

Novell CIFS Administration Guide

Open Enterprise Server 2 SP3

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Novell.

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About This Guide

This guide contains information on installing, migrating, configuring, administering, managing, and troubleshooting Novell CIFS software specific to Windows CIFS running on Open Enterprise Server (OES) 2 SP3 Linux.

- ♦ Chapter 1, “Overview of CIFS,” on page 9
- ♦ Chapter 2, “What’s New,” on page 13
- ♦ Chapter 3, “Planning and Implementing CIFS,” on page 17
- ♦ Chapter 4, “Installing Upgrading and Setting Up CIFS,” on page 19
- ♦ Chapter 5, “Administering the CIFS Server,” on page 29
- ♦ Chapter 6, “Migrating CIFS from NetWare to OES 2 SP3 Linux,” on page 57
- ♦ Chapter 7, “Running CIFS in a Virtualized Environment,” on page 59
- ♦ Chapter 8, “Configuring CIFS with Novell Cluster Services for an NSS File System,” on page 61
- ♦ Chapter 9, “Working with Client Computers,” on page 67
- ♦ Chapter 10, “Troubleshooting CIFS,” on page 71
- ♦ Chapter 11, “Security Guidelines for CIFS,” on page 77
- ♦ Appendix A, “Command Line Utility for CIFS,” on page 85
- ♦ Appendix B, “Comparing Novell CIFS and Novell Samba,” on page 93
- ♦ Appendix C, “Comparing CIFS on NetWare and CIFS on Linux,” on page 95

Audience

This guide is intended for OES 2 Linux administrators who want to use and administer the CIFS services and to access shares.

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, or go to [Novell Documentation Web site \(http://www.novell.com/documentation/feedback.html\)](http://www.novell.com/documentation/feedback.html) and enter your comments there.

Documentation Updates

For the most recent version of the *CIFS Guide*, visit the [OES 2 Documentation Web site \(http://www.novell.com/documentation/oes2\)](http://www.novell.com/documentation/oes2).

Additional Documentation

For documentation on CIFS on NetWare, see the [NW 6.5 SP8: AFP, CIFS, and NFS \(NFAP\)](#).

1 Overview of CIFS

CIFS (Common Internet File System) is a network file sharing protocol that is based on the SMB (Server Message Block) protocol. File sharing is achieved through this but intertwined with other protocols for service announcement, naming, authentication, and authorization.

- ♦ [Section 1.1, “Understanding CIFS,” on page 9](#)
- ♦ [Section 1.2, “CIFS and Universal Password,” on page 10](#)
- ♦ [Section 1.3, “CIFS Features and Capabilities,” on page 10](#)
- ♦ [Section 1.4, “What’s Next,” on page 11](#)

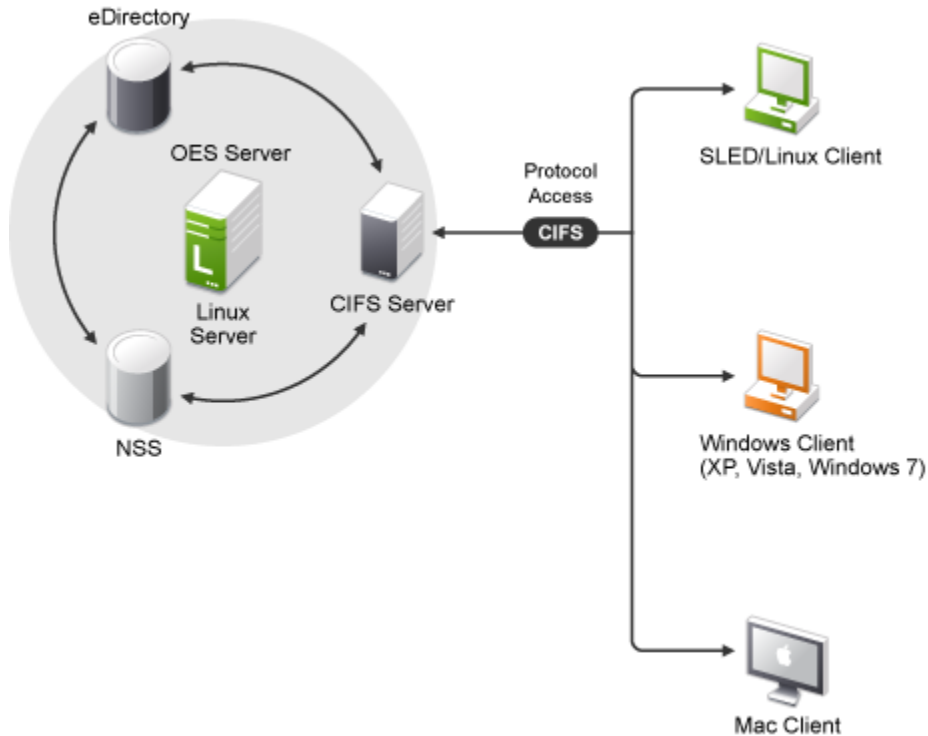
1.1 Understanding CIFS

The Common Internet File System (CIFS) also known as Server Message Block (SMB) is an application-layer network protocol used for providing shared access to files on a Local Area Network (LAN). It relies on NetBIOS over TCP (NBT) for reliable transport. Although file sharing is the primary purpose of CIFS, there are other functions that CIFS is commonly associated with. Some of them include service announcements, name resolution, user authentication, authorization, and browsing for other CIFS servers in the network.

Novell CIFS runs on the Open Enterprise Server (OES) 2 SP3 server, uses Novell eDirectory services for user authentication, and allows Windows, Linux, and Mac client users to access the server data files or other shared resources in one of the following ways:

- ♦ For Windows, through the Network Neighborhood or My Network, Windows Explorer, and mapped drives from Windows workstations.
- ♦ For Linux, through an SMB client from Linux desktops.

Figure 1-1 Novell CIFS Conceptual Overview



Novell CIFS enables Windows, Linux, and Mac client workstations to create, copy, delete, move, save, and open files on an OES 2 server. CIFS allows read and write access from multiple client systems simultaneously. All these various file operations and sharing of resources on a network are managed from a CIFS server.

1.2 CIFS and Universal Password

Universal Password helps in management of password-based authentication schemes. Each CIFS user must be Universal Password enabled to be able to log in to the CIFS server.

The Universal password is not enabled by default.

To learn more about Universal Password, including how to enable it, see [Novell Password Management](#) in the *Novell Password Administration Guide*.

1.3 CIFS Features and Capabilities

The CIFS implementation supports the following features on OES 2 SP3 Linux:

- ◆ Support for Windows 7 client
- ◆ Support for DST shadow volume pair access. For more information, refer to [Section 5.5, “Dynamic Storage Technology for CIFS Server,”](#) on page 49.
- ◆ Support for subtree search. For more information, refer to [Section 5.7, “Subtree Search,”](#) on page 53.
- ◆ Support for windows offline feature. For more information, refer to [Section 5.8, “Using Offline Files,”](#) on page 54.

- ♦ Cross-Protocol File Locking support between AFP, CIFS, and NCP. For more information, refer to [Section 5.3, “Locks Management for CIFS,” on page 46](#)
- ♦ Auditing support for File Access activities.
- ♦ Migration capability from NetWare to Linux. For more information, refer to [“Migrating CIFS from NetWare to OES 2 SP3 Linux”](#).
- ♦ Support for DFS junctions. For more information, refer to [Section 5.6, “DFS Junction Support in CIFS Linux,” on page 50](#)
- ♦ Support for Universal Password. For more information, refer to [Security Considerations](#) in the *Novell Password Management Administration Guide*.
- ♦ Support for NTLMv1 and NTLMv2 authentication mode. For more information, refer to [Table 5-2 on page 36](#).
- ♦ Integration with Novell eDirectory
- ♦ CIFS supports NMAS authentication method
- ♦ Integration with the Novell Storage Services (NSS) file system
- ♦ Support for Unicode filenames
- ♦ Supports the Novell Trustee Model for file access.
- ♦ CIFS does not require Linux User Management (LUM) enabling.
- ♦ Supported by Novell Cluster Services for high availability.
- ♦ Administration and configuration through iManager.

1.4 What's Next

If you are planning to implement CIFS on your enterprise server, continue with [Chapter 3, “Planning and Implementing CIFS,” on page 17](#) to understand the implementation requirements.

2 What's New

This section describes additions to the Novell CIFS service for the Novell Open Enterprise Server 2 SP3 Linux platform for maintaining feature parity with solutions on the NetWare platform:

- ♦ [Section 2.1, “What’s New \(OES 2 SP3 April 2013 Patches\),” on page 13](#)
- ♦ [Section 2.2, “What’s New \(OES 2 SP3 January 2013 Patches\),” on page 13](#)
- ♦ [Section 2.3, “What’s New \(OES2 SP3 November 2012 Patches\),” on page 15](#)
- ♦ [Section 2.4, “What’s New \(OES2 SP3 September 2012 Patches\),” on page 15](#)
- ♦ [Section 2.5, “What’s New in the September 2011 Patch Release,” on page 15](#)
- ♦ [Section 2.6, “What’s New \(May 2011 Patches\),” on page 15](#)
- ♦ [Section 2.7, “What’s New \(OES 2 SP3\),” on page 15](#)

2.1 What’s New (OES 2 SP3 April 2013 Patches)

Upgrade to eDirectory 8.8.7

An upgrade to Novell eDirectory 8.8 SP7 is available in the April 2013 Scheduled Maintenance for OES 2 SP3. For information about the eDirectory upgrade, see [TID 7011599](#) in the Novell Knowledgebase.

There will be no further eDirectory 8.8 SP6 patches for the OES platform. Previous patches for Novell eDirectory 8.8 SP6 are available on [Novell Patch Finder](#).

2.2 What’s New (OES 2 SP3 January 2013 Patches)

Upgrade to Novell iManager 2.7.6

The January 2013 Scheduled Maintenance for OES 2 SP3 includes a channel upgrade from Novell iManager 2.7.5 to Novell iManager 2.7.6.

Novell iManager 2.7.6 provides the following enhancements:

- ♦ Microsoft Internet Explorer 10 certification in the desktop user interface view on Windows 8 (excluding Windows 8 RT) and Windows Server 2012.
- ♦ Apple Safari 6.0 certification on Mac OSX Mountain Lion (version 10.8).
- ♦ iManager Workstation certification on Windows 8 Enterprise Edition (32-bit and 64-bit).
- ♦ iManager 2.7.6 support for Tomcat 7.0.32. and Java 1.7.0_04 versions.

iManager documentation links in this guide have been updated to reflect this change.

iManager 2.7.6 documentation is available on the [Web](#). For earlier iManager versions, see [Previous Releases](#).

Novell Client Support for Windows 8 and Server 2012

The January 2013 Scheduled Maintenance for OES 2 SP3 announces the availability of Novell Client 2 SP3 for Windows with support for:

- ♦ Windows 8 (32-bit and 64-bit) excluding Windows 8 RT
- ♦ Windows Server 2012 (64-bit)

Novell Client 2 documentation links in this guide have been updated to reflect the release of SP3.

Novell Client 2 SP3 for Windows documentation is available on the [Web](#). Documentation for earlier versions is available under [Previous Releases](#).

New Novell Cluster Services Plug-in for iManager 2.7.5 and Later

The Clusters plug-in for Novell iManager 2.7.5 or later supports the management of OES and NetWare clusters and resources. The availability of different cluster management features depends on the version of Novell Cluster Services and the server platform that are installed on the cluster being managed. A comparison of the old and new interface is available in “[What’s New \(January 2013 Patches\)](#)” in the [OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux](#).

OES Client Services Support for Windows 8 and IE 10

In the January 2013 Scheduled Maintenance for OES 2 SP3, OES client services added support for user access from Windows 8 clients (excluding Windows 8 RT), with the exception of Domain Services for Windows (DSfW). DSfW was not tested with Windows 8 clients and does not support them.

Client applications are supported to run on Windows 8 clients in the desktop user interface view. Web-based client access is supported for the Internet Explorer 10 Web browser in the desktop user interface view for Windows 7 clients and Windows 8 clients.

OES Client Services Do Not Support Windows Server 2012

In the January 2013 Scheduled Maintenance for OES 2 SP3, OES client services were not tested with Windows Server 2012 servers. Client access support for Windows Server 2012 is not planned for OES 2 SP3.

OES Client Services Support for Mac OS X 10.8 and Safari 6.0

In the January 2013 Scheduled Maintenance for OES 2 SP3, OES client services added support for user access from Mac OS X Mountain Lion (version 10.8) clients, with the exception of Domain Services for Windows (DSfW) and Novell iFolder:

- ♦ DSfW was not tested with Mac OS X 10.8 clients and does not support them. DSfW support for Mac OS X 10.8 clients is planned for a future release.
- ♦ The iFolder client does not run on Mac OS X 10.8 clients and does not support them. Web-based client access is supported for the Apple Safari 6.0 Web browser on Mac OS X 10.8 clients.

Safari 6.0 is not supported by DSfW and iFolder.

2.3 What's New (OES2 SP3 November 2012 Patches)

Novell CIFS will now be able to increase the file id pool size from 65k to 600k. In addition, you can also dump file handle statistics and directory cache statistics. For more information see, [“Enabling CIFS File Id Pool” on page 88](#) and [“Dumping File Handle Statistics” on page 88](#) in the [OES2 SP3: Novell CIFS for Linux Administration Guide](#).

2.4 What's New (OES2 SP3 September 2012 Patches)

CIFS will now be able to cache the invalid user logins for a specific timeout period. Further authentication requests from the same user name will be ignored based on the configured timeout period. For more information, see [“Enabling Invalid User Caching” on page 88](#) in the [OES2 SP3: Novell CIFS for Linux Administration Guide](#).

2.5 What's New in the September 2011 Patch Release

With the release of the August 2011 patches for OES 2 SP3, the base platform has been upgraded to SLES 10 SP4.

SLES 10 SP4 support is enabled by updating OES 2 SP3 servers with the `move-to-sles10-sp4` patch. Novell encourages customers to update to this latest set of patches. For more information, see [“Updating \(Patching\) an OES 2 SP3 Server”](#) in the [OES 2 SP3: Installation Guide](#)

SLES 10 SP4 is considered a lower-risk update that contains a set of consolidated bug fixes and support for newer hardware. It does not impact the kernel ABI or third-party certifications.

With the release of the August 2011 patches, OES 2 SP2 customers who upgrade to OES 2 SP3 via the `move-to` patch will receive the SLES 10 SP4 updates. New installations of OES 2 SP3, migrations to OES 2 SP3, and down-server upgrades to OES 2 SP3, should all be performed using SLES 10 SP4 media.

2.6 What's New (May 2011 Patches)

In addition to bug fixes, the following changes were made to Novell CIFS in the OES 2 SP3 May 2011 Scheduled Maintenance patch:

- Supports for offline client-side caching for files. For more information, see [Enabling or Disabling Client-side Caching \(page 88\)](#)
- Support for Mask Behaviour for Range Locks. For more information, see [“Enabling or Disabling Mask Behaviour for Range Locks” on page 87](#)

2.7 What's New (OES 2 SP3)

- Windows offline support is now provided by CIFS. For more information, refer [Section 5.8, “Using Offline Files,” on page 54](#).
- Authentication method for CIFS is now done using NMAP method.
- CIFS now supports [“Subtree Search” on page 53](#).
- CIFS now supports OES Common Proxy User. For more information, refer [Section 4.2, “Installing and Configuring a CIFS Server through YaST,” on page 21](#).

- ♦ [NTLMv2](#), a cryptographically stronger authentication protocol is now supported.
- ♦ CIFS now supports [Dynamic Storage Technology](#) while accessing NSS volumes.

3 Planning and Implementing CIFS

Planning and implementing CIFS on an Open Enterprise Server (OES) 2 SP3 Linux server requires you to understand the information and requirements discussed in the following sections:

- ♦ [Section 3.1, “Planning for CIFS,” on page 17](#)
- ♦ [Section 3.2, “CIFS System Prerequisites,” on page 17](#)
- ♦ [Section 3.3, “Co-existence Issues,” on page 18](#)
- ♦ [Section 3.4, “What’s Next,” on page 18](#)

3.1 Planning for CIFS

The key factors to consider for implementing and enabling Novell CIFS on your enterprise servers are:

- ♦ Upgrading from OES 2 Linux to OES 2 SP3 Linux on your enterprise servers.
- ♦ Moving from NetWare to an OES 2 SP3 Linux setup. For details see, [Chapter 6, “Migrating CIFS from NetWare to OES 2 SP3 Linux,” on page 57.](#)

3.2 CIFS System Prerequisites

To access CIFS servers running on an OES 2 SP3 Linux server, client computers must be connected to the network, properly configured to run NBT (NetBIOS over TCP/IP), and meet the following basic minimum requirements:

- ♦ [Section 3.2.1, “Server Operating System Requirements,” on page 17](#)
- ♦ [Section 3.2.2, “Server Hardware Requirements,” on page 17](#)
- ♦ [Section 3.2.3, “Client Operating System Requirements,” on page 18](#)
- ♦ [Section 3.2.4, “Package Dependencies,” on page 18](#)

3.2.1 Server Operating System Requirements

Novell Open Enterprise Server 2 Support Pack 1 or later.

3.2.2 Server Hardware Requirements

Same as the OES 2 SP3 Linux hardware requirements. For details, see [“Meeting All Server Software and Hardware Requirements”](#) in the *OES 2 SP3: Installation Guide*.

3.2.3 Client Operating System Requirements

- ♦ Windows XP SP2 and SP3.
- ♦ Windows 7 Client.
- ♦ Windows Vista Business SP1 and 64-bit SP1, Enterprise SP1 and 64-bit SP1, and Ultimate SP1 and 64-bit SP1.
- ♦ Mac Client Support.
- ♦ SUSE Linux Enterprise Desktop versions.
- ♦ Any NFS platform capable of NFS v2, NFS v3, or NFS v4, such as Linux, or FreeBSD.

3.2.4 Package Dependencies

Use the following checklist to verify CIFS dependencies before proceeding:

- All Novell CIFS users must be in eDirectory. Linux-only users are not supported.
- Novell CIFS supports only Novell Storage Services (NSS) volumes.
- NCP should be up and running for Novell CIFS to function properly.
- If your eDirectory replica is stored on an eDirectory server earlier than 8.8.3, ensure you upgrade the server using the *Security Services 2.0.6 patch* (<http://download.novell.com/Download?buildid=LY1bZMAom6k~>).

3.3 Co-existence Issues

Do not install any of the following service combinations on the same server as Novell CIFS. Although not all of the combinations cause pattern conflict warnings, Novell does not support any of the combinations shown:

- File Server (SLES 10 - Samba).
- Novell Domain Services for Windows (DSfW).
- Any other Samba implementation.
- Xen Virtual Machines on the host.

