node:
 - 1a Log in as the Administrator user or as a user with Administrator privileges.
 - 1b Use the Windows cluster administration tool to stop the Dynamic File Service by taking its cluster resource offline.
 - 1c Modify the installed components as described in [Step 3](#) through [Step 7](#) in [Section B.2, “Modifying Dynamic File Services,”](#) on page 47.
- 2 Use the Windows cluster administration tool to move the following cluster resources to the second node:
 - ♦ The shared disk that contains the Dynamic File Services software
 - ♦ The shared disk that contains the Dynamic File Services program data
 - ♦ The Dynamic File Service
- 3 Repeat [Step 1](#) for the second cluster node, then continue with [Step 4](#).
- 4 (Optional) Use the Windows cluster administration tool to move the Dynamic File Service and disk resources back to the first node.
- 5 Log in to the active cluster node as the Administrator user or as a user with Administrator privileges.
- 6 Use the Windows cluster administration tool to start the Dynamic File Service by bringing its cluster resource online.

C.3 Repairing Dynamic File Services in a Cluster

The *Repair* option in the Dynamic File Services Uninstall tool allows you to reinstall the currently installed components of the Dynamic File Services software on a computer.

In a cluster, you must repair the software on each node in turn to update the information stored locally on each server. The following procedure assumes a two-node failover cluster. Modify the steps as necessary if you have more nodes.

IMPORTANT: Before you begin, make sure you meet the [“Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software”](#) on page 53.

- 1 Repair the currently installed components on the active node:
 - 1a Log in as the Administrator user or as a user with Administrator privileges.
 - 1b Use the Windows cluster administration tool to stop the Dynamic File Service by taking its cluster resource offline.
 - 1c Repair the installed components as described in [Step 3](#) through [Step 5](#) in [Section B.3, “Repairing Dynamic File Services,”](#) on page 48.
- 2 Use Windows cluster administration tool to move the following cluster resources to the second node:
 - ◆ The shared disk that contains the Dynamic File Services software
 - ◆ The shared disk that contains the Dynamic File Services program data
 - ◆ The Dynamic File Service
- 3 Repeat [Step 1](#) for the second node, then continue with [Step 4](#).
- 4 (Optional) Use the Windows cluster administration tool to move the Dynamic File Service and disk resources back to the first node.
- 5 Log in to the active cluster node as the Administrator user or a user with Administrator privileges.
- 6 Use the Windows cluster administration tool to start the Dynamic File Service by bringing its cluster resource online.

C.4 Removing Dynamic File Services in a Cluster

The *Remove* option in the Dynamic File Services Uninstall tool automatically does the following:

- ◆ Removes the Dynamic File Services program files.
- ◆ Clears the Dynamic File Services entries in the computer registry.
- ◆ Removes the SSL certificate from the local personal computer store.
- ◆ Removes the local `Dynamic File Services` group.
- ◆ In an Active Directory environment, it removes the domain user `NDFS-servername` from the domain. If this is the only proxy user in the Dynamic File Services Storage Rights (`NDFS Storage Rights`) group, it also removes the domain group.

You can separately specify whether you want to also remove all of the files in the `\ProgramData\Dynamic File Services` folder that were created since the installation, which includes the pair, policy, and schedule database files. The files on the primary paths and secondary paths are untouched.

- ◆ [Section C.4.1, “Planning to Uninstall Dynamic File Services in a Cluster,”](#) on page 56
- ◆ [Section C.4.2, “Uninstalling Dynamic File Services in a Cluster,”](#) on page 56

C.4.1 Planning to Uninstall Dynamic File Services in a Cluster

For general uninstall guidelines, see [Section B.4.1, “Planning to Uninstall Dynamic File Services,”](#) on page 49.

In a cluster, you must remove the software on each node in turn. Before you attempt to uninstall, make a copy of the DynamicFS installation folder (default is C:\Program Files\Dynamic File Services) and store it in a temporary location on the server. After the uninstall is complete, copy the files back to the installation location on the shared disk, then move the shared disk and the Dynamic File Service to the next node. This rolling uninstall approach allows the Uninstall tool to successfully clean up the registry and other information that is stored locally on each server in the cluster.

C.4.2 Uninstalling Dynamic File Services in a Cluster

The following procedure assumes a two-node failover cluster. Modify the steps as necessary if you have more nodes.

IMPORTANT: Before you begin, make sure you meet the [“Prerequisites for Modifying, Repairing, or Removing Dynamic File Services Software”](#) on page 53.