3.4 What's Next

To proceed with CIFS installation on an OES 2 SP3 Linux server, continue with [Chapter 4, "Installing Upgrading and Setting Up CIFS,"](#) on page 19.

4 Installing Upgrading and Setting Up CIFS

This section describes how to install and configure Novell CIFS. CIFS should be selected to be installed during OES 2 Linux installation. This section also provides the CIFS installation requirements and procedures.

- ♦ Section 4.1, “Preparing for CIFS Installation,” on page 19
- ♦ Section 4.2, “Installing and Configuring a CIFS Server through YaST,” on page 21
- ♦ Section 4.3, “Installing LSM,” on page 25
- ♦ Section 4.4, “Verifying Installation,” on page 25
- ♦ Section 4.5, “Upgrading CIFS,” on page 27
- ♦ Section 4.6, “\ Installing the CIFS iManager Plug-In,” on page 27
- ♦ Section 4.7, “What’s Next,” on page 28

4.1 Preparing for CIFS Installation

- ♦ Section 4.1.1, “Product Interdependencies,” on page 19
- ♦ Section 4.1.2, “Prerequisites,” on page 19
- ♦ Section 4.1.3, “Required Rights and Permissions for a CIFS User/Administrator,” on page 20

4.1.1 Product Interdependencies

CIFS has product interdependencies that must be considered:

- ♦ NMAS (Novell Modular Authentication Services).
- ♦ NICI (Novell International Cryptographic Infrastructure).

CIFS depends on NMAS for authentication of CIFS users. NMAS is dependent on NICI for encryption and decryption services. A problem with any of these products causes CIFS users to be denied access to an OES 2 Linux server.

4.1.2 Prerequisites

To properly install and configure CIFS, ensure that the following prerequisites are met:

- You are running an OES 2 SP3 server. For more information on installing OES 2 Linux, see the *OES 2 SP3: Installation Guide*.
- CIFS users must be universal password enabled. Read “Deploying Universal Password” in the *Novell Password Management Administration Guide* (http://www.novell.com/documentation/password_management32/pwm_administration/data/allq21t.html).

The Universal Password includes the ability to create password policies. It also removes the need to maintain two separate passwords for CIFS users.

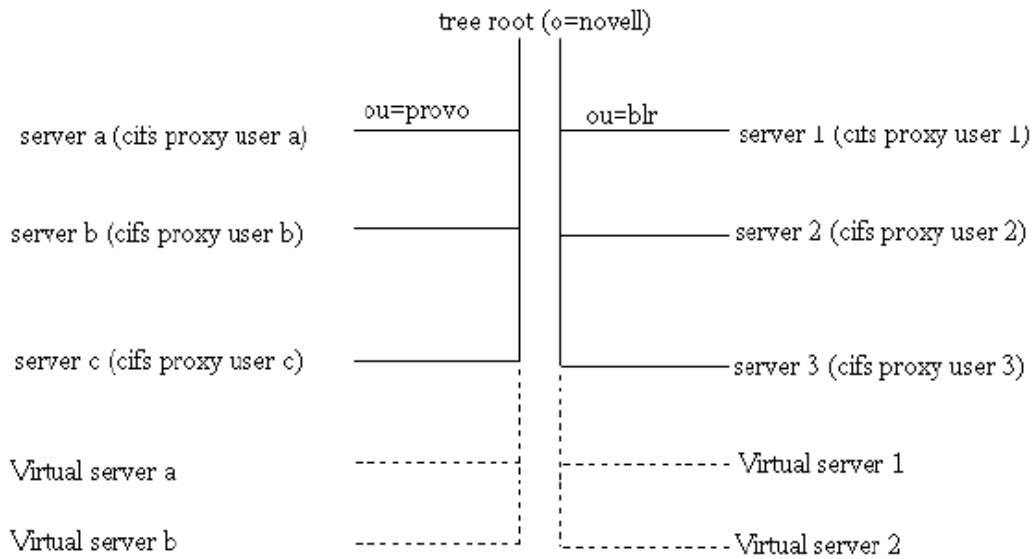
- ❑ NMAS is installed on or added to an OES 2 Linux server that has a read/write eDirectory replica of the eDirectory partition where the User objects reside.

NMAS is automatically installed with eDirectory. For more information on NMAS, see the *NMAS 3.2 Administration Guide* (<http://www.novell.com/documentation/nmas32/admin/index.html?page=/documentation/nmas32/admin/data/a20gkue.html>).

- ❑ Novell iManager 2.7.4 is installed, configured, and running. For more information on iManager installation and administration, see the .
- ❑ NCP must be installed and running for CIFS to work correctly.
- ❑ Stop all the running Samba daemons before installing CIFS. Use the following commands:
 - ♦ `/etc/init.d/smb stop`
 - ♦ `/etc/init.d/nmb stop`

4.1.3 Required Rights and Permissions for a CIFS User/Administrator

Example for CIFS Cluster Rights



The *cifs proxy user a*, *cifs proxy user b*, and *cifs proxy user c* have the rights to read the eDirectory CIFS attributes under *ou=provo* (*Virtual server a* and *Virtual server b*). Hence if these virtual servers are hosted in any of these three nodes, the configuration is read by the CIFS service in the corresponding node.

The *cifs proxy user 1*, *cifs proxy user 2*, and *cifs proxy user 3* have rights to read the eDirectory CIFS attributes under *ou=blr* (*Virtual server 1* and *Virtual server 2*). Hence if these virtual servers are hosted in any of these three nodes, the configuration is read by the CIFS service in the corresponding node.

If the virtual server requires to be migrated across the branches, then the *cifs proxy users* have to be given explicit rights on those branches such that the CIFS attribute information can be read.

The attributes for which the cifs proxy user requires rights are, *nfapCIFSservername*, *nfapCIFScomment*, *nfapCIFSshares*, and *nfapCIFSattach*. These attributes must have read, write, and compare rights. If the rights are defined on the branch (preferable), then the inherit rights also have to be provided.

In this example, if *Virtual server 2* is to be hosted on node server *c*, then *cifs proxy user c* must be provided access to read the attributes of *Virtual server 2*. The rights for the above mentioned attributes can be provided at *ou=blr* for *cifs proxy user c*. Hence the same rights holds good for hosting *Virtual server 1* too.

4.2 Installing and Configuring a CIFS Server through YaST

Follow this procedure to install and configure the CIFS services on an OES 2 SP3 Linux server in either of the following cases:

- ♦ Installing CIFS with the bundle of products during OES 2 SP3 Linux installation.
- ♦ Installing only the Novell CIFS service and its dependencies on an existing OES 2 SP3 Linux server.

Before you begin, ensure that you have the required eDirectory admin credentials to proceed, if you are installing CIFS after installing OES 2 SP3 Linux.

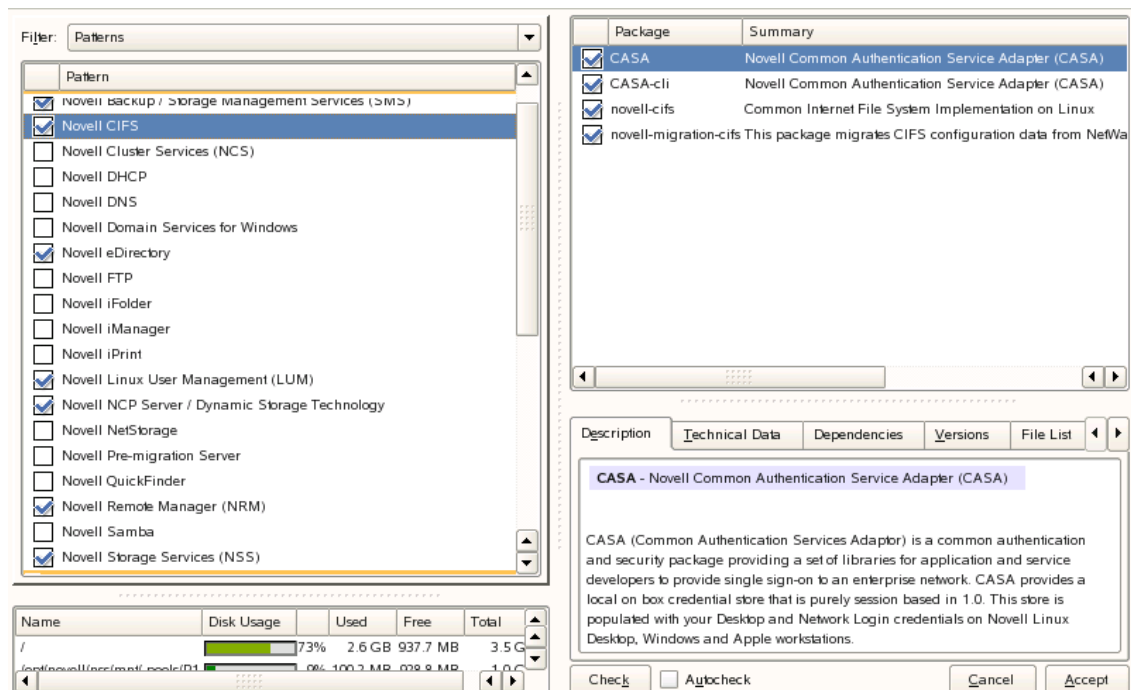
- 1 Launch YaST, using one of the following methods:

From your Desktop: Click *Computer > More Applications > System > YaST*.

or

From your Terminal: Run the `yast2` command on the server console.

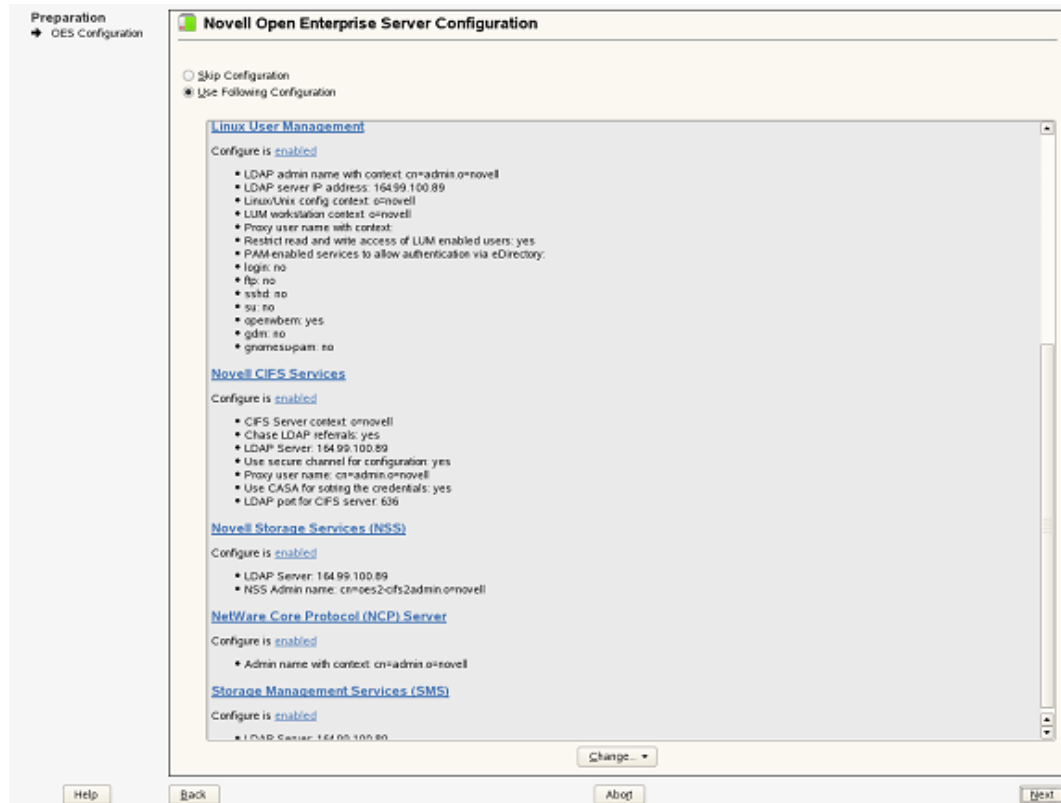
- 2 Click *Group > Open Enterprise Server > OES Install and Configuration*.
- 3 Select *Novell CIFS* from the software patterns listed.



IMPORTANT: By default, the CIFS dependency packages are selected: Novell eDirectory, Novell Linux User Management (LUM), NetWare Core Protocol Server (NCP), Novell Remote Manager (NRM), and Novell Storage Services (NSS), in addition to other OES 2 SP3 default dependencies or other services dependency packages.

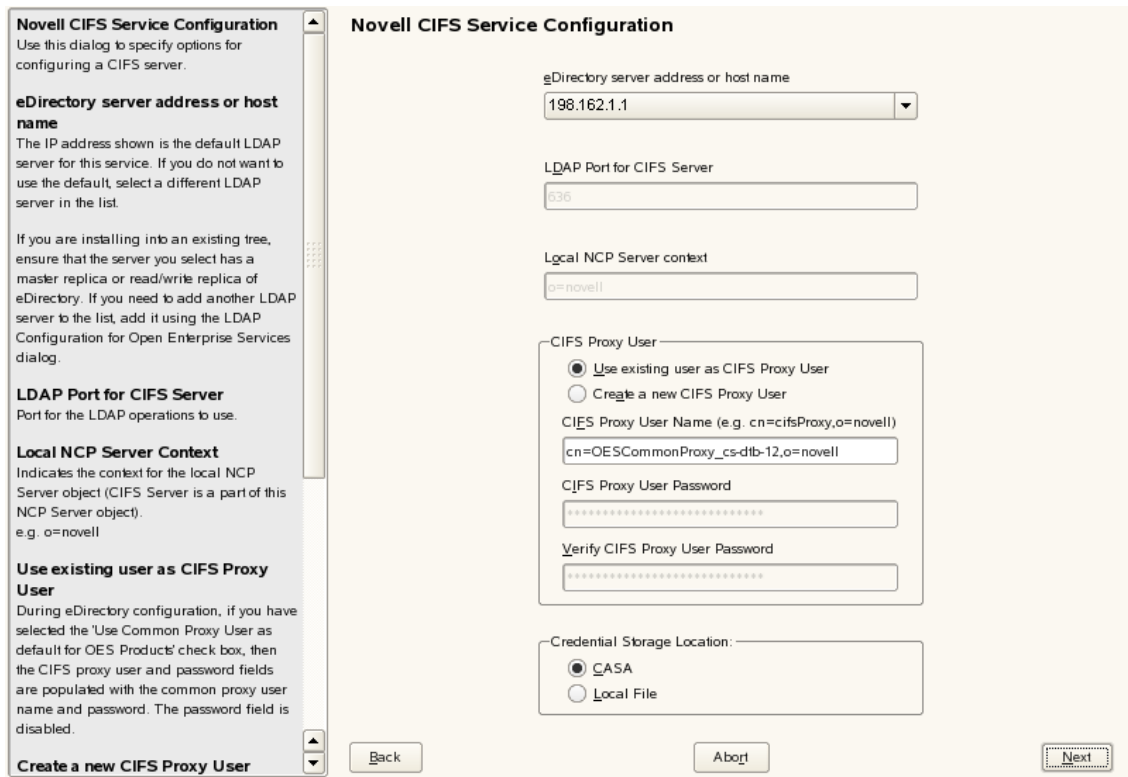
4 Click *Accept*.

The subsequent pages allow the administrator to configure CIFS on OES 2 SP3.



5 To change the default configuration settings for CIFS, click on the Novell CIFS service or click *Next* to continue with the default configuration.

NOTE: If you are installing CIFS after installing OES 2 SP3, you are prompted to enter the eDirectory admin password. Enter the password and click *OK* to proceed.



6 Fill in the following fields and click *Next*:

Parameter	Description
eDirectory server address or host name	This is the default eDirectory server IP address. Select from the drop-down list to change to a different server.
LDAP port for CIFS Server	The default is 636. This is preferred. Do not change the default port value during a fresh installation of the tree. NOTE: If the OES 2 SP3 Linux server is attached to an existing tree, the administrator can change this to another LDAP port.
Local NCP Server context	Displays the NCP Server context.
CIFS Proxy User Name	Create a new proxy user. Use the format <code>cn=proxyusername,o=company</code> . During eDirectory configuration, if you have selected the <i>Use Common Proxy User as default for OES Products</i> check box, then the proxy user and password fields are populated with common proxy user name and password. You cannot change this password in the CIFS configuration screen.
CIFS Proxy User Password	The password specified here is set in CASA or the local file. The maximum length is 256 characters.
Verify CIFS Proxy User Password	Re-enter the password for verification. It should be identical to the CIFS proxy user password.
eDirectory Contexts	The default is displayed. Select or add a new context, indicating where the user resides. Use the <i>Add</i> and <i>Delete</i> buttons to add and delete contexts.

Parameter	Description
Credential Storage Location	By default, the credential is stored in CASA. It is possible to store the credentials by using the Local File option. The password file is encrypted and encoded in the credential storage location.

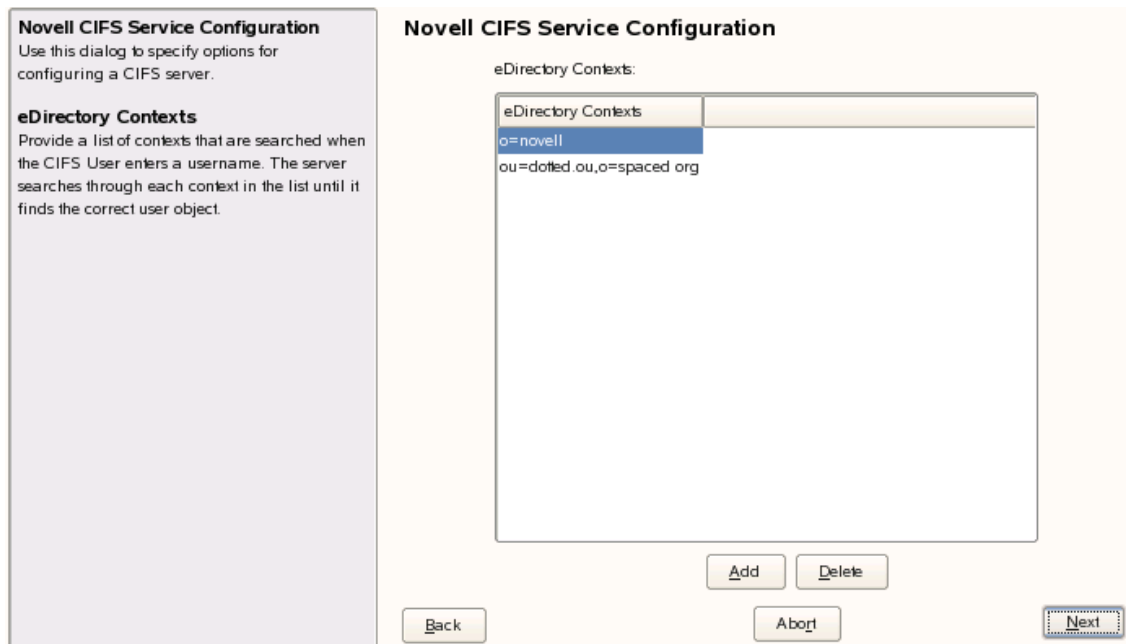
7 Select an *eDirectory context* from the available list.