- 1** Uninstall Dynamic File Services on the active node:
 - 1a** Log in as the Administrator user or as a user with Administrator privileges.
 - 1b** Make a copy of the Dynamic File Services folder.
For example, copy S:\Dynamic File Services to S:\Copy of Dynamic File Services.
 - 1c** Use the Windows cluster administration tool to stop the Dynamic File Service by taking its cluster resource offline.
 - 1d** Uninstall DynamicFS on the first node as described in [Section B.4.2, “Uninstalling Dynamic File Services,”](#) on page 50.
 - 1e** Move the copy of the Dynamic File Services folder back to the shared disk installation location.
For example, rename S:\Copy of Dynamic File Services to S:\Dynamic File Services.
- 2** Use Windows cluster administration tool to move the following cluster resources to the second node:
 - ◆ The shared disk that contains the Dynamic File Services software
 - ◆ The shared disk that contains the Dynamic File Services program data
 - ◆ The Dynamic File Service
- 3** Uninstall DynamicFS on the second cluster node:
 - 3a** Log in as the Administrator user or as a user with Administrator privileges.
 - 3b** Use the Windows cluster administration tool to stop the Dynamic File Service by taking its cluster resource offline.
 - 3c** Uninstall DynamicFS on the second node as described in [Section B.4.2, “Uninstalling Dynamic File Services,”](#) on page 50.
- 4** (Optional) Use the Windows cluster administration tool to move shared disk back to the first node.

D Dynamic File Services Components

This section identifies the various components for Novell Dynamic File Services (DynamicFS) and their primary use. The software files are located in the folder where you installed the software. The default install location is `C:\Program Files\Dynamic File Services`. On platforms where program data is stored separately from the program files, the default program data location is `C:\ProgramData\Dynamic File Services`.

- ♦ [Table D-1, “Dynamic File Services Components,” on page 57](#)
- ♦ [Table D-2, “Open Source and Third-Party Components,” on page 61](#)

Table D-1 *Dynamic File Services Components*

Component File or Folder	Used for
audit folder	Contains the audit log file.
audit\AuditAndNotificationControl.xml	Configuration settings that control which DynamicFS management events are logged.
audit\DswAuditLog.xml	Event log for DynamicFS management events.
Documentation folder	Contains the product license and help files.
DswApi.dll	Web Services API.
DswBuiltInRules.dll	Policy rules engine.
DswCert.exe	Manages the DynamicFS SSL certificate.
DswCertificateLib.dll	DynamicFS SSL certificate handling library.
DswCli.exe	DynamicFS command line interface management utility for pairs and policies.
DswCore.xml	DynamicFS configuration information.
DswDump.exe	Configuration Dump utility for use when working with Novell Support.
dswflt folder	Contains information used by the DynamicFS Filter Driver.
dswflt.sys	DynamicFS Filter Driver. Provides the merged file tree view to users via the primary share on a standard pair.
DswFileTypes.cfg	Contains a list of well-known file types that are considered in addition to file types in the server's registry.

Component File or Folder	Used for
DswFTypes.dll	Discovers the file types defined in the server's registry.
DswFunctions.dll	Miscellaneous libraries.
DswInventory.config.xml	Configuration for logging events for the DynamicFS file system inventory. This file is not created until the DswInventory.exe application first runs.
DswInventory.exe	File System Inventory application.
DswInventory.log	Event log for the DynamicFS file system inventory. This file is not created until the DswInventory.exe application first runs.
DswIoctlLib.dll	Win32 Ioctl to Filter Driver communication.
DswIpcClient.dll	Local IPC client.
DswIpcCore.dll	Local IPC core engine.
DswIpcListener.dll	Local IPC server.
DswLib.dll	DynamicFS Common Library.
DswLogger.dll	Logs events.
DswMcpCore.config.xml	Configuration for logging events for the Dynamic File Service.
DswMcpCore.dll	Dynamic File Service engine.
DswMcpCore.log	Event log for the Dynamic File Service.
DswMcpDatabase.dll	Pair and policy database engine.
DswMgmtConsole.exe	DynamicFS Management Console for creating and managing pairs and policies.
DswPairsLib.dll	Pair libraries.
DswPolicyLib.dll	Policy libraries.
DswReg.dll	Registers a license key for the product.
DswRepair.exe	Repairs DynamicFS database files.
DswResources.dll	Strings for localization.
DswRetentionEngine.config.xml	Configuration for logging events for the DynamicFS Retention Engine. This file is not created until the DswRetentionEngine.exe application first runs.
DswRetentionEngine.exe	For a retention pair, executes policy tasks to move files from the primary path to the retention repository on the secondary path.