If you want to add a CIFS user context, click *Add*. The format for specifying the context is as follows:

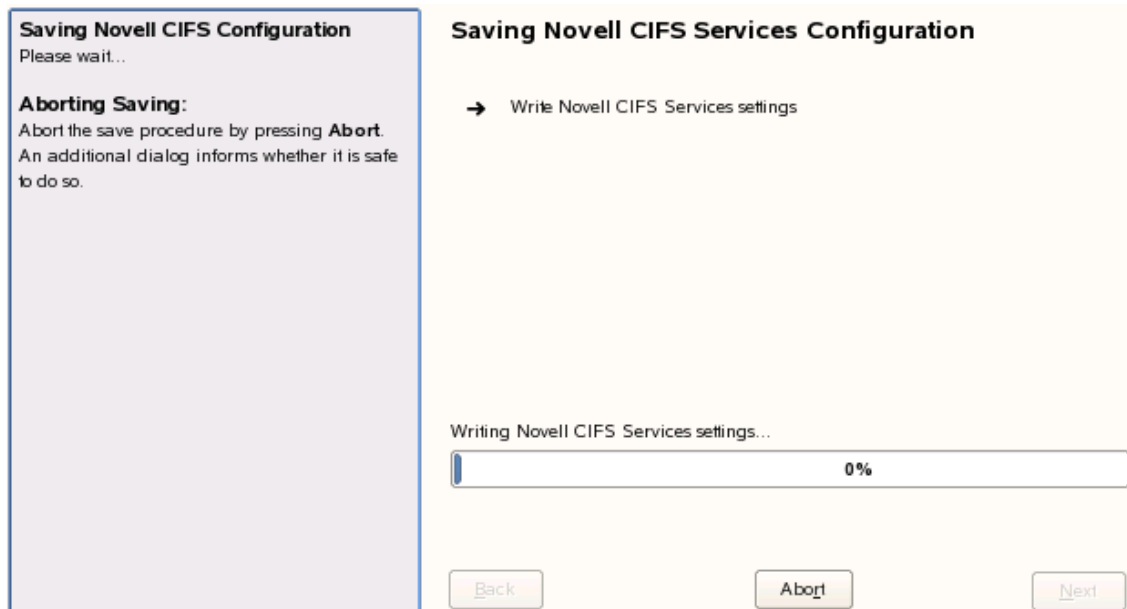
For example: `ou=eng,o=novell`

If you want to delete a CIFS user context, select a context from the available list and click *Delete*.

The CIFS user contexts are stored in `/etc/opt/novell/cifs/cifsctxs.conf`.



- 8 The CIFS configuration settings you specified are saved successfully on your OES 2 SP3 Linux server.



4.3 Installing LSM

Use one of the following methods to install LSM:

- ♦ **Fresh/Media Install:** LSM is installed with CIFS by default. LSM can be installed only once for the entire tree.
- ♦ **Upgrade:** LSM is not installed by default. Install LSM by running the YaST screen.
- ♦ **Patches:** Patches for CIFS NMAS methods are packed with `novell-cifs-nmasmethods*.rpm`. After the rpm is installed, run the following command to update the method version:

```
nmasinst -addmethod <adminDN> <treeName> <configFile> [-h hostname[:port]] [-w  
pwd] [-checkversion]
```

```
nmasinst -addmethod cn=admin.o=novell CIFS-TREE /opt/novell/cifs/share/  
nmasmthd/ntlm/config.txt -checkversion
```

When prompted, enter the admin password. For more information about using the `nmasinst` utility, refer to the `nmasinst` man page.

4.4 Verifying Installation

Perform the following steps if you want to verify a successful installation. For troubleshooting your installation, see [Section 10.2, “CIFS Installation and Configuration Issues,”](#) on page 71.

- ♦ [Section 4.4.1, “Verifying Files and Folders,”](#) on page 26
- ♦ [Section 4.4.2, “Verifying the File Configuration Information,”](#) on page 27
- ♦ [Section 4.4.3, “Verifying LSM Installation,”](#) on page 27

4.4.1 Verifying Files and Folders

IMPORTANT: A file or folder loses its explicit trustee assignments if Rename/Move operations are performed on it. An administrator must re-assign trustee rights to the renamed or moved folder or file.

Run the following commands on the OES 2 SP3 server console:

- 1 Run the `ls /opt/novell/cifs/` command and verify that the `bin`, `schema`, and `share` folders are present.
- 2 Run the `ls /opt/novell/cifs/bin` command and verify that the following files are present:
 - ◆ `cifs-config.sh`
 - ◆ `encrypt_password`
 - ◆ `migCifsC`
 - ◆ `migcifs.pl`
 - ◆ `novcifs`
 - ◆ `retrive_proxy_cred`
 - ◆ `getpwpolicies.sh`
 - ◆ `migCifsS`
 - ◆ `migcifs.sh`
 - ◆ `readCasaC`
 - ◆ `verify-user.sh`
 - ◆ `cifs_proxy_rights_assign.sh`
 - ◆ `cifs_retrieve_proxy_cred.sh`
 - ◆ `cifs_update_proxy_cred.sh`
 - ◆ `cifs-lcm.sh`
- 3 Run `ls /usr/sbin` command and verify that the `cifsd` file is present.
- 4 Run the `ls /opt/novell/cifs/schema` command and verify that the following files are present:
 - ◆ `nfap.ldif`
 - ◆ `nfap.sch`
 - ◆ `password-policy.ldif`
- 5 If you selected CASA storage for storing the CIFS proxy user credentials, run the `CASAccli -l` command to verify if there is an entry for `novell-cifs`.
or
If you selected a local file for credential storage, verify the existence of the `.cifspwd.enc` file by running `ls -a /etc/opt/novell/cifs`.
- 6 Check for `libcifslcm.so` library under `/usr/lib` on a 32-bit system and `libcifslinlcm.so` library under `/usr/lib64` on a 64-bit system.

4.4.2 Verifying the File Configuration Information

Verify whether the following files are populated with the information you specified while using YaST for configuration during installation:

- 1 Run `cat /etc/opt/novell/cifs/cifs.conf` and verify whether the configuration is the same as you specified during installation.
- 2 Run `cat /etc/opt/novell/cifs/cifsctxs.conf` and verify whether the context information is the same as you specified during installation.

4.4.3 Verifying LSM Installation

LSM installation can be verified either through iManager or Local File System.

Verifying through iManager

In iManager, click NMAS. Under NMAS Login Methods and NMAS Login Sequences, verify that both `cifslinlsm` method and `cifslinlsm` sequence are present.

Verifying through Local File System

- ♦ Verify that CIFSLINLSM is present at `/var/opt/novell/eDirectory/data/nmas-methods` on a 32-bit system.
- ♦ Verify that CIFSLINLSM_X64 is present at `var/opt/novell/eDirectory/data/nmas-methods` on a 64-bit system.
- ♦ On a NetWare machine, verify that `cifslinlsm.nlm` is loaded.

4.5 Upgrading CIFS

Novell Open Enterprise Server (OES) 2 provides the option of updating an existing system to the new version without completely reinstalling it.

For more information on Upgrading, see “[Upgrading to OES 2 SP3](#)” in the *OES 2 SP3: Installation Guide*

After the upgrade is completed, configure CIFS using the `yast2 novell-cifs` command.

IMPORTANT: If you want to enable subtree search on a server that has been upgraded from OES2SP1 to OES2SP3, it is important to add the contexts to the `cifsctxs.conf` file using `yast2 novell-cifs` command or by using [iManager](#).

This is required to assign the required rights for the `cifs proxy` user over the specified contexts.

4.6 Installing the CIFS iManager Plug-In

You must install the iManager plug-in for CIFS in order to access CIFS from iManager.

- 1 Launch iManager from your Web browser.
For details, see [Accessing iManager](#) in the *Novell iManager 2.7.4 Administration Guide*.
- 2 Click *Configure* and go to *Plug-In Module Installation > Available Novell Plug-In Modules*.

For details, see [Novell Plug-in Modules](#) in the [Novell iManager 2.7.4 Administration Guide](#).

- 3 Select the CIFS plug-in *CIFS Management* from the list and click *Install*.
- 4 Exit iManager.
- 5 From OES 2 Linux server console, run one of the following commands to complete the plug-in installation:
 - ♦ `/etc/init.d/tomcat5 restart`
 - ♦ `rcnovell-tomcat5 restart`

4.7 What's Next

When the installation is complete, you can get started with CIFS administration activities. For details, see [Chapter 5, "Administering the CIFS Server,"](#) on page 29.

5 Administering the CIFS Server

An administrator can start or stop CIFS and customize network access for CIFS users, enable or disable SMB signing, and perform other configuration and administration activities.

CIFS maintains a configuration file and context search information that is set up during installation. An eDirectory search context is created by default during the OES 2 Linux installation for all users who require access to the network. These contexts are saved in the context search file. When users specify a username, the CIFS component running on the server searches each context in the list until it finds the correct User object.

CIFS on an Open Enterprise Server (OES) 2 Linux server can be managed and administered either through iManager 2.7.4 or from the command line.

For details on how to install the CIFS iManager plug-in, see [Section 4.6, “\Installing the CIFS iManager Plug-In,” on page 27](#).

For basic information on command line administration, see [Section 5.2, “Using the Command Line to Manage CIFS,” on page 43](#) or for complete details, see [Appendix A, “Command Line Utility for CIFS,” on page 85](#).

- [Section 5.1, “Using iManager to Manage CIFS,” on page 29](#)
- [Section 5.2, “Using the Command Line to Manage CIFS,” on page 43](#)
- [Section 5.3, “Locks Management for CIFS,” on page 46](#)
- [Section 5.4, “Third-Party Domain Authentication,” on page 46](#)
- [Section 5.5, “Dynamic Storage Technology for CIFS Server,” on page 49](#)
- [Section 5.6, “DFS Junction Support in CIFS Linux,” on page 50](#)
- [Section 5.7, “Subtree Search,” on page 53](#)
- [Section 5.8, “Using Offline Files,” on page 54](#)
- [Section 5.9, “Directory Cache Management for CIFS Server,” on page 54](#)
- [Section 5.10, “What’s Next,” on page 55](#)

5.1 Using iManager to Manage CIFS

You can manage CIFS services from iManager 2.7.4. The recommended method to configure, manage, and modify CIFS properties and parameters is using iManager.

NOTE: Admin equivalent/container admin users should be LUM enabled to manage the CIFS server through CIFS iManager plugin.

- [Section 5.1.1, “Prerequisites,” on page 30](#)
- [Section 5.1.2, “Selecting a Server to Manage,” on page 30](#)
- [Section 5.1.3, “Setting the CIFS Server and Authentication Properties,” on page 32](#)

- ♦ [Section 5.1.4, “Managing CIFS Shares,”](#) on page 37
- ♦ [Section 5.1.5, “Configuring a CIFS User Context,”](#) on page 41
- ♦ [Section 5.1.6, “Stopping CIFS,”](#) on page 43

5.1.1 Prerequisites

- ♦ Install the CIFS iManager plug-in. For details, see [Section 4.6, “\ Installing the CIFS iManager Plug-In,”](#) on page 27.
- ♦ Install CIFS on at least one OES 2 SP3 Linux server. For details on installing CIFS, see [Chapter 4, “Installing Upgrading and Setting Up CIFS,”](#) on page 19.
- ♦ Ensure that `ndsd` is running. Use `/etc/init.d/ndsd status` on the server console to check.

5.1.2 Selecting a Server to Manage

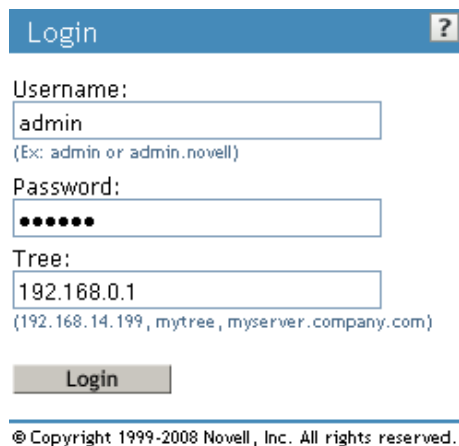
- 1 In a Web browser, specify the following in the address (URL) field:

`http://server_IP_address/nps/iManager.html`

For example:

`http://192.168.0.1/nps/iManager.html`

- 2 At the login prompt, specify the server administrator username and password and click *Login*.





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For more information on iManager administration, see the [Novell iManager 2.7.4 Administration Guide](#).

- 3 In the iManager application left frame, click *File Protocols > CIFS*.
The default CIFS parameters page is displayed. Use this page to configure and manage CIFS.

CIFS

To manage a CIFS server, select a server where CIFS is installed.

Server:  

General | Share | Context

Server | Authentication | Start | Stop

Status: Running

CIFS Virtual Server Name:

WINS IP Address:

Comment:

OpLocks

Distributed File Services (DFS) Support

SMB Signature

Disabled

Mandatory

Optional

OK Cancel

- 4 In the *Server* field, specify the OES 2 Linux server name.
or
Browse and select it from the object selector
or
Use the object history button to select it.
- 5 Verify the status of the server. If the CIFS server is stopped, click *Start* to start the CIFS server.



The *Status* changes to *Running* and all the CIFS properties are displayed on the screen.

If a Samba server is running, CIFS does not start. To resolve this problem, see [“CIFS Is Not Running With Samba”](#) on page 72.

- 6 Continue with other administrative actions as necessary:
 - ♦ [Section 5.1.3, “Setting the CIFS Server and Authentication Properties,”](#) on page 32
 - ♦ [Section 5.1.4, “Managing CIFS Shares,”](#) on page 37
 - ♦ [Section 5.1.5, “Configuring a CIFS User Context,”](#) on page 41

5.1.3 Setting the CIFS Server and Authentication Properties

The server and authentication parameters can be set by using the parameters listed under the *General* and *Share* tabs on the default CIFS server page in the iManager.

For information on starting iManager and accessing the CIFS server, see [Section 5.1.2, “Selecting a Server to Manage,”](#) on page 30.

To change these parameters from command line, see [Section 5.2.4, “Modifying the CIFS Configuration,”](#) on page 44

- ♦ [“Setting CIFS General Server Parameters”](#) on page 32
- ♦ [“Enabling and Disabling SMB Signing”](#) on page 34
- ♦ [“Setting CIFS General Authentication Parameters”](#) on page 35

Setting CIFS General Server Parameters

The General page contains the *Server* and *Authentication* properties tabs. By default, the Server Properties page is displayed. View or edit the server parameters on this page.

Figure 5-1 CIFS General Server Parameters

CIFS

To manage a CIFS server, select a server where CIFS is installed.

Server:  

General Share Context

Server | Authentication | Start | Stop

Status: Running

CIFS Virtual Server Name:

WINS IP Address:

Comment:

OpLocks

Distributed File Services (DFS) Support

SMB Signature

Disabled

Mandatory

Optional

NOTE: For a virtual server, only CIFS Virtual Server Name and Comment are not inherited from the physical server. Hence only these parameters can be edited for CIFS on a shared pool server.

Table 5-1 CIFS Server Page Parameters

Parameter	Description
CIFS Virtual Server Name	The name of the server running CIFS services. The length can be a maximum of 15 characters. The default server name is the OES 2 Linux server name.
WINS IP Address	The address of the WINS server.
Comment	A comment associated with the name of the server running CIFS services. This comment is displayed when viewing details. The maximum length is 47 characters. IMPORTANT: You should use single-byte characters in comments. Double-byte characters are not supported.
OpLocks (Opportunistic Locking)	Improves file access performance. The option is disabled by default.
Distributed File Services (DFS) Support	This option allows Distributed File Services support in CIFS. The option is disabled by default.
SMB Signature	By default, this is set to <i>Optional</i> . Select <i>Mandatory</i> or <i>Optional</i> or <i>Disabled</i> . For details, see “Enabling and Disabling SMB Signing” on page 34 .

Enabling and Disabling SMB Signing

SMB signing supports message authentication, which prevents active message attacks. The authentication is provided by placing a digital signature into each SMB. The digital signature is then verified by both the client and the server. It can be set to mandatory or optional mode.

SMB signing should be turned off when domain authentication is configured.

To use SMB signing mode, both the client and the server should be enabled for SMB signing. Use either Optional or Mandatory modes to enable it.

Optional mode: If SMB signing is set to the optional mode (the default mode after enabling it by using console commands), it automatically detects whether or not individual clients have SMB signing enabled. If a client does not have SMB signing enabled, the server does not use SMB signing for client communication. If a client has SMB signing enabled, the server uses SMB signing for client communication.

Mandatory mode: If you set SMB signing to mandatory mode, all clients must have SMB signing enabled or they cannot connect to the server. If SMB signing is set as mandatory on the server, clients cannot establish sessions with the server unless they have SMB signing enabled.

Disable mode: You can disable SMB signing by setting SMB signing to disabled mode.

IMPORTANT: After enabling or disabling SMB signing, or changing the mode to optional or mandatory, clients must reconnect in order for changes to take effect. For example, if SMB signing is enabled on the server, SMB signing is not in effect for individual clients until each of those clients reconnects.

Setting CIFS General Authentication Parameters

On the General page, select *Authentication* to view or edit the CIFS authentication parameters. When a third party domain authentication is selected, SMB signing is disabled.

CIFS pass through authentication works in parity with NetWare.

Figure 5-2 CIFS Authentication Page Parameters

The screenshot shows the 'CIFS' configuration window. At the top, it says 'To manage a CIFS server, select a server where CIFS is installed.' Below this, the 'Server' field contains 'OESBOX.novell'. There are three tabs: 'General', 'Share', and 'Context', with 'General' selected. Underneath the tabs are links for 'Server', 'Authentication', 'Start', and 'Stop'. The 'Mode' section has two radio buttons: 'eDirectory (Local)' (selected) and 'Third Party Domain'. Below this, the 'Work Group / Domain Name' is set to 'OrangeGrp'. The 'LMCompatibilityLevel' dropdown menu is open, showing four options: 'Accept LM and NTLM responses' (selected), 'Accept LM and NTLM responses', 'Accept NTLM response/refuse LM response', and 'Accept NTLMv2 response/refuse LM and NTLM response'. The 'Primary Domain Controller' section has 'Name' and 'IP Address' fields, with '0.0.0.0' entered in the IP field. At the bottom, there are 'OK' and 'Cancel' buttons.

NOTE: For a virtual server, only CIFS Virtual Server Name and Comment are not inherited from the physical server. Hence only these parameters can be edited for CIFS on a shared pool server.

Table 5-2 CIFS Authentication Page Parameters

Parameters	Description
Mode	<p>Indicates the method of authentication used by CIFS. CIFS uses either eDirectory (local) or third-party Domain authentication mechanisms.</p> <ul style="list-style-type: none">♦ eDirectory (Local): Clients are members of a workgroup. The server running CIFS services performs the user authentication. The login credentials (username and password) on an OES 2 Linux server must match the login credentials used by the client users.♦ Third Party Domain: Clients are members of a domain. A Windows domain controller performs user authentication. The username and password on the domain controller must match the username and password used to log in to the Windows workstation. <p>IMPORTANT: If you change the modes from Local to Third Party Domain or from Third Party Domain to Local, restart the CIFS server for the changes to take effect.</p>
Work Group / Domain Name	<p>The workgroup or domain to which the server belongs. Domain is a third-party domain.</p>
Primary Domain Controller Name	<p>The name of the PDC server. This is needed if the PDC is on a different subnet. This option should be used only when there is a valid reason for overriding WINS or DNS. This field can be changed only if <i>Third Party Domain</i> is selected.</p>
Primary Domain Controller IP Address	<p>The PDC server's static IP address. This is needed if the PDC is on a different subnet. This option should be used only when there is a valid reason for overriding WINS or DNS. This field can be changed only if <i>Third Party Domain</i> is selected.</p> <p>IMPORTANT: If this is not a static address, the server running CIFS services cannot contact the PDC when PDC reboots and the address changes.</p>

Parameters	Description
LMCompatibilityLevel	<p>NTLMv2 is an authentication protocol that is cryptographically stronger than NTLMv1. NTLMv2 is not negotiated between the client and the server. The protocol does not determine the challenge or response algorithms, so it must be configured on both the client and the server by setting the LMCompatibilityLevel (the Windows registry key is at HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\LSA). Novell CIFS currently supports 0, 4, and 5 compatibility levels for NTLMv2.</p> <p>Select the appropriate LMCompatibilityLevel from the drop-down list.</p> <ul style="list-style-type: none"> ♦ Accept LM and NTLM responses (Default setting) - Level 0: The server or domain controller compares the client's responses against LM, NTLM, LMv2, and NTLMv2 responses. Any valid response is accepted. ♦ Accept NTLM response/refuse LM response (NTLM authentication) - Level 4: The server or domain controller accepts a valid LM, NTLM, LMv2, or NTLMv2 response. ♦ Accept NTLMv2 response /refuse LM and NTLM response (NTLMv2 required) - Level 5: The server or domain controller compares the client's responses, using only LMv2 and NTLMv2.

5.1.4 Managing CIFS Shares

The *Shares* tab on the default CIFS server page in iManager displays the CIFS share details. Use the Shares page to add a new share on the server to be specified as a sharepoint and to be accessible via the Network Neighborhood. NSS Volumes are added by default.

For information on starting iManager and accessing the CIFS server, see [Section 5.1.2, "Selecting a Server to Manage," on page 30](#).


To manage CIFS Shares from command line, see [Section 5.2.6, "Working with CIFS Shares," on page 45](#).

Figure 5-3 CIFS Shares Page Parameters

CIFS

To manage a CIFS server, select a server where CIFS is installed.

Server:  

General		Share	Context
Add...	Edit...	Remove	
<input type="checkbox"/>	Name 	Path	Comment
<input type="checkbox"/>	CVOL1	CVOL1	N55 Volume
<input type="checkbox"/>	CVOL2	CVOL2	N55 Volume

NOTE: If no shares are specified, all mounted volumes are displayed.

IMPORTANT: Double-byte characters are not supported in a Share name, Share path, or Comment.

Administrators can add, edit, and delete CIFS shares.

- ♦ [“Adding a New CIFS Share” on page 38](#)
- ♦ [“Editing a CIFS Share” on page 39](#)
- ♦ [“Removing a CIFS Share” on page 40](#)
- ♦ [“CIFS Share Parameters” on page 41](#)

Adding a New CIFS Share

Before adding a new share, ensure that your CIFS server is started and running. For details on how to start the server, see [Section 5.1.2, “Selecting a Server to Manage,” on page 30](#).

NOTE: There is a limitation on the number of shares a CIFS server can host. For most configurations this limit is between 300 to 500 shares.

- 1 On the default CIFS server page in iManager click the *Shares* tab, then click *Add*.
For information on starting iManager and accessing the CIFS server, see [Section 5.1.2, “Selecting a Server to Manage,” on page 30](#).


New Share



required = *

Share names can have up to 80 characters and contain characters A to Z, 0 to 9, _, !, @, #, \$, %, &, (,). Names cannot begin or end with the "_" (underscore) character or contain "__" (multiple underscores).

Share Name*:

Volume*: 

Path*:
(vol: or vol:\directorypath)

Comment:

2 Specify the *Share Name*, *Volume*, *Path*, and *Comment* for the new share. For details, see [Table 5-3 on page 41](#).

3 Click *OK* to save your changes.

On successful addition of a share, the following message is displayed.

 **Complete: Success**

The share, CIFSShare, was successfully created.

Editing a CIFS Share

Before editing a share, ensure that your CIFS server is started and running.

If you edit the default share name, a new share is created. However, the default share is still present with the same share name.

NOTE: All shares on a volume are removed on pool unmount.

For details on how to start the server, see [Section 5.1.2, "Selecting a Server to Manage," on page 30](#).

1 On the default CIFS server page in iManager click the *Shares* tab, then select a share from the list and click *Edit*, or click a particular share link to edit the share.

For information on starting iManager and accessing the CIFS server, see [Section 5.1.2, "Selecting a Server to Manage," on page 30](#).

Edit Share: VOL1



required = *

Share names can have up to 80 characters and contain characters A to Z, 0 to 9, _, !, @, #, \$, %, &, (,). Names cannot begin or end with the "_" (underscore) character or contain "__" (multiple underscores).

Share Name*:

Path*:

Modify

Comment:

OK

Cancel

- 2 Modify the *Share Name* or *Path* or *Comment* for the share. For details, see [Table 5-3 on page 41](#).
- 3 Click the *Modify* button to modify the *Volume* and *Path* on the pop-up screen. For details, see [Table 5-3 on page 41](#).

Modify Share Path

Volume*:

Path*:

(vol: or vol:\directorypath)

OK Cancel

- 4 Click *OK* twice to save your changes.

Removing a CIFS Share

Before deleting a share, ensure that your CIFS server is started and running. For information on starting iManager and accessing the CIFS server, see [Section 5.1.2, "Selecting a Server to Manage," on page 30](#).

- 1 On the default CIFS server page in iManager click the *Share* tab, then select one or more shares from the list, then click *Remove*.

On successful deletion of the share the following message is displayed.

 **Complete: Success**

The selected shares were successfully deleted.



2 Either click *OK* to return to the main page or click *Repeat Task* to delete more shares.

CIFS Share Parameters

Use this table information to create and edit CIFS shares.

Table 5-3 *Shares Page Parameters*

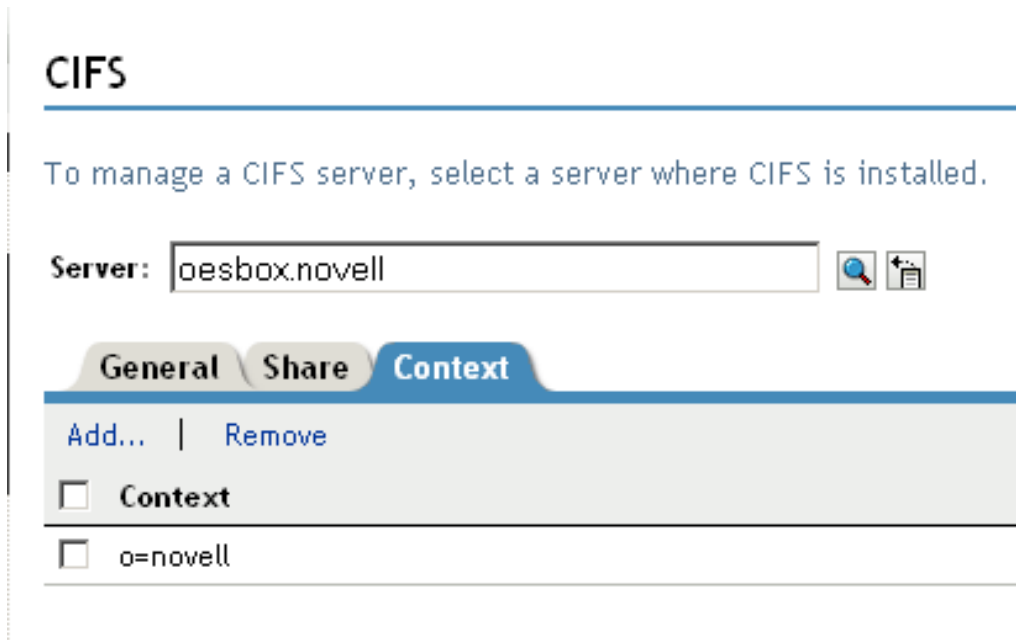
Parameter	Description
Name	<p>The name that the CIFS share uses for all the CIFS services and for display on Windows computers. For example, if you specify <code>Company Photos</code> as the share name associated with <code>vol1\graphics</code>, then Windows workstations browsing the network see <code>Company Photos</code> instead of <code>vol1\graphics</code>.</p> <p>A Share name can be up to 80 characters long and can contain any single-byte characters, but should not begin or end with an underscore <code>_</code> or contain multiple underscores <code>_</code>.</p>
Volume	The OES 2 volume name.
Path	<p>The CIFS share path. This is the path to the server volume or directory that becomes the root of the sharepoint. This path may contain single-byte and multi-byte characters.</p> <p>NOTE: Do not end the path with a backslash (<code>\</code>).</p>
Comment	A description for the sharepoint. The description appears in Network Neighborhood or My Network Places. The maximum length is 47 characters. Comment may contain single-byte and multi-byte characters.

5.1.5 Configuring a CIFS User Context

On the default CIFS server page in iManager click the *Context* tab to list, add, and delete the CIFS user contexts.

To configure a context search from the command line, see [Section 5.2.7, “Configuring the CIFS Context Search File,”](#) on page 45.

Figure 5-4 CIFS Context Page



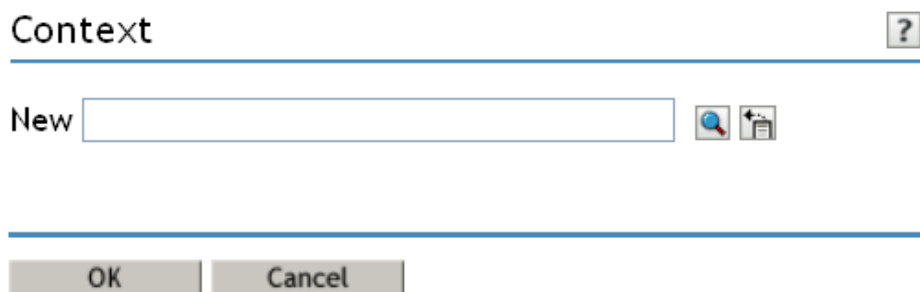
- [“Adding a New Context” on page 42](#)
- [“Removing a Context” on page 42](#)

Adding a New Context

Before adding a new context, ensure that your CIFS server is started and running. For details on how to start the server, see [Section 5.1.2, “Selecting a Server to Manage,” on page 30](#).

- 1 Click *Add* to add a new user context to CIFS.

Figure 5-5 Add New Context



- 2 Browse the Object Selector, select a context to add, then click *OK* to save.

Removing a Context

Before removing a context, ensure that your CIFS server is started and running. Select one or more contexts and click *Remove*.

5.1.6 Stopping CIFS

To stop a running CIFS server:

- 1 If the CIFS server status is *Running* on your screen, click *Stop* to stop the CIFS server.



The *Status* changes to *Stopped* and all the CIFS properties are dimmed on the screen.

5.2 Using the Command Line to Manage CIFS

Command line utilities are available to control the CIFS services. The main activities for CIFS services are described in this section. For information about specific CIFS commands, see [Appendix A, “Command Line Utility for CIFS,” on page 85](#) or enter `man novcifs` at the command prompt.

- [Section 5.2.1, “Starting CIFS,” on page 43](#)
- [Section 5.2.2, “Stopping CIFS,” on page 43](#)
- [Section 5.2.3, “Restarting CIFS,” on page 43](#)
- [Section 5.2.4, “Modifying the CIFS Configuration,” on page 44](#)
- [Section 5.2.5, “Anonymous Log In for CIFS,” on page 44](#)
- [Section 5.2.6, “Working with CIFS Shares,” on page 45](#)
- [Section 5.2.7, “Configuring the CIFS Context Search File,” on page 45](#)

5.2.1 Starting CIFS

Use the `rcnovell-cifs start` command to start CIFS.

NOTE: If a Samba server is running, CIFS does not start. To resolve this problem see [“CIFS Is Not Running With Samba” on page 72](#).

5.2.2 Stopping CIFS

Use the `rcnovell-cifs stop` command to stop CIFS.

5.2.3 Restarting CIFS

Use the `rcnovell-cifs restart` command to restart CIFS.

5.2.4 Modifying the CIFS Configuration

The configuration settings are taken directly from the CIFS iManager settings. The recommended method to modify CIFS configuration is using iManager. For details, see [Section 5.1.3, “Setting the CIFS Server and Authentication Properties,”](#) on page 32.

Use the following steps to edit the CIFS configuration from command line:

- 1 Use any text editor to open the `cifs.conf` file from `/etc/opt/novell/cifs/` directory.

IMPORTANT: It is recommended to not change the default settings in this file.

- 2 Use the following information to change the configuration:

- ♦ In the AUTHENT section, set the mode to either local or domain. Local is preferred. For example, `-AUTHENT local`.

IMPORTANT: A domain mode is a third-party domain. For this mode, a Windows domain controller performs user authentication. A local mode is an eDirectory mode. For this mode, the server running CIFS services performs the user authentication.

- ♦ In the COMMENT section, specify an appropriate user comment to associate with the sharepoint.
- ♦ In the DOMAIN / WORKGROUP section, set the domain to use.

IMPORTANT: For third-party domains, specify the domain name. For the local option, set the workgroup.

- ♦ Leave the OPLOCKS [yes/no] set to yes.
 - ♦ Leave the UNICODE [yes/no] set to yes.
 - ♦ In the -PDC [PDC_NAME] [PDC_IP_ADDR] section, specify the PDC name and IP address.
 - ♦ In the -WINS [WINS_IP_ADDR] section, specify the WINS IP address. Set this if the PDC and the server running CIFS are on different subnets.
 - ♦ In the -SUBNET [subnet] section, specify the subnet value, if required.
- 3 Restart the CIFS server by using the `rcnovell-cifs restart` command for the configuration changes to take effect.

5.2.5 Anonymous Log In for CIFS

Anonymous log in for CIFS can be used to map to the CIFS share without a username and password. The anonymous configuration is set at the server level and hence the anonymous login settings are effected on all CIFS shares on the server.

- ♦ [“Setting Anonymous Login”](#) on page 44
- ♦ [“Anonymous login in a Cluster Setup”](#) on page 45

Setting Anonymous Login

To set anonymous login, use the following command:

```
novcifs -e [yes/no]
```

The CIFS connections logged in as an anonymous user gets privileges on the NSS volumes assigned to the Public trustee. The Public trustee rights can be set on any folder in an NSS volume using Novell Client. For more information, see [Novell Client for Linux Documentation \(http://www.novell.com/documentation/linux_client\)](http://www.novell.com/documentation/linux_client)

If you don't have Novell Client installed, you can use iManager to add Public trustee rights. For more information, see “[Viewing, Adding, or Removing File System Trustees](#)” in the *OES 2 SP3: File Systems Management Guide*

Anonymous login in a Cluster Setup

In a cluster setup, anonymous login must be configured on every node and set to the same configuration level for consistent behavior across all shares.

This needs to be done for all the CIFS server parameters except for server name, server comment and shares.

WARNING: When you provide supervisor rights to public objects, it in turn allows access to all the secured folders. For security considerations, do not provide supervisor rights to the public objects as it allows access to all the secured folders.

5.2.6 Working with CIFS Shares

CIFS sharepoints can be added, removed, and displayed by using the command line interface or server console. CIFS shares cannot be added to virtual server object using command line (novcifs). If the shares are added on cluster resource using command line, then all the shares are lost if the resource leaves that node.

NOTE: Whenever a CIFS service is restarted on a node (node A) that hosts a cluster resource, the resource must be moved offline. It must then be available online or migrated to another node (node B), then brought back to the original node (node A) such that rebinding occurs.

You can view details about how CIFS shares are listed and configured by using any of the following commands at the server console or prompt:

To manage CIFS shares using iManager, see [Section 5.1.4, “Managing CIFS Shares,” on page 37](#).

To manage CIFS shares using console, see the following sections:

- ♦ “[Adding a New Sharepoint](#)” on page 86
- ♦ “[Removing a Sharepoint](#)” on page 86
- ♦ “[Displaying the List of Sharepoints](#)” on page 86
- ♦ “[Displaying the Specific Sharepoint Details](#)” on page 86
- ♦ “[Enabling or Disabling SMB Signing](#)” on page 86.

5.2.7 Configuring the CIFS Context Search File

The recommended method is to use iManager to configure the search context. For details, see [Section 5.1.5, “Configuring a CIFS User Context,” on page 41](#).

5.3 Locks Management for CIFS

Cross-Protocol locks help prevent the same file from being concurrently accessed for modifications. This option ensures that a file is updated correctly before another user, application, or process can access it.

- ♦ **Byte-Range Locking:** Two types of byte-range locking are used:
 - ♦ **Exclusive Lock:** The locked byte range is read/write for the holder of the lock and deny-all for all others. A write lock on a byte range is acquired by an application that intends to write data into that byte range, and does not want other applications to be able to read or write to the byte range while it is accessing that byte range. A write lock on a given byte range is exclusive. It is granted to only one requester at a time. A write lock denies other applications the ability to either read or write to the locked byte-range.
 - ♦ **Shared Lock:** Also called a non-exclusive byte-range lock. The locked byte range is read-only for the holder of the lock and deny-write for all others. A read lock on a byte range is normally acquired by an application that intends to read data from the byte range, and does not want other applications to be able to write to the byte range while it is performing the read operation. A read lock on a given byte range is sharable, which means it is granted to multiple requesters concurrently. However, it is incompatible with a concurrent write lock on the same byte range. A read lock denies other applications the ability to write to the locked byte range. In environments that implement advisory record locking rather than mandatory record locking, a read lock simply advises other applications that they should not write to the locked byte-range, even though they are technically able to do so.
- ♦ **Opportunistic Locking: Opportunistic Locking or Oplocks** improves file access performance and is enabled by default. Oplocks must be enabled on the server for Offline files to function correctly on Windows XP, Windows Vista, and Windows 7.