Component File or Folder	Used for
DswRetentionEngine.log	<p>Event log for the DynamicFS Retention Engine application that enforces policies.</p> <p>This file is not created until the DswRetentionEngine.exe application first runs.</p>
DswServers.xml	<p>Configuration information about the servers set up in the DynamicFS Management Console on this computer.</p> <p>This file is created when you first set up a server for management.</p>
DswService.exe	Dynamic File Service application.
DswServiceController.exe	<p>DynamicFS applet for the Windows notification area:</p> <ul style="list-style-type: none"> ◆ Launches the DynamicFS Management Console ◆ Launches the Repair tool ◆ Starts or stops the Dynamic File Service ◆ Enables or disables the Windows Firewall access ◆ Configures the Dynamic File Service port ◆ Configures the DynamicFS SSL certificate ◆ Registers a license key on the server ◆ Configures the events to be audited ◆ Configures the notification service and events that trigger a notification
DswStandardEngine.config.xml	<p>Configuration for logging events for the DynamicFS Standard Engine.</p> <p>This file is not created until the DswStandardEngine.exe application first runs.</p>
DswStandardEngine.exe	For a standard pair, executes policy tasks to move files from the primary path to the secondary path, or from the secondary path to the primary path.
DswStandardEngine.log	<p>Event log for the DynamicFS Standard Engine application that enforces policies.</p> <p>This file is not created until the DswStandardEngine.exe application first runs.</p>
DswStrings.dll	Contains strings for messages.
DswSyncPair.config.xml	<p>Configuration for logging events for the DynamicFS Synchronize Pair application.</p> <p>This file is not created until you use the DswSyncPair.exe application.</p>

Component File or Folder	Used for
DswSyncPair.exe	Detects and reports duplicate files or mismatched attributes and ACL permissions for folders on the DynamicFS pair.
DswSyncPair.log	Event log for the DynamicFS Synchronization Pair application. This file is not created until you use the DswSyncPair.exe application.
DswUpgrade.exe	Upgrades the software.
DswWinApi.dll	C# .NET wrappers for native Windows APIs.
install.log	Event log for the DynamicFS installation.
LocalDrives folder	Contains information about the local drives on the server, and drives that are mounted as local drives, such as via iSCSI and Fibre Channel.
NDFS.lic	The license that is created when you register the Dynamic File Services License Key.
Pairs folder	Contains the pairs database files.
Plugins folder	Contains the plug-in files for the notification system.
Policies folder	Contains the policies database files.
RetentionReview.css	The style sheet for the Retention Review Web site.
Schedules folder	Contains the schedules database files.
SnapShot folder	Contains backup copies of the pair and policies databases for use by the Repair tool.
System.DirectoryServices.AccountManagement.dll	Manages the Dynamic File Services groups that are created in Active Directory environments.
upgrade.log	Event log for the DynamicFS upgrade.

Table D-2 Open Source and Third-Party Components

Component	Used for
GlacialList.dll	Glacial ListView by the Glacial Components Software and the C# ListView open source project. It is a .NET based ListView control that allows you to customize your controls.
Hammock.dll	Hammock open source project . A Web API library for .NET that simplifies consuming and wrapping RESTful services.
InstallShield 2009	Flexera Software (formerly Aceso Software). Provides the install, modify, repair, and uninstall features for the DynamicFS software.
Ionic.Zip.dll	DotNetZip Library open source project. Allows .NET applications to read, create, extract, and modify ZIP files.
log4net.dll	Apache Logging Services open source project. Provides cross-language logging services for application debugging and auditing.
Newtonsoft.Json.dll	Json.NET open source project. Provides a high-performance JSON framework for the Microsoft .NET framework.
Plossum.dll C5.dll	Plossum open source project. A class library collection written in C# to provide functionality for writing and communicating with console applications.
TweetSharp.dll TweetSharp.Twitter.dll TweetSharp.Yammer.dll	TweetSharp open source project. Provides functionality for sending Tweets to a Twitter account that has been configured with OAuth credentials.
ZedGraph.dll	ZedGraph open source project. Uses the Plossum library for creating two-dimensional line and bar graphics.