IMPORTANT: .If a file is opened with multiple protocols when the migration or failover begins, the file should be closed and reopened after the migration or failover to acquire cross-protocol locks on the new node.

For more information, see [“Using Novell Remote Manager for Linux to Configure Cross-Protocol Locks”](#) in the *OES 2 SP3: NCP Server for Linux Administration Guide*.

5.4 Third-Party Domain Authentication

For third-party domain authentication, the clients are members of a third-party domain such as Windows. A Windows domain controller performs the user authentication. The username and password on the domain controller must match the username and password used to log in to the Windows workstation.

Ensure that you understand and meet the following prerequisites before setting up third-party authentication:

- ♦ [Section 5.4.1, “Prerequisites,” on page 47](#)
- ♦ [Section 5.4.2, “Using iManager to Enable Third-Party Authentication,” on page 47](#)

5.4.1 Prerequisites

- ♦ [“Prerequisites for the Primary Domain Controller”](#) on page 47
- ♦ [“Prerequisites for the CIFS Server”](#) on page 47

Prerequisites for the Primary Domain Controller

- ♦ Ensure that the Primary Domain Controller (PDC) is up and reachable by using the NETBIOS name of the PDC from the CIFS server.

For example, WINPDC_W.
- ♦ Disable autodisconnect feature in PDC to avoid resetting connection from PDC to CIFS server by configuring timeout value to infinity i.e 65535. For more information, see [“How Autodisconnect Works in Windows NT and Windows 2000”](#).
- ♦ Disable SMB signing by following the instructions in [“Overview of Server Message Block Signing”](#) (<http://support.microsoft.com/kb/887429>)
- ♦ The desktop user or the user that has joined the domain must be same as the CIFS user.
- ♦ For Windows 2008 Server and later versions, apply the changes as per the [Microsoft Knowledge Base](#) article.

NOTE: The Windows client might be required to log in as the same user with the same password to access the CIFS shares when you are using third-party authentication.

Prerequisites for the CIFS Server

- ♦ Ensure that SMB signing is disabled on the CIFS server. For details, see [“Enabling and Disabling SMB Signing”](#) on page 34.

5.4.2 Using iManager to Enable Third-Party Authentication

- 1 In a Web browser, specify the following in the address (URL) field:

`http://server_IP_address/nps/iManager.html`

For example:

`http://192.168.0.1/nps/iManager.html`

- 2 At the login prompt, specify the server administrator username and password and click *Login*.

Login ?

Username:

(Ex: admin or admin.novell)

Password:

Tree:

(192.168.14.199, mytree, myserver.company.com)

Login

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For more information on iManager administration, see the [Novell iManager 2.7.4 Administration Guide](#).

- 3 In the iManager application left frame, click *File Protocols > CIFS*.

The default CIFS parameters page is displayed. Use this page to configure and manage CIFS.

CIFS

To manage a CIFS server, select a server where CIFS is installed.

Server:  

General Share Context

Server | Authentication | Start | Stop

Status: Running

CIFS Virtual Server Name:

WINS IP Address:

Comment:

OpLocks

Distributed File Services (DFS) Support

SMB Signature

Disabled

Mandatory

Optional

OK **Cancel**

- 4 Select the CIFS server you want to manage.
- 5 Select *General > Authentication*
- 6 Select *Third party Domain* as the mode of authentication.
- 7 Specify the *Work Group/Domain Name* of the Windows environment.
- 8 Specify the *LMCompatibility level*. For details, see [Table 5-2, “CIFS Authentication Page Parameters,”](#) on page 36.

- 9 Specify the name of the Primary Domain Controller. Ensure that the name does not exceed 15 characters.
- 10 Specify the IP address of the Primary Domain Controller.
- 11 Click *OK* to save the changes in the CIFS properties.

5.5 Dynamic Storage Technology for CIFS Server

Dynamic Storage Technology (DST) for Novell Open Enterprise Server (OES) 2 SP3 Linux is an information life-cycle management technology that uses a policy-based approach for relocating data between two Novell Storage Services (NSS) volumes located on different devices, and transparently provides a unified view of the file tree to users. You specify policies that classify data to be moved by its frequency of use, filename, file type, and file size. Policy enforcement is automated with scheduled and on-demand runs of the policies. DST allows you to seamlessly tier storage between high-performance and lower-performance devices.

For example, you can establish policies that keep frequently-used mission-critical data on high-performance devices, and move rarely accessed less-essential data to lower-performance devices. Backup can be performed separately on the two volumes, which allows for different backup schedules.

Dynamic Storage Technology enables you to manage data more efficiently for the enterprise and in doing so, the enterprise can potentially realize significant cost savings in storage management.

CIFS server for Linux provides the CIFS services for NSS volumes on Linux. Dynamic Storage Technology is a component of NCP Server.

Enabling DST: DST is automatically enabled when the shadow volume is added to the primary volume.

CIFS DST supports only NSS volumes being used as shadow volumes. If you plan to use DST, you need to install NSS when you install CIFS server and Dynamic Storage Technology. The NSS volumes must meet the [“Planning to Create DST Shadow Volumes”](#) in the *OES 2 SP3: Dynamic Storage Technology Administration Guide*.

DST for CIFS server that allows you to specify a shadow relationship between two volumes, which forms a shadow volume pair. The secondary directory tree structure, or shadow file tree, shadows the primary file tree. For more information, see [“Planning for DST Shadow Volumes and Policies”](#) in the *OES 2 SP3: Dynamic Storage Technology Administration Guide*.

DST presents a unified view to users of the subdirectory trees on each volume. The primary file tree and secondary file tree have the same directory structure so that each subdirectory appears in both locations as data is moved between the two volumes. The primary tree and the secondary tree are overlaid to create one virtual volume tree that is transparently presented to the users. The CIFS users are not aware of the actual physical location of the files. For more information, see [“Providing a Merged View for Users”](#) in the *OES 2 SP3: Dynamic Storage Technology Administration Guide*.

For more information about [“Configuring Global Policies for DST”](#) see the *OES 2 SP3: Dynamic Storage Technology Administration Guide*.

NOTE: A tech preview version of secondary NSS volumes on remote OES or NetWare server is now available with OES2 SP3 release.

5.6 DFS Junction Support in CIFS Linux

CIFS must be configured to support [DFS junctions](#). By default, DFS junction support is disabled. You must enable it on host (server that hosts the junction) and target (server that is pointed by the junction) servers in order for the junctions to work. The junctions that point to subdirectories are also supported with CIFS Linux.

- ♦ [Section 5.6.1, “Prerequisites,” on page 50](#)
- ♦ [Section 5.6.2, “Enabling DFS Support,” on page 50](#)
- ♦ [Section 5.6.3, “Limitations,” on page 51](#)
- ♦ [Section 5.6.4, “Problems Following DFS Junctions with CIFS in Windows 2000/XP Releases,” on page 51](#)

5.6.1 Prerequisites

- ♦ Unicode must be enabled.
- ♦ DFS must be enabled for CIFS on all the host and target servers.
- ♦ Both host and target CIFS servers must be running.
- ♦ The VLDB server must be running.

IMPORTANT: The CIFS clients accessing DFS junctions must be DFS aware. smbclient on Linux may not work appropriately in case of junctions as it is not DFS aware.

5.6.2 Enabling DFS Support

Use the instructions in this section to enable DFS junction support in CIFS Linux:

- 1 In iManager, click *File Protocols > CIFS*.
- 2 Browse to locate and select the server you want to manage.

Figure 5-6 Enabling DFS Support

CIFS

To manage a CIFS server, select a server where CIFS is installed.

Server:

General Share Context

Server | Authentication | Start | Stop

Status: Running

CIFS Virtual Server Name:

WINS IP Address:

Comment:

OpLocks

Distributed File Services (DFS) Support

SMB Signature

Disabled

Mandatory

Optional

- 3 Select the check box for *Distributed File Services (DFS) Support* to enable the DFS support in CIFS Linux.
- 4 Click OK.

5.6.3 Limitations

- ♦ Junctions in NetWare cannot point to volumes in Linux and vice versa, that is, junctions are not supported across platforms.
- ♦ DFS is available only if Unicode (UTF8 format) is enabled.
- ♦ Only CIFS shares are enabled with DFS support.

5.6.4 Problems Following DFS Junctions with CIFS in Windows 2000/XP Releases

Windows Unable to Resolve the NetBIOS Name of the CIFS Server

Clients using Windows 2000 Service Pack 4 and Windows XP Service Pack 2 might have problems following DFS junctions over CIFS because of a defect in Windows. (This problem exhibits itself in a pure Windows environment.) When using DFS with CIFS, the CIFS server and Windows clients are on different IP subnets. In this case, the client must have a way to resolve the CIFS server name in order for DFS to work. This is a Microsoft/CIFS requirement, not a CIFS Linux requirement.

NOTE: This problem does not affect Windows clients that use the Novell Client.

There are multiple ways the client can resolve the CIFS server name:

- ◆ Configure both the client and server for the same WINS server
- ◆ Configure both the client and server to use the same DNS server
- ◆ Modify the `hosts` file for all client computers with appropriate entries for any volumes on OES servers that use DFS junctions

To modify the `hosts` file on a client:

- 1 In a text editor, open the `hosts` file and modify the `hosts` file.
 - ◆ **Windows 2000:** `c:\WINNT\system32\drivers\etc\hosts`
 - ◆ **Windows XP:** `c:\windows\system32\drivers\etc\hosts`

If you do not have `hosts` file, create the file.

- 2 For all the host and target servers, add a line at the end of the file that identifies the IP address and NetBIOS name of the data server.

```
192.168.1.1    servername_W
```

Replace `192.168.1.1` with the actual IP address and `servername` with the name of your server.

IMPORTANT: Modifying the CIFS server name of the virtual server using iManager is not allowed. However, it is possible to modify the CIFS server name for a physical server.

We recommend that you do not modify the CIFS server name of the physical server that is the DFS target.

For example, suppose you have the following server:

- ◆ Server IP address: `10.10.1.1`. If the DFS target is a cluster resource, then mention `<Cluster IP address>` or `<Cluster Resource IP address>`
- ◆ Server name: `USERSVR`
- ◆ NetBIOS server name: `USERSVR_W`

If the target of the junction is a cluster resource, mention the `<Cluster IP address>` or `<Cluster Resource IP address>` and instead of server name, mention the cluster resource name.

The line you add to the `hosts` file is:

```
10.10.1.1    USERSVR_W
```

NOTE: The string length of the NetBIOS name should not exceed 15 chars. The hostname or the last 13 characters from the hostname, whichever is shorter is considered and appended with `_W` at the end to frame the standard NetBIOS name.

- 3 Save and close the `hosts` file.
- 4 If necessary, repeat [Step 1](#) to [Step 3](#) on each client computer, or create a `hosts` file and distribute it to the client machines.
- 5 On each client, map a network drive to the user's data volume.

Continuing the example above, the user could map to `\\10.10.1.1\VOL1` or to `\\USERSVR_W\VOL1`.

5a In the Windows Explorer file manager, click *Tools > Map Network Drive*.

5b In the *Folder* field, type one of the following:

```
\\192.168.1.1\volumename
```

```
\\servername_W\volumename
```

Replace `192.168.1.1` with the actual IP address or `servername` with the hostname of your server.

5c Select *Reconnect at Logon*.

5d Click *Finish*.

After Modifying the Junction Target, Accessing the Junction Still Leads to the Old Target

Windows does not prompt the server everytime to resolve the junction every time the junction is accessed. It prompts the server only for the first time and then caches it. When the junction is accessed the next time, Windows does not prompt CIFS server to resolve the junction but it makes use of the target location it received previously.

On restarting the Windows machine, if the same mapping is done, it points to correct location. Because there is no cached value, it prompts the CIFS server to provide the location of the target that the junction points to and gets the latest value from CIFS server.

5.7 Subtree Search

A subtree search or contextless login enables CIFS to search for a user in the entire base context of a tree. The subtree search setting that is saved in the `cifs.conf` file stays persistent even if the system or service is restarted.

- ♦ [Section 5.7.1, “Prerequisites,” on page 53](#)
- ♦ [Section 5.7.2, “Enabling a Subtree Search,” on page 53](#)
- ♦ [Section 5.7.3, “Subtree Search in a Cluster Setup,” on page 53](#)
- ♦ [Section 5.7.4, “Subtree Search Persistence,” on page 54](#)

5.7.1 Prerequisites

To use the subtree search feature, the CIFS proxy user should have read rights for the base context. These rights are assigned automatically from iManager when the context is added.

5.7.2 Enabling a Subtree Search

After you have finished installing CIFS, start the CIFS server and enable the subtree search by using the following command:

```
novcifs -y yes
```

To disable the subtree search, use the `novcifs -y no` command.

You can choose to enable or disable the subtree search before the user starts connecting to the CIFS server.

5.7.3 Subtree Search in a Cluster Setup

A subtree search can be configured only at a physical server or node level. In a cluster setup, each node should be configured with the same configuration level for consistent behavior.

NOTE: The time taken for the LDAP search to be completed depends on the WAN link and on the number of user replicas in the tree.

5.7.4 Subtree Search Persistence

The subtree search setting is saved in the `cifs.conf` file and is persistent even after the CIFS server or node is restarted.

5.8 Using Offline Files

Offline Files helps you be more productive. You can use this feature on a portable computer, or on a desktop computer that occasionally connects to your workplace network. For example, this feature is useful if you are working at home on a desktop computer, and need to automatically get files off the network whenever you connect.

The files that you select are automatically downloaded from shared folders on the network and stored on your computer. When you disconnect, the files are available to use. When you reconnect to the network, your changes are added to the files on the network in a process called synchronization. If someone else on the network made changes to the same file, you can save your version, keep the other version, or save both.

For more information on using offline files, see [Microsoft Support](#).

5.9 Directory Cache Management for CIFS Server

Table 5-4 Server Parameter Information for Directory Cache Management

Parameter Name and Description	Default Value	Value Options
MAXIMUM_CACHED_FILES_PER_SUBDIRECTORY Controls the maximum number of file entries that can be cached by the system for a given folder in the directory cache.	10240	Minimum is 512 files.
MAXIMUM_CACHED_FILES_PER_VOLUME Controls the maximum number of file entries that can be cached by the system for a given volume in the directory cache.	256000	Minimum is 2048 files.
MAXIMUM_LAZY_CLOSE_FILES Controls the maximum number of files' handles that can be lazy closed in the directory cache.	4096	16 to 64000
MAXIMUM_CACHED_SUBDIRECTORIES_PER_VOLUME Controls the maximum number of folder entries that can be cached by the system for a volume in the directory cache.	102400	4096

5.10 What's Next

To learn how to use CIFS services as an end user, continue with [Chapter 9, "Working with Client Computers,"](#) on page 67.

6 Migrating CIFS from NetWare to OES 2 SP3 Linux

The Open Enterprise Server (OES) 2 SP3 Migration Tool has a plug-in architecture that is made up of Linux command line utilities with a GUI wrapper. You can migrate CIFS from a NetWare server to an OES 2 SP3 Linux server either by using the GUI Migration Tool or from the command line. For more information on NetWare CIFS, see the [NM 6.5 SP8: AFP, CIFS, AND NFS \(NFAP\) Administration Guide](#).

To get started with migration, see the [OES 2 SP3: Migration Tool Administration Guide](#).

For more information on migrating CIFS, see “[Migrating CIFS from NetWare to OES 2 SP3 Linux](#)” in the [OES 2 SP3: Migration Tool Administration Guide](#).

To access the CIFS migration man page with command information, enter `man migCifs` at the command prompt. For details on `migCifs` command options, see “[Man Page for Migration](#)” in the [OES 2 SP3: Migration Tool Administration Guide](#).

7 Running CIFS in a Virtualized Environment

Novell CIFS runs in a virtualized environment just as it does on a physical NetWare server, or on a physical server running Open Enterprise Server (OES) 2 Linux, and requires no special configuration or other changes.

To get started with virtualization, see [Introduction to Xen Virtualization](#) in the *Virtualization with Xen* guide.

For information on setting up virtualized OES 2 Linux, see “[Installing, Upgrading, or Updating OES on a Xen-based VM](#)” in the *OES 2 SP3: Installation Guide* guide.

7.1 What’s Next

To learn more about what you can do with CIFS on OES 2 Linux, continue with [Chapter 5, “Administering the CIFS Server,”](#) on page 29.

8 Configuring CIFS with Novell Cluster Services for an NSS File System

Novell Cluster Services for Open Enterprise Server (OES) 2 Linux provides high availability, scalability, and security for your network while reducing administrative costs associated with managing client workstations.

This section describes how to set up Novell CIFS in a cluster so that Windows and Linux computers can use CIFS to access shared cluster resources on the network even when there is a server failure.

- ♦ [Section 8.1, “Benefits of Configuring CIFS for High Availability,” on page 61](#)
- ♦ [Section 8.2, “Cluster Terminology,” on page 61](#)
- ♦ [Section 8.3, “CIFS and Cluster Services,” on page 62](#)
- ♦ [Section 8.4, “Configuring CIFS in a Cluster,” on page 64](#)
- ♦ [Section 8.5, “What’s Next,” on page 66](#)

8.1 Benefits of Configuring CIFS for High Availability

With the OES 2 Linux cluster configured with CIFS protocols, users receive the following benefits of a clustered environment:

- ♦ Novell Cluster Services and Novell Storage Services (NSS), which are part of OES 2 Linux, combine with Novell CIFS to facilitate highly available CIFS access for users.
- ♦ Enabling and disabling CIFS for shared NSS pools has a single point of administration through the browser-based Novell iManager pool configuration or the console-based NSSMU.
- ♦ The cluster-enabled CIFS share is automatically mounted and dismounted when the shared NSS pool’s cluster resource is brought online and offline.
- ♦ The CIFS sessions of the users continue without interruption when the shared NSS pool is migrated or failed over to a different node in the cluster.

8.2 Cluster Terminology

The following terminology is used in this section when discussing the cluster environment:

- ♦ **Active node:** The cluster server that currently owns the cluster resource and responds to network requests made to shared volumes on that resource.
- ♦ **Passive node:** The cluster server that does not currently own the cluster resources but is available if the resource fails over or is migrated to it.
- ♦ **Active/Passive clustering:** The cluster includes active nodes and passive nodes. The passive nodes are used if an active node fails.

- ♦ **Virtual server:** A cluster-enabled pool and related services that appears to clients as a physical server but is not associated with a specific server in the cluster. This is the name of the virtual server as it appears to NCP, AFP, and Linux Samba clients.
- ♦ **CIFS virtual server:** A cluster-enabled pool and the Novell CIFS service that appear to CIFS clients as a physical server but are not associated with a specific server in the cluster. This is the name of the virtual server as it appears to CIFS clients.
- ♦ **Cluster Resource IP address:** Each cluster-enabled NSS pool requires its own static IP address. The IP address is used to provide access and failover capability to the cluster-enabled pool (virtual server). The IP address assigned to the pool remains assigned to the pool regardless of which server in the cluster it is active.
- ♦ **Load script:** A file that contains the cluster resource definition and commands that load services and load the NSS pool and its volumes for a given cluster resource. Load scripts are generated by default when you cluster-enable a pool, and are modified by using the Clusters plug-in for Novell Cluster Services.
- ♦ **Unload script:** A file that contains the cluster resource definition and commands that unload services and dismount the NSS pool and its volumes for a given cluster resource. Unload scripts are generated by default when you cluster-enable a pool, and are modified by using the Clusters plug-in for Novell Cluster Services.

8.3 CIFS and Cluster Services

Novell Cluster Services can be configured either during or after OES 2 SP3 installation. In a cluster, Novell CIFS for OES 2 SP3 Linux, is available only in ACTIVE/PASSIVE mode, which means that CIFS software runs on all nodes in the cluster. When a server fails, the cluster volumes that were mounted on the failed server fail over to that other node. The following sections give details about using Novell CIFS in a cluster environment:

- ♦ [Section 8.3.1, “Prerequisites,” on page 62](#)
- ♦ [Section 8.3.2, “Using CIFS in a Cluster Environment,” on page 63](#)

8.3.1 Prerequisites

Before setting up Novell CIFS in a cluster environment, ensure that you meet the following prerequisites:

- Novell Cluster Services installed on OES 2 Linux servers

For information on installing Novell Cluster Services, see [“Installing and Configuring Novell Cluster Services on OES 2 Linux”](#) in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.

For information on managing Novell Cluster Services, see [“Managing Clusters”](#) in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.

- Novell CIFS is installed on all the nodes in the cluster to provide high availability
- Follow the instructions in [“Installing and Configuring a CIFS Server through YaST” on page 21](#).

8.3.2 Using CIFS in a Cluster Environment

Keep in mind the following considerations when you prepare to use CIFS in a cluster.

- ◆ Novell CIFS is not cluster-aware and is not clustered by default. You must install and configure Novell CIFS on every node in the cluster where you plan to give users CIFS access to the shared cluster resource.
- ◆ Novell CIFS runs on all nodes in the cluster at any given time.
- ◆ Novell CIFS is started at boot time on each node in the cluster. A CIFS command is added to the load script and unload script for the shared cluster resource. This allows Novell CIFS to provide or not to provide access to the shared resource through Virtual server IP.

NOTE: In CIFS, all the nodes should have similar server configuration, such as contexts and authentication mode.

The following process indicates how CIFS is enabled and used in a cluster environment:

- 1. Creating Shared Pools:** To access the shared resources in the cluster environment through the CIFS protocol, you create the shared pools either by using the NSSMU utility or the iManager tool and selecting CIFS as an advertising protocol. For requirements and details about configuring shared NSS pools and volumes on Linux, see [“Configuring Cluster Resources for Shared NSS Pools and Volumes”](#) in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.
- 2. Creating a Virtual Server:** When you cluster-enable an NSS pool, an NCS:NCP Server object is created for the virtual server. This contains the virtual server IP address, the virtual server name, and a comment.
- 3. Creating a CIFS Virtual Server:** When you cluster-enable an NSS pool and enable that pool for CIFS by selecting CIFS as an advertising protocol, a virtual CIFS server is added to eDirectory. This is the name the CIFS clients use to access the virtual server.
- 4. Loading the CIFS Service:** When you enable CIFS for a shared NSS pool and when Novell CIFS is started at system boot, the following line is automatically added to the cluster load script for the pool's cluster resource:

```
novcifs --add --vserver=virtualserverFDN --ip-addr=virtualserverip
```

```
For example, novcifs --add '--vserver=".cn=CL_POOL_SERVER.o=novell.t=VALTREE."' --ip-addr=10.10.10.10
```

This command is executed when the cluster resource is brought online on an active node. You can view the load script for a cluster resource by using the Clusters plug-in for iManager. Do not manually modify the load script.

- 5. Unloading the CIFS Service:** When you CIFS-enable for a shared NSS pool, the following line is automatically added to the cluster unload script for the pool's cluster resource:

```
novcifs --remove --vserver=virtualserverFDN --ip-addr=virtualserverip
```

```
For example, novcifs --remove '--vserver=".cn=CL_POOL_SERVER.o=novell.t=VALTREE."' --ip-addr=10.10.10.10
```

This command is executed when the cluster resource is taken offline on a node. The virtual server is no longer bound to the Novell CIFS service on that node. You can view the unload script for a cluster resource by using the Clusters plug-in for iManager. Do not manually modify the unload script.

6. **CIFS Attributes for the Virtual Server:** When you CIFS-enable a shared NSS pool, the following CIFS attributes are added to the NCS:NCP Server object for the virtual server:
- ◆ `nfapCIFSServerName` (read access)
 - ◆ `nfapCIFSAttach` (read access)
 - ◆ `nfapCIFSComment` (read access)

The CIFS virtual server uses these attributes. The CIFS server proxy user must have default ACL access rights to these attributes, access rights to the virtual server, and be in the same context as the CIFS virtual server.

NOTE: If the CIFS server proxy user is in a different context, the cluster administrator should give access to these virtual server attributes for the proxy user.

8.4 Configuring CIFS in a Cluster

Perform the following tasks to configure or enable CIFS and make it available on a cluster environment:

- ◆ [Section 8.4.1, “Prerequisites,” on page 64](#)
- ◆ [Section 8.4.2, “Creating Shared Pools and Accessing Sharepoints,” on page 64](#)

8.4.1 Prerequisites

- ◆ The cluster environment is set up and ready
- ◆ All nodes in the cluster are installed and configured for CIFS
- ◆ All nodes in the cluster meet CIFS standalone server setup requirements and CIFS is running
- ◆ The shared disk is configured through iSCSI or SAN and is able to create shared pools

8.4.2 Creating Shared Pools and Accessing Sharepoints

You can configure, enable, and access the CIFS services by using iManager or by using NSSMU.

- ◆ [“Using iManager to Create the Pool” on page 64](#)
- ◆ [“Using NSSMU to Create the Pool” on page 65](#)

Using iManager to Create the Pool

- 1 Ensure that the [“Prerequisites” on page 64](#) are met.
- 2 Log in to iManager, then click *Storage > Pools*.
- 3 Under *Server*, specify the cluster object or browse and select it.
- 4 Click *New*.
- 5 Specify the pool name and click *Next*.
- 6 Select the shared disk and allocate the pool size with a value of 0, then click *Next*.

New Pool
?

Cluster Information

New Pool: **P2**

Shared Pool Clustering Parameters:

Virtual Server Name:

CIFS Virtual Server Name:

IP Address:

Advertising Protocols:

NCP

CIFS

AFP

<< Back
Finish
Cancel

- 7 Specify an *IP address*, ensure that you select *CIFS* under *Advertising Protocols*, then click *Finish*.
- 8 Use the `cluster status` command to verify that the created pool server is running.
For details, see “[Console Commands for Novell Cluster Services](#)” in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.
- 9 Create volumes in the shared pools.
For details, see “[Configuring Cluster Resources for Shared NSS Pools and Volumes](#)” in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.
- 10 Create sharepoints on the volume created on the shared NSS Pool. Use the same procedure that you used to configure standalone CIFS server.
For details, see [Section 5.1, “Using iManager to Manage CIFS,” on page 29](#), but ensure that you select only the virtual or pool server as the OES 2 server.
- 11 Access the sharepoints from a client workstation through the virtual server IP address or virtual server (NetBIOS) name.

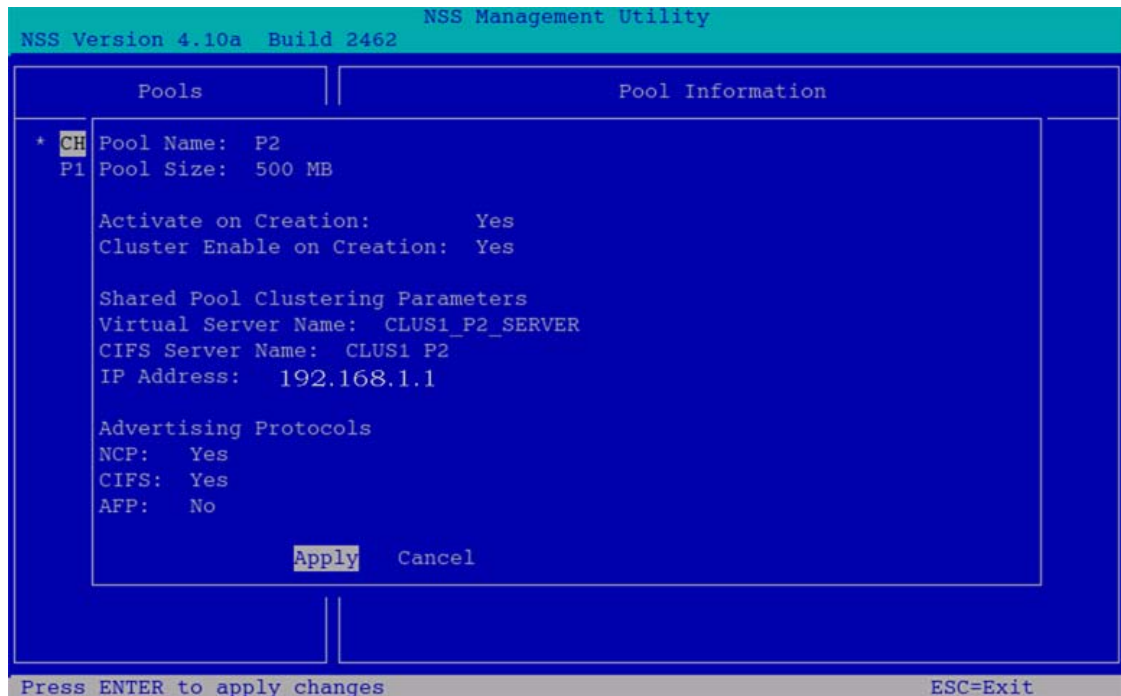
For details on creating pools by using iManager, see [Creating a Cluster-Enabled Pool and Volume with iManager](#) in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux* or *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.

NOTE: If the cluster object is created in a container that is in a different subtree than the one in which the nodes are present or is at a higher level than where nodes are present, then the CIFS proxy user must be manually added to the trustee list of cluster server object and required rights must be assigned to it along with the inherited rights.

Using NSSMU to Create the Pool

- 1 Ensure that the “[Prerequisites](#)” on [page 64](#) are met.
- 2 Start NSSMU from the server console of a cluster server.
- 3 Select pools from the NSSMU main menu.

- 4 Select the device where you want the pool to be created.
- 5 Specify the pool name and virtual server's or pool server's IP address.
- 6 Select *Yes* for CIFS under *Advertising Protocols*.



- 7 Select *Apply* and press Enter.
- 8 Use the `cluster status` command to verify that the created pool server is running.
For details, see [“Console Commands for Novell Cluster Services”](#) in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.
- 9 Create volumes in the shared pools.
For details, see [“Configuring Cluster Resources for Shared NSS Pools and Volumes”](#) in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.
- 10 Create sharepoints, provide access rights, and assign password policies for the CIFS virtual server or pool server. Use the same procedure that you used to configure standalone CIFS server.
For details, see [Section 5.1, “Using iManager to Manage CIFS,”](#) on page 29, but ensure that you select only the virtual or pool server as the OES 2 server.
- 11 Access the sharepoints from a client workstation through the virtual server IP address or virtual server (NetBIOS) name.

For details on creating pools by using NSSMU, see [Creating a Cluster-Enabled Pool and Volume with NSSMU](#) in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.

8.5 What's Next

For information about managing the CIFS services by using iManager or the command line interface, see [Chapter 5, “Administering the CIFS Server,”](#) on page 29.

For an explanation of how end users access network files from different workstations by using CIFS, see [Chapter 9, “Working with Client Computers,”](#) on page 67.

9 Working with Client Computers

If CIFS is properly configured, the users on your network can perform the following tasks:

- ♦ [Section 9.1, “Accessing Files from a Client Computer,” on page 67](#)
- ♦ [Section 9.2, “Mapping Drives and Mounting Volumes,” on page 69](#)

9.1 Accessing Files from a Client Computer

You can access files and folders hosted on CIFS server from Windows (XP, Vista, Win7) or Linux clients. Use one of the following methods to access the CIFS server from your clients:

- ♦ [Section 9.1.1, “Accessing Files from a Windows Client,” on page 67](#)
- ♦ [Section 9.1.2, “Accessing Files from a Linux Desktop,” on page 68](#)

9.1.1 Accessing Files from a Windows Client

- ♦ [“Prerequisite” on page 67](#)
- ♦ [“Procedure to Access Files” on page 67](#)

Prerequisite

Accessing files from a Windows computer requires NetBIOS over TCP/IP to be enabled on the Windows computer. If you have disabled NetBIOS over TCP/IP, you will not be able to access files and directories through CIFS.

IMPORTANT: The *Search* option in Win7 mapped drive does not work as designed. You will see windows client searching for some time. However, it is not searching but the client is waiting for the server's response.

Procedure to Access Files

- 1 Specify your username (no context) and local password to log in to the computer.
- 2 Access the network by clicking the network icon.
In Windows 2000 and XP, click *My Network Places*. In Vista and Win 7, click *Network*.
- 3 Browse to the workgroup or domain specified during the CIFS software installation.
- 4 Select the server running CIFS.

Although it is the same computer, the CIFS server name is not the same as the Open Enterprise Server (OES) 2 Linux server name. For more information, ask your network administrator.

TIP: You can specify the server name or the server IP address in *Find Computer* to quickly access the server running CIFS software.

- 5 Browse to the desired folder or file.

NOTE: Windows users can also be managed through a Windows Domain Controller.

9.1.2 Accessing Files from a Linux Desktop

You can access files either by using an IP address or a NETBIOS name. If your Linux client is a SUSE Linux Enterprise Desktop (SLED) desktop, you can also use nautilus to access the files.:

- ♦ [“Using an IP Address to Access Files” on page 68](#)
- ♦ [“Using a NETBIOS Name to Access Files” on page 68](#)
- ♦ [“Using nautilus to Access Files” on page 68](#)

Using an IP Address to Access Files

- 1 Run this command from the command prompt:

```
smbclient://<SERVER_IP_ADDRESS>/<VOLUME_NAME or SHARE_NAME> -U<user_name> -p 139
```

- 2 Enter the password when prompted.

For example,

```
trml-prompt:~ # smbclient //192.168.103.158/V1 -Uari -p 139
session request to 192.168.103.158 failed (Called name not present)
session request to 192 failed (Called name not present)
Password: (enter password here)
OS=[SUSE LINUX 10.1SUSE LINUX 10.1WORKGROUP] Server=[]
smb: \>
```

Using a NETBIOS Name to Access Files

- 1 Run this command from the command prompt:

```
smb://<SERVER_NAME>/<VOLUME_NAME or SHARE_NAME> -U<user_name> -p 139
```

- 2 Enter the password when prompted.

Using nautilus to Access Files

- 1 Run this command from the nautilus address bar:

```
smb://<SERVER_IP_ADDRESS>/<VOLUME_NAME or SHARE_NAME>
```

- 2 Enter the username and password when prompted.

9.2 Mapping Drives and Mounting Volumes

You can map drives for accessing the CIFS share names from a Windows, Windows Vista, or Windows 7 client and mount the volumes from a Linux client.

- ♦ [Section 9.2.1, “Mapping Drives from a Windows 2000 or XP Client,” on page 69](#)
- ♦ [Section 9.2.2, “Mapping Files from a Windows Vista Client,” on page 69](#)
- ♦ [Section 9.2.3, “Mounting Volumes from a Linux Client,” on page 69](#)

9.2.1 Mapping Drives from a Windows 2000 or XP Client

From a Windows 2000 or XP client computer, you can map drives and create shortcuts that are retained after rebooting.

- 1 Right click on the *My Computer* icon.
- 2 Click *Map Network Drive*.

There are several ways to access *Map Network Drive*. For example, you can use the *Tools* menu in Windows Explorer or you can right-click *Network Neighborhood*.

- 3 Browse to or specify the following path:

```
\\server_running_Novell_CIFS\<sharepoint | volume> \ directory
```

- 4 Select the server running CIFS.

Although it is the same computer, the CIFS server name is not the same as the OES 2 Linux server name. For more information, contact your network administrator.

- 5 Specify the user name and password to login.
- 6 Click *OK* to proceed.

9.2.2 Mapping Files from a Windows Vista Client

- 1 From the Windows explorer, either right click on the *Computer* icon, from the left-pane or go to the *Tools* menu.
- 2 Select *Map Network Drive*.
- 3 Specify a *Drive* to map.
- 4 Specify a path or Browse to the desired folder to map to the Drive. In this case, a CIFS share name, for example `\\server_running_Novell_CIFS\<sharepoint | volume> \ directory`.
- 5 Click *Connect using a different user name* link.
- 6 Specify the user name and password to login.
- 7 Click *OK* to proceed.

9.2.3 Mounting Volumes from a Linux Client

- 1 Login as a root administrator.
- 2 From your console, enter one of the three commands:

- ♦ `smbmount`

```
smbmount //<ip_address>/<share_name> <mount_point> -  
username=<username>,password=<password>
```

or

- ◆ `mount -t smbfs`

NOTE: It is not recommended to use smbfs to mount CIFS shares.

or

- ◆ `mount -t cifs`

For example, `mount -t cifs - ousername=<username>,password=<password> //
<ip_address>/<share_name> <mount_point>`

10 Troubleshooting CIFS

- ♦ [Section 10.1, “Known issues,” on page 71](#)
- ♦ [Section 10.2, “CIFS Installation and Configuration Issues,” on page 71](#)
- ♦ [Section 10.3, “CIFS Log In Issues,” on page 72](#)
- ♦ [Section 10.4, “CIFS Loading Issues,” on page 73](#)
- ♦ [Section 10.5, “CIFS Migration Issues,” on page 74](#)
- ♦ [Section 10.6, “CIFS General Issues,” on page 74](#)

10.1 Known issues

- ♦ The usage process for mapping in OES2 SP1 is by using mapped network drives only.
Mapping from explorer or accessing the server from network neighbourhood will not work as desired.
- ♦ In OES2 SP1, mapping from network drive using modified CIFS virtual server name fails.
- ♦ In OES2 SP1, admin and _admin shares are still visible on mapping from Windows 7 client as a non-admin user with server IP address.
- ♦ In OES2 SP3, on a Windows 7 client, opening MS Office 2007 SP2 files throws a read only error randomly. This is a rare occurrence. Close and reopen the file till it opens in an editable mode.
- ♦ After renaming an NSS volume, both the old and new name of the volumes get listed as shares in CIFS iManager.

Workaround: Administrator must delete the share for the old volume manually.

Novell plans to address this issue in a future OES release.

10.2 CIFS Installation and Configuration Issues

- ♦ [Section 10.2.1, “CIFS is Not Coming Up After Installation,” on page 71](#)
- ♦ [Section 10.2.2, “CIFS Stops After Installation and Throws an Error 669, “schema not extended”,” on page 72](#)
- ♦ [Section 10.2.3, “CIFS Is Not Running With Samba,” on page 72](#)
- ♦ [Section 10.2.4, “CIFS Server Broadcasts the Browser Packets every Twelve Minutes,” on page 72](#)

10.2.1 CIFS is Not Coming Up After Installation

Description: CIFS status is listed as stopped after a successful installation.

Cause: CIFS may be installed as standalone after installing Open Enterprise Server (OES) 2 SP3 Linux.

Action: Restart the OES 2 SP3 server for the installation and configuration settings to take effect.

If this step does not bring up the CIFS server, refer [TID 7009704 \(http://www.novell.com/support/php/search.do?cmd=displayKC&docType=kc&externalId=7009704&sliceId=2&docTypeID=DT_TID_1_1&dialogID=278237151&stateId=0%20%20278233639\)](http://www.novell.com/support/php/search.do?cmd=displayKC&docType=kc&externalId=7009704&sliceId=2&docTypeID=DT_TID_1_1&dialogID=278237151&stateId=0%20%20278233639) for details on resolving this issue.

10.2.2 CIFS Stops After Installation and Throws an Error 669, “*schema not extended*”

Cause: Proxy user credentials in the credential store (file/CASA) are not stored correctly.

Action: Reconfigure CIFS proxy user.

10.2.3 CIFS Is Not Running With Samba

Description: CIFS server does not come up if the Samba server is running.

Cause: CIFS cannot coexist with samba daemons.

Action: Login to the OES Linux Server as root. Use the following commands to stop the Samba daemons and restart the CIFS server.

- ◆ `rcsmb stop`
- ◆ `rcnmb stop`
- ◆ `rcnovell-cifs start`

10.2.4 CIFS Server Broadcasts the Browser Packets every Twelve Minutes

Cause: It is designed to broadcast every twelve minutes.

Action: An entry with the NetBIOS Name and the respective server IP address in LMHOSTS file must be present on Windows client machine or WINS should be configured for both the server and the client.

10.3 CIFS Log In Issues

- ◆ [Section 10.3.1, “CIFS Does Not Log In and Throws “Password has expired” Error in the Log File,” on page 72](#)
- ◆ [Section 10.3.2, “Enabling the Subtree Search After an Upgrade Results in an Authentication Failure,” on page 73](#)

10.3.1 CIFS Does Not Log In and Throws “Password has expired” Error in the Log File

Error: Password has expired.

Cause: Password expiry is set for security purposes. The password has expired.

Action: Reset the password and try to log in again.

10.3.2 Enabling the Subtree Search After an Upgrade Results in an Authentication Failure

Error: Authentication Failure.

Cause: While enabling subtree search after an upgrade (using `novcifs -y` yes option), the container level rights are not assigned by default to the proxy user. Due to this user authentication fails after the upgrade.

Action: To resolve this issue, reconfigure cifs using the `yast2 novell-cifs` or add the contexts using iManager to the `cifsctxs.conf` file. This way the cifs proxy user gets the required rights over these contexts and authentication will be successful.

10.4 CIFS Loading Issues

- ◆ [Section 10.4.1, “CIFS Is Not Starting,” on page 73](#)
- ◆ [Section 10.4.2, “Newly Created NSS Volumes Are Not Being Shared in CIFS,” on page 73](#)

10.4.1 CIFS Is Not Starting

Cause: The proxy user password was changed in eDirectory by using iManager or command line interface.

Action: Reconfigure the CIFS services through YaST. Use the same proxy user and the changed password or create a new proxy user.

- 1 Launch *YaST* on the OES 2 Linux Server.
- 2 Open the *Novell CIFS Service Configuration* screen.
- 3 Change the password in the *CIFS Proxy User Password* field.

NOTE: Specify a password that adheres to the password policy restrictions.

- 4 Retype the password in the *Verify CIFS Proxy User Password* field.
- 5 Click *Next* and continue with the remaining configuration steps in [Section 4.2, “Installing and Configuring a CIFS Server through YaST,” on page 21.](#)

10.4.2 Newly Created NSS Volumes Are Not Being Shared in CIFS

Description: When a new volume is created in a cluster/non-cluster environment, the dynamic detection of the NSS share does not happen.

Cause: eDirectory server might be restarted without restarting CIFS.

Action: Restart the CIFS service whenever eDirectory service is restarted.

Or

Description: Cluster resource gets into comatose mode when migrating the cluster resource.

Error: 22101. An invalid path.

Cause: eDirectory server might be restarted without restarting CIFS.

Action: Restart the CIFS service whenever eDirectory service is restarted.

Or

Description: Trustee updation not working in CIFS.

Error: Users are unable to access data for which they have access.

Cause: eDirectory server might be restarted without restarting CIFS.

Action: Restart the CIFS service whenever eDirectory service is restarted.

10.5 CIFS Migration Issues

- ♦ [Section 10.5.1, “After Migration, CIFS is Not Running,” on page 74](#)
- ♦ [Section 10.5.2, “Different Tree Migration Is Not Available in the Migration Tool,” on page 74](#)

10.5.1 After Migration, CIFS is Not Running

Description: Migration is complete. However, CIFS is not running.

Cause: Configuration settings are not updated on the OES2 SP3 server.

Action: Restart OES2 SP3 server on the target server for migration to be effective.

10.5.2 Different Tree Migration Is Not Available in the Migration Tool

Description: The Different Tree scenario is not supported in the Migration Tool.

Action: Use the following workaround:

- 1 Migrate the File System from the source server to the target server, using the Different Tree scenario.
For detailed information see, Migrating Data to a Server in a Different Tree in the [OES 2 SP3: Migration Tool Administration Guide](#).
- 2 Reconfigure CIFS by using YaST on the target server.
For detailed YaST configuration steps, see [Section 4.2, “Installing and Configuring a CIFS Server through YaST,” on page 21](#).

10.6 CIFS General Issues

- ♦ [Section 10.6.1, “Junction Target Changes Require DFSUTIL Command Execution to Clear the Cache,” on page 75](#)
- ♦ [Section 10.6.2, “Unable to Access DFS Junctions on a Novell CIFS Share from Windows Client,” on page 75](#)
- ♦ [Section 10.6.3, “The Mac Client does not Display a Complete List of Available Shares,” on page 75](#)

10.6.1 Junction Target Changes Require DFSUTIL Command Execution to Clear the Cache

Cause: The Windows client caches junction locations when it starts. If you modify the junction target location, the client continues to point to the old junction target path.

Action: To refresh the Windows environment, do the following:

- 1 Download the DFSUTIL utility from the Microsoft download site.
- 2 Disconnect from the mapped drive and clear the cache using the following DFSUTIL commands:

```
DFSUTIL /PKTFLUSH  
DFSUTIL /SPCFLUSH
```

- 3 Map to the drive again.

10.6.2 Unable to Access DFS Junctions on a Novell CIFS Share from Windows Client

Cause: The Windows client and the Novell CIFS server might be on a different subnet.

Action: Add an entry with the CIFS server IP address and the NetBIOS name at
C:\WINDOWS\system32\drivers\etc\hosts.

10.6.3 The Mac Client does not Display a Complete List of Available Shares

Cause: The CIFS server allows the Mac clients to map shares that have sharenames exceeding 12 chars, however, the CIFS server does not respond to the NetShareEnum request if the client uses a older version of NetShareEnum verb to get the list of all available shares.

Though the LANMAN protocol authenticates the trustees of the share, it will not list the share if the sharename exceeds 12 characters.

Action: It is recommended to specify the share name less than or equal to 12 characters.

11 Security Guidelines for CIFS

You can use several protection mechanisms to counteract potential security vulnerabilities for CIFS on Open Enterprise Server (OES) 2 Linux.

NOTE: The CIFS log file is located at `/var/opt/novell/log/cifs.log`.

- ♦ [Section 11.1, “Using Credentials,” on page 77](#)
- ♦ [Section 11.2, “Using CASA,” on page 77](#)
- ♦ [Section 11.3, “Using VPN Connections,” on page 77](#)
- ♦ [Section 11.4, “Using SMB Signing,” on page 77](#)
- ♦ [Section 11.5, “Other Security Considerations,” on page 78](#)

11.1 Using Credentials

When you set the password for the CIFS proxy user during YaST configuration, make sure you choose a password according to password policy restrictions. Choose a password that has combination of alphanumeric characters, capital letters, small letters, and adheres to the password policy restrictions.

11.2 Using CASA

Select CASA as the secret store during YaST configuration of CIFS.

11.3 Using VPN Connections

Use VPN or other secure connections while accessing confidential CIFS shares through the Internet, because CIFS packets are not encrypted.

11.4 Using SMB Signing

For a secure connection, set the SMB signing option to *optional* in iManager. For details on how to set it, see [“Enabling and Disabling SMB Signing” on page 34](#).

11.5 Other Security Considerations

OES 2 Linux provides Universal Password security. For details, see [Security Considerations \(http://www.novell.com/documentation/password_management32/pwm_administration/?page=/documentation/password_management32/pwm_administration/data/bc11ish.html\)](http://www.novell.com/documentation/password_management32/pwm_administration/?page=/documentation/password_management32/pwm_administration/data/bc11ish.html) in the *Novell Password Management Administration Guide* (http://www.novell.com/documentation/password_management32/pwm_administration/data/bwjorxp.html).

12 Tuning the Parameters and Settings for a File Server Stack

Following are the list of settings or parameters that can have an impact on the performance of the file server while accessing the data hosted on NSS volumes.

- ♦ [Section 12.1, “eDirectory,” on page 79](#)
- ♦ [Section 12.2, “NSS,” on page 80](#)
- ♦ [Section 12.3, “CIFS,” on page 81](#)
- ♦ [Section 12.4, “NCP,” on page 83](#)

12.1 eDirectory

- ♦ [Section 12.1.1, “FLAIM Database,” on page 79](#)
- ♦ [Section 12.1.2, “Thread Pool,” on page 79](#)

12.1.1 FLAIM Database

eDirectory uses FLAIM (Flexible Adaptable Information Manager) as its database. It is used for traditional, volatile, and complex information. It is a highly scalable database engine that supports multiple readers and single writer concurrency model.

Physically, FLAIM organizes data in blocks. Some of the blocks are typically held in memory and they represent the block cache. The entry cache, at times called a record cache, caches logical entries from the database. Entries are constructed from the items in the block cache. FLAIM maintains hash tables for both caches. The hash bucket size is periodically adjusted based on the number of items.

By default eDirectory uses a block of 4 KB. The block cache size for caching the complete DIB is equal to the DIB size, and the size required for the entry cache is about two to four times the DIB size.

12.1.2 Thread Pool

eDirectory is multithreaded for performance reasons. In multithreading, when the system is busy, more threads are created to handle the load, and some threads are terminated to avoid extra overhead. Not every module uses the thread pool. The actual number of threads for the process is more than the number that exists in the thread pool. For example, FLAIM manages its background threads separately.

Use `ndstrace -c threads` command to know the thread pool statistics.

Here’s an example of a sample thread pool.

```
Summary      : Spawned 71, Died 24
Pool Workers : Idle 14, Total 47, Peak 52
Ready Work   : Current 1, Peak 12, maxWait 592363 us
Sched delay  : Min 23 us, Max 1004764 us, Avg: 5994 us
Waiting Work : Current 15, Peak 20
```

Here are some thread pool parameters:

- ♦ `n4u.server.max-threads`: Maximum number of threads that can be available in the pool.
- ♦ `n4u.server.idle-threads`: Maximum number of idle threads that can be available in the pool.
- ♦ `n4u.server.start-threads`: Number of threads started.

Run the `ndsconfig get` and `ndsconfig set` commands to get and set the thread pool size respectively.

Usually the default settings work for around 3000 to 4000 user connections unless the eDirectory is busy with some other background processing of maintenance events, like creating external references for a user object that is in a remote eDirectory replica. It is recommended to have servers having the eDirectory replicas to be reachable over fast links from the servers hosting the CIFS server.

Customers should monitor the output of `ndstrace -c` to see how many threads they are using. If they hit the total threads to *max-threads* value constantly, then they should consider changing the max value to a higher number. We usually recommend the eDirectory customers not to go beyond 512, but in some OES environments, we have it set to more than that as well.

To determine what factors could affect the performance of your eDirectory, see FLAIM Database and Thread Pool in the Novell eDirectory 8.8 SP6 Tuning Guide for UNIX* Platforms. These sections contain information on how to tune the FLAIM database and Thread pool in order to get the optimum performance. You can find the eDirectory 8.8 SP6 guide under Previous Releases on the eDirectory 8.8 SP7 (https://www.netiq.com/documentation/edir88/pdfdoc/edir88_sp6.zip) documentation page.

12.2 NSS

- ♦ [Section 12.2.1, “IDCacheSize,” on page 80](#)
- ♦ [Section 12.2.2, “Minimum Buffer Cache,” on page 81](#)
- ♦ [Section 12.2.3, “Setting the Name Cache Size,” on page 81](#)

Execute the following commands at the `nsscon` console prompt. To start the `nsscon` console, do the following:

- 1 As a root user, open a terminal console.
- 2 At the console prompt, enter `nsscon`.

12.2.1 IDCacheSize

```
nss /IDCacheSize=value
```

This sets the maximum number of entries for NSS GUID to ID and ID to GUID cache.

For example, `nss /IDCacheSize = 256000`

Default: 16384

Range: 16384 to 524288

Recommendation: The recommendation is to set the `IDCacheSize` to the corresponding number of users accessing the file system. For example, if the user home directories are around 4000, then it is recommended to set the `IDCacheSize` to 4000.

12.2.2 Minimum Buffer Cache

To set the Minimum Number of Cache Buffers to use for the kernel memory:

```
nss /MinBufferCacheSize=value
```

where `value` is the number of 4 KB buffers.

The default value is 30000. The maximum setting is the amount of memory in KB divided by 4 KB. For a 32-bit machine, the maximum setting is 250000 buffers.

12.2.3 Setting the Name Cache Size

The NSS Name Cache is responsible for caching the Name Tree information. This is the information that is read when you perform any kind of search by file or directory name. The Name Cache maps a name to a ZID (a unique file object ID). Directory listings do not do this as much as normal file opens that must resolve each name in the file path.

Use the `NameCacheSize` parameter to specify the amount of recently used Name Tree entries for files and directories that NSS caches. Each entry uses about 150 bytes of memory. Increasing the maximum number of Name Cache entries does not necessarily improve the performance for getting directory listing information. This happens because NSS looks up information about the file from a tree or structure outside of the name tree.

If you want to see how your name cache is performing, use the `nsscon /NameCacheStats` command in the shell prompt.

```
nsscon /NameCacheSize=<value>
```

If you are already inside NSSCON console prompt, use `/NameCacheSize=<value>` or `nss /NameCacheSize=<value>`.

Specify the maximum number of recently used Name Tree entries for files and directories to cache. Name cache grows up to the specified limit. Unlike the file system cache, it does not take the maximum amount of memory allocated from the start.

Default: 100000

Range: 17 to 1000000

Apart from the above parameters, for more information on tuning NSS performance on Linux, see [Tuning Cache Buffers for NSS](#) and [Configuring or Tuning Group I/O](#) in the *OES 2 SP3: NSS File System Administration Guide for Linux*.

12.3 CIFS

- ♦ [Section 12.3.1, “Maximum Cached Subdirectories Per Volume,”](#) on page 82
- ♦ [Section 12.3.2, “Maximum Cached Files Per Subdirectory,”](#) on page 82
- ♦ [Section 12.3.3, “Maximum Cached Files Per Volume,”](#) on page 82
- ♦ [Section 12.3.4, “Subtree Search,”](#) on page 82
- ♦ [Section 12.3.5, “Information and Debug Logs,”](#) on page 83

- [Section 12.3.6, “Oplocks,” on page 83](#)
- [Section 12.3.7, “Cross Protocol Locks,” on page 83](#)
- [Section 12.3.8, “SMB Signing,” on page 83](#)

12.3.1 Maximum Cached Subdirectories Per Volume

This controls the maximum number of folder entries that can be cached by the CIFS server for a volume in the directory cache. The default value is 102400.

Use the following command to set the Maximum Cached Subdirectories Per Volume.

```
novcifs -k SDIRCACHE = <value for the Maximum Cached Subdirectories Per Volume>
```

12.3.2 Maximum Cached Files Per Subdirectory

This controls the maximum number of file entries that can be cached by the CIFS server for a given folder in the directory cache. The default value is 10240.

Use the following command to set the Maximum Cached Files Per Subdirectory.

```
novcifs -k DIRCACHE = <value for the Maximum Cached Files Per Subdirectory>
```

12.3.3 Maximum Cached Files Per Volume

This controls the maximum number of file entries that can be cached by the CIFS server for a given volume in the directory cache. The default value is 256000.

Use the following command to set the Maximum Cached Files Per Volume.

```
novcifs -k FILECACHE = <value for the Maximum Cached Files Per Volume>
```

NOTE: The above filecache size determines how many files or folders can be opened at a time. Although the total number of files and folders residing in a volume might be substantially larger than this number. This settings caches only the file name and related information, and it does not cache the whole file.

Recommendation: Set this value close to the number of files and folders available in a volume.

12.3.4 Subtree Search

A subtree search or contextless login enables CIFS to search for a user in the entire base context of a tree. The subtree search setting that is saved in the `cifs.conf` file stays persistent even if the system or service is restarted.

To use the subtree search feature, the CIFS proxy user should have read rights for the base context. These rights are assigned automatically from iManager when the context is added. A subtree search can be configured only at a physical server or at node level. In a cluster setup, each node should be configured with the same configuration level for consistent behavior.

Use following command to enable or disable subtree search.

```
novcifs -y yes|no
```

Subtree search performance depends on how the eDirectory replicas are spread over how the eDirectory contexts hierarchy is created.

12.3.5 Information and Debug Logs

Please keep the CIFS information and debug logs in a disabled state unless you specifically require the detailed log information.

To enable or disable the Debug Log for Developers, use the following command: `novcifs [-b yes|no | --enable-debug=yes|no]`

To enable or disable the Info Log, use the following command: `novcifs [-f yes|no | --enable-info=yes|no]`

12.3.6 Oplocks

The Oplocks or opportunistic locking improves file access performance by caching files at the client side. This option is enabled by default.

Recommendation: For better performance oplocks should be enabled (use iManager).

12.3.7 Cross Protocol Locks

The CrossProtocol locks help in using the files in the right way from different clients depending on the type of file accessed. This option is enabled by default.

Recommendation: Option should be enabled for data integrity purposes.

12.3.8 SMB Signing

The SMB signing ensures data integrity. Default option is disabled in latest CIFS releases as both client and server are in trusted corporate network and also disabling gives optimal file server performance. The SMB signing should be turned off when domain authentication is configured.

Recommendation: Option is disabled by default.

```
novcifs -g yes / no / optional / force
```

Apart from the above parameters, for more information on CIFS parameters that affect the file system performance, see [Locks Management for CIFS](#), [Using Offline Files](#) and [Directory Cache Management for CIFS Server](#) in the [OES 2 SP3: Novell CIFS for Linux Administration Guide](#).

12.4 NCP

- ♦ [Section 12.4.1, "Thread Pools,"](#) on page 83
- ♦ [Section 12.4.2, "Cache Settings,"](#) on page 84

12.4.1 Thread Pools

To manage the thread pools in NCP, see [Managing NCP Threads](#) in the [OES 2 SP3: NCP Server for Linux Administration Guide](#).

Tuning the number of asynchronous threads in NCP will help to route the NCP requests to eDirectory.

12.4.2 Cache Settings

To set the directory cache values in NCP, see [Directory Cache Management for NCP Server](#) in the [OES 2 SP3: NCP Server for Linux Administration Guide](#).

A Command Line Utility for CIFS

This section describes the command line utilities that work on an Open Enterprise Server (OES) 2 Linux server for running the CIFS services.

To access a man page with the command information, enter `man novcifs` at the command prompt. To run this command, the user must login as root.

- ♦ [“novcifs\(8\)” on page 86](#)

novcifs(8)

Name

novcifs - A client interface program that communicates with the `cifs` daemon for Novell OES 2 SP3 Linux. For `novcifs` to be running, the user must log in as `root`.

Syntax

Displaying the List of Sharepoints

```
novcifs [-sl | --share --list]
```

Displaying the Specific Sharepoint Details

```
novcifs [-sln SHARENAME | --share --list --name=SHARENAME]
```

Adding a New Sharepoint

```
novcifs [-sap PATH -n SHARENAME -m CONNECTION-LIMIT -c COMMENT |  
--share --add --path=PATH --name=SHARENAME --conn-limit=CONNECTION-LIMIT --  
comment=COMMENT]
```

Removing a Sharepoint

```
novcifs [-srn SHARENAME | --share --remove --name=SHARENAME]
```

Enabling or Disabling the Debug Log (for Developers)

```
novcifs [-b yes|no | --enable-debug=yes|no]
```

Enabling or Disabling the Info Log

```
novcifs [-f yes|no | --enable-info=yes|no]
```

Enabling or Disabling SMB Signing

```
novcifs [-g yes|no|optional|force | --enable-smbSigning=yes|no|optional|force]
```

Enabling or Disabling Anonymous Log In for CIFS

```
novcifs -e [yes|no]
```

Adding or Removing DNS Names (other than hostnames) for Advertising

```
novcifs --add --dns-name="<DNS_NAME>" --ip-addr=IP_ADDR  
novcifs --remove --dns-name="<DNS_NAME>" --ip-addr=IP_ADDR
```

Displaying Operational Parameters

```
novcifs [-o | --oper-params]
```

Adding a Virtual Server to the Shared Pool

```
novcifs [-av VIRTUALSERVERFDN -I VIRTUALSERVERIP | --add --vserver=VIRTUALSERVERFDN  
--ip-addr=VIRTUALSERVERIP]
```

Removing a Virtual Server from the Shared Pool

```
novcifs [-rv VIRTUALSERVERFDN -I VIRTUALSERVERIP | --remove --  
vserver=VIRTUALSERVERFDN --ip-addr=VIRTUALSERVERIP]
```

Displaying the Active Client Connection Count on the CIFS Server

```
novcifs [-C | --conn-count]
```

Setting LMCompatibilityLevel

```
novcifs [-L 0|4|5 | --lm=0|4|5]
```

Enabling or Disabling Subtree Search Capability

```
novcifs -y [yes|no]
```

Enabling or Disabling Mask Behaviour for Range Locks

```
novcifs [--enable-range-lock-mask=yes|no]
```

Enabling or Disabling Client-side Caching

```
novcifs --[0|1|2|3]
```

Enabling Invalid User Caching

```
novcifs [-UT <TIMEOUT-PERIOD>]  
novcifs [-Uan <USER-NAME>]  
novcifs [-Urn <USER-NAME>]  
novcifs [-Ul]
```

Enabling CIFS File Id Pool

```
novcifs [--dynamic-fid-pool=yes|no]
```

Dumping File Handle Statistics

```
novcifs [-d fh | --dump-statistics=fh]  
novcifs [-d fp | --dump-statistics=fp]
```

Dumping Directory Cache Statistics

```
novcifs [-d dc | --dump-statistics=dc]
```

Viewing the Trustees Associated with a File or Folder

```
novcifs [-Rp FILE-PATH | --rights --path=FILE-PATH]
```

Synchronizing the Trustee List for a Volume

```
novcifs [--resync=VOLUME-NAME]
```

Viewing Statistics of Trustees for a Volume

```
novcifs [--vol-stats=VOLUME-NAME]
```

Options

Usage Options

-s | --share

An argument to manipulate a sharepoint.

-l | --list

Displays the list of sharepoints.

-a | --add

Adds a new sharepoint or virtual server.

-p PATHNAME | --path=PATHNAME

Specifies a volume-based path to add for the sharepoint. This path is not an absolute path.

-n SHARENAME | --name=SHARENAME
 Specifies the CIFS sharename while adding or removing the sharepoint.

-m CONNECTION-LIMIT | --conn-limit=CONNECTION-LIMIT
 Specifies the connection limit of the CIFS sharepoint to add.

-c COMMENT | --comment=COMMENT
 Specifies a CIFS sharepoint comment to add.

-C | --conn-count
 Displays the active connection count.

-r | --remove
 Removes the sharepoint or virtual server.

-v VIRTUALSERVERFDN | --vserver=VIRTUALSERVERFDN
 Specifies the virtual server FDN to add or remove.

-I VIRTUALSERVERIP | --ip-addr=VIRTUALSERVERIP
 Specifies the virtual server IP address to add or remove.

-o | --oper-params
 Displays the operational parameters, such as enabled or disabled, for different CIFS configurations.

-f yes | no | --enable-info=yes | no
 Enables or disables the info log status.

-g yes | no | optional | force | --enable-smbsigning=yes | no | optional | force
 Enables or disables the SMB signature.

yes for enabling.
no for disabling.
optional for optional enabling.
force for mandatory enabling.
 This is an add-on functionality.

-b yes | no | --enable-debug=yes | no
 Enables or disables the debug log.

-L 0 | 4 | 5 | --lm=0 | 4 | 5
 Sets LMCompatibilityLevel.

0 for Accept LM and NTLM responses.
4 for Accept NTLM response/refuse LM response.
5 for Accept NTLMv2 response/refuse LM and NTLM responses.

-y yes | no
 Enables or disables the subtree search.

--enable-range-lock-mask={ yes | no }
 Enables or disables range lock masking behaviour.

IMPORTANT: If you enable or disable this parameter, make sure you restart the CIFS server using the `rcnovell-cifs restart` command for the changes to take effect.

[--csc= 0|1|2|3]

Enables or disables offline client-side caching for files

0 Caches files for offline use. Does not permit automatic file-by-file re-integration.

1 Caches files for offline use. Permits automatic file-by-file reintegration.

2 Caches files for offline use. Clients are permitted to work from their local cache even while online.

3 Disables offline caching.

-UT <TIMEOUT-PERIOD> | --block-invalid-users --timeout-period=TIMEOUT-PERIOD

Specifies the amount of time a user should be considered as invalid to ignore authentication requests. Specify the timeout period in minutes and the range should be between 0 and 525600.

-Uan <USER-NAME> | --block-invalid-users --add --name=<USER-NAME>

Adds the specified user to the list of default invalid users whose authentication requests needs to be ignored permanently.

-Urn <USER-NAME> | --block-invalid-users --remove --name=<USER-NAME>

Removes the specified user from the list of cached invalid users to start considering authentication requests.

-UI | --block-invalid-users --list

Lists all the cached invalid users whose authentication requests are currently ignored.

--dynamic-fid-pool={yes|no}

Enables CIFS to increase the file id pool from 65k to 600k. By default, this option is disabled.

-d fh | --dump-statistics=fh

Dumps statistics of Linux file handles opened.

-d fp | --dump-statistics=fp

Dumps statistics of Linux file handles and CIFS protocol file Ids opened.

-d dc | --dump-statistics=dc

Dumps cache statistics used to store file and directory names.

-Rp FILE-PATH | --rights --path=FILE-PATH

Displays the list of trustees associated with the specified file or folder as per the CIFS cache record.

--resync=VOLUME-NAME

Imports the trustee information from the trustee_database.xml file associated with the specified volume into the CIFS cache.

--vol-stats=VOLUME-NAME

Displays the count of new, modified, and removed trustees for the specified volume. Run this command after synchronizing the trustee list.

Help Options

-h | --help

Displays the help information for CIFS commands, syntax, and exits.

-u | --usage

Displays the usage information for the commands and exits.

Files

/etc/opt/novell/cifs/cifs.conf

CIFS configuration file.

/etc/opt/novell/cifs/cifsctxs.conf

CIFS context file.

/etc/opt/novell/cifs/.cifspwd.enc

Encrypted CIFS proxy user file.

/etc/init.d/novell-cifs

Initialization script for CIFS. You should use this script to start and stop CIFS, rather than running it directly.

/var/opt/novell/log/cifs.log

CIFS server log file.

Examples

`/etc/init.d/novell-cifs start` runs this program in the standard way.

`/usr/sbin/novcifs` runs the client interface program directly.

`VOL1:dir1` or `VOL1:/dir1` is a volume-based path.

Authors

Copyright 2010, Novell, Inc. All rights reserved. <http://www.novell.com>.

See Also

`migCifs(8)`

Report Bugs

To report problems with this software or its documentation, visit <http://bugzilla.novell.com>.

B Comparing Novell CIFS and Novell Samba

This section compares features and capabilities of Novell CIFS and Novell Samba on Open Enterprise Server 2 SP3 servers.

Table B-1 *Novell CIFS and Novell Samba Comparison*

Parameter	Novell CIFS	Novell Samba
Authentication	Password policy is required to allow cifs users to authenticate to eDirectory.	A Samba-compatible Password Policy is required for compatibility with Windows workgroup authentication.
File system support	NSS is the only file system supported for this release.	It is recommended (but not required) that you create Samba shares on NSS data volumes. NSS is fully integrated with eDirectory for easy management, and using an NSS volume allows you to take advantage of the rich data security model in NSS. You can use either iManager or the nssmu utility to create an NSS volume on an OES2 Linux server. For instructions on how to setup an NSS volume see the OES 2 SP3: File Systems Management Guide .
LUM and Samba enablement	LUM enablement is not required.	Users must be enabled for LUM and Samba and assigned to a Samba group.
Novell Trustee Rights	Yes	No
Scalability	Higher when compared with Samba	Lower when compared with CIFS
DST	Yes	No
Sub-tree Search	Yes	No

C Comparing CIFS on NetWare and CIFS on Linux

This section compares features and capabilities of Novell CIFS on the NetWare and Linux platforms for Novell Open Enterprise Server 2 SP3 servers.

Table C-1 CIFS services on NetWare and OES 2 Linux

Service	NetWare	OES 2 Linux
64-Bit Support	No	Yes
NSS Support	Yes	Yes
Distributed File Services	Yes	Yes
OpLocks	Yes	Yes
Cross Protocol Locking	Yes	Yes
CIFS-enabled shared NSS pool/ volume in a NetWare-to-NetWare or Linux-to-Linux cluster	Yes	Yes
CIFS-enabled shared NSS pool/ volume in a mixed NetWare-to- Linux cluster	No	No
iManager Support and Administration tool	Yes	Yes
File and Record Locking	Yes	Yes
Domain Emulation	Yes	Future
Monitoring	No	Future
Xen Virtualized Host Server Environment	NA	No
Xen Virtualized Guest Server Environment	Yes	Yes
Multi-processor/Multicore Server Support	No	Yes
Multi-File System Support	No	Future
NTLMv2	No	Yes
Dynamic Storage Technology Support	No	Yes

Service	NetWare	OES 2 Linux
LDAP User (subtree) Search	No	Yes

D Configuration and Log Files

Table D-1 CIFS Configuration Files

Path	Description
/etc/opt/novell/cifs/cifs.conf	CIFS server
/etc/opt/novell/cifs/cifsctxs.conf	List of eDirectory contexts having CIFS users
/etc/opt/novell/cifs/cifslogrotate.conf	Hourly rotation of CIFS log file
/etc/opt/novell/cifs/logrotate.d/novell-cifs-hourly	Customized hourly rotation of CIFS log file
/opt/novell/cifs/share/nmasmthd/ntlm/config.txt	Used by installation of CIFS NMAS method into eDirectory tree.

Table D-2 CIFS Log Files

Path	Description
/va/log/cifs/cifs.log	CIFS server run-time
/var/opt/novell/log/cifs.log	Soft link to /var/log/cifs/cifs.log

With the CIFS logrotate function you can now administer your log files on an hourly basis. The cron job checks the size of the log file on a hourly basis to see if it exceeds the predefined quota. If the quota is crossed, the existing file will be rotated and logging information is written to a fresh file.

This operation continues till there are 10 cifslog files. When the last cifslog file reaches the predefined quota, then the 1st log file will be rotated.

To implement this feature, copy the cifslogrotate file to /etc/cron.hourly/ and remove the novell-cifs configuration file from /etc/logrotate.d location.

E Documentation Updates

- ♦ [Section E.1, “November 2012,”](#) on page 99
- ♦ [Section E.2, “September 2012,”](#) on page 99
- ♦ [Section E.3, “December 2011,”](#) on page 99
- ♦ [Section E.4, “September 2011,”](#) on page 99
- ♦ [Section E.5, “December 2010,”](#) on page 99
- ♦ [Section E.6, “November 2009,”](#) on page 100
- ♦ [Section E.7, “November 2008,”](#) on page 101

E.1 November 2012

- ♦ Added [“Enabling CIFS File Id Pool”](#) on page 88
- ♦ Added [“Dumping File Handle Statistics”](#) on page 88
- ♦ Added [“Dumping Directory Cache Statistics”](#) on page 88

E.2 September 2012

- ♦ Added [Section 2.4, “What’s New \(OES2 SP3 September 2012 Patches\),”](#) on page 15
- ♦ Added [“Enabling Invalid User Caching”](#) on page 88
- ♦ Updated [“Usage Options”](#) on page 88

E.3 December 2011

- ♦ Updated [Section 5.4, “Third-Party Domain Authentication,”](#) on page 46 and [Section 5.7, “Subtree Search,”](#) on page 53

E.4 September 2011

- ♦ Updated the [What’s New](#) chapter with details of August patch.

E.5 December 2010

- ♦ Included the [Section 10.1, “Known issues,”](#) on page 71 with the patch release updates.
- ♦ Mentioned the remote volume support for NSS volumes on shadow volumes.

- ♦ Updated the [Section 4.2, “Installing and Configuring a CIFS Server through YaST,”](#) on page 21 with the common proxy information.
- ♦ Updated the [Chapter 2, “What’s New,”](#) on page 13 with the new features supported in OES2 SP3 Beta 1.
- ♦ The `LMCompatibilityLevel` content is updated in [Table 5-2 on page 36](#).
- ♦ The following note is included in the [Section 5.3, “Locks Management for CIFS,”](#) on page 46:

NOTE: Oplocks must be enabled on the server for Offline Files to function correctly on Windows XP, Windows Vista, and Windows 7.

- ♦ The following note is included in the [Section 4.2, “Installing and Configuring a CIFS Server through YaST,”](#) on page 21:

NOTE: Installing Novell CIFS also installs Audit and starts `auditd`.

- ♦ [Appendix A, “Command Line Utility for CIFS,”](#) on page 85 is updated with new options.
- ♦ [Chapter 5, “Administering the CIFS Server,”](#) on page 29 is updated with [Dynamic Storage Technology for CIFS Server](#), [Subtree Search](#), and [Using Offline Files](#).
- ♦ [Chapter 10, “Troubleshooting CIFS,”](#) on page 71 is updated with new issues.
- ♦ Added a new [Section 5.9, “Directory Cache Management for CIFS Server,”](#) on page 54.
- ♦ Added a new issue in [Section 10.6, “CIFS General Issues,”](#) on page 74.

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- ♦ Front file is updated with date, version, and copyright.
- ♦ [Section 10.4.2, “Newly Created NSS Volumes Are Not Being Shared in CIFS,”](#) on page 73 is added in the [Chapter 10, “Troubleshooting CIFS,”](#) on page 71.
- ♦ [Section 10.3, “CIFS Log In Issues,”](#) on page 72 is added in the [Chapter 10, “Troubleshooting CIFS,”](#) on page 71.
- ♦ [Appendix A, “Command Line Utility for CIFS,”](#) on page 85 is updated with new command line utilities.
- ♦ Editorial Comments are incorporated.
- ♦ The following note is added in the [Chapter 5, “Administering the CIFS Server,”](#) on page 29:

NOTE: The string length of the NetBIOS name should not exceed 15 chars. The hostname or the first 13 characters from the hostname, whichever is shorter is considered and appended with `_W` at the end to frame the standard NetBIOS name.

- ♦ [Section 5.4, “Third-Party Domain Authentication,”](#) on page 46 is added to [Chapter 5, “Administering the CIFS Server,”](#) on page 29.
- ♦ [Table 5-3 on page 41](#) is revised.
- ♦ The following content is updated in [Section 5.2.6, “Working with CIFS Shares,”](#) on page 45: CIFS shares cannot be added to virtual server object using command line (`novcifs`). If the shares are added on cluster resource using command line, then all the shares are lost if the resource leaves that node.
- ♦ [Section 5.1, “Using iManager to Manage CIFS,”](#) on page 29 is revised with graphics and content.
- ♦ [Section 5.3, “Locks Management for CIFS,”](#) on page 46 is added to [Chapter 5, “Administering the CIFS Server,”](#) on page 29.

- ♦ Section 5.6, “DFS Junction Support in CIFS Linux,” on page 50 is added to Chapter 5, “Administering the CIFS Server,” on page 29.
- ♦ Oplocks and Distributed File Services description is included in Table 5-1 on page 34.
- ♦ Section 5.6.4, “Problems Following DFS Junctions with CIFS in Windows 2000/XP Releases,” on page 51 is added to Chapter 5, “Administering the CIFS Server,” on page 29.

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- ♦ All chapters and sections are new additions to OES 2 SP1 release.

