

Novell Nterprise™ Linux* Services

1.0

December 23, 2003

OVERVIEW, PLANNING, AND
IMPLEMENTATION GUIDE

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U.S. Patent No. 5,608,903; 5,671,414; 5,758,344; 5,832,275; 5,832,483; 5,832,487; 5,870,739; 5,873,079; 5,878,415; 5,884,304; 5,910,803; 5,933,503; 5,933,826; 5,946,467; 5,956,718; 5,963,938; 6,052,724; 6,065,017; 6,067,093; 6,115,039; 6,167,393; 6,286,010; 6,308,181; 6,345,266; 6,424,976; 6,516,325; 6,519,610; 6,532,451; 6,539,381; 6,578,035; & 6,615,350. Patents Pending.

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Novell Nterprise Linux Services Overview, Planning, and Implementation Guide

[December 23, 2003](#)

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About This Guide

This guide describes Novell® Nterprise™ Linux* Services (NNLS) software and provides planning and implementation instructions for each service.

It is designed to help network administrators

- ◆ Understand NNLS services prior to installing them.
- ◆ Implement the services after they are installed.

To install NNLS and all its components, see the instructions in the *Novell Nterprise Linux Services Installation Guide*.

Additional Documentation

This guide focuses on getting started with the file services, e-mail services, etc., in NNLS.

It doesn't contain detailed information about configuring and maintaining NNLS services. However, it does contain helpful links to other service-specific administration guides and documentation.

Documentation Conventions

In this documentation, a greater-than symbol (>) is used to separate actions within a step and items within a cross-reference path.

A trademark symbol (®, ™, etc.) denotes a Novell trademark. An asterisk (*) denotes a third-party trademark.

When a single pathname can be written with a backslash for some platforms, or a forward slash for other platforms, the pathname is presented with a forward slash to reflect the Linux convention. Users of platforms that require a backslash, such as NetWare® should use backslashes as required by the software.

Product Overview

Novell Nterprise™ Linux Services 1.0 provides a comprehensive set of network services that run on enterprise Linux platforms, such as Red Hat* and SuSE*.

This section discusses the following:

- ♦ [“About Novell Nterprise Linux Services 1.0” on page 11](#)
- ♦ [“Services to Network Users” on page 11](#)
- ♦ [“Administrative Tools and Services” on page 13](#)
- ♦ [“Differences from NetWare Releases” on page 14](#)

About Novell Nterprise Linux Services 1.0

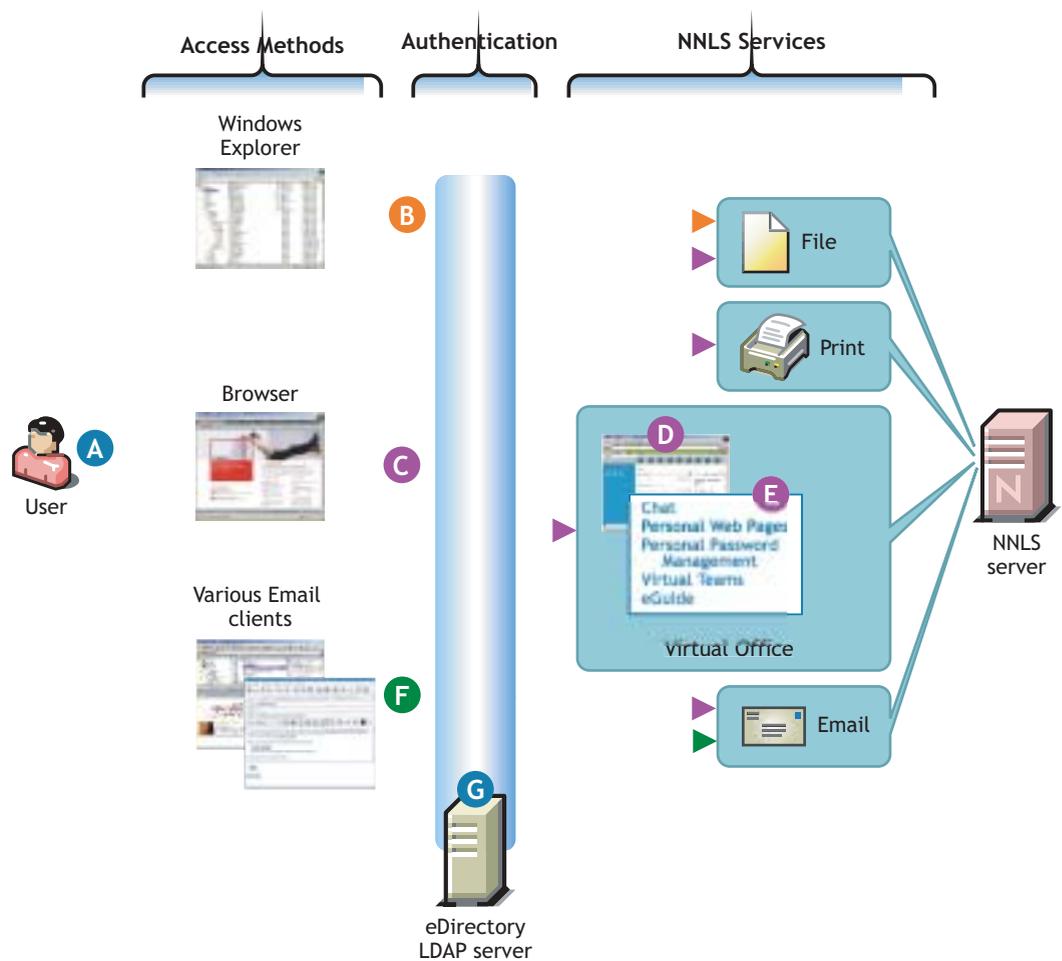
Novell Nterprise Linux Services (NNLS) 1.0 is Novell’s first services suite for the Linux platform. It includes a number of powerful network services that organizations will find very useful. These services are summarized in [“Services to Network Users” on page 11](#).

NNLS 1.0 doesn’t include all of the network services that are traditionally part of a NetWare® release. Novell plans to provide a common set of services on both Linux and NetWare in the future.

Services to Network Users

[Figure 1 on page 12](#) illustrates the services that NNLS can provide to network users and the methods they can use to access those services. For service access information, see [Chapter A, “Quick Reference to NNLS User Services,” on page 75](#).

Figure 1 NNLS User Services

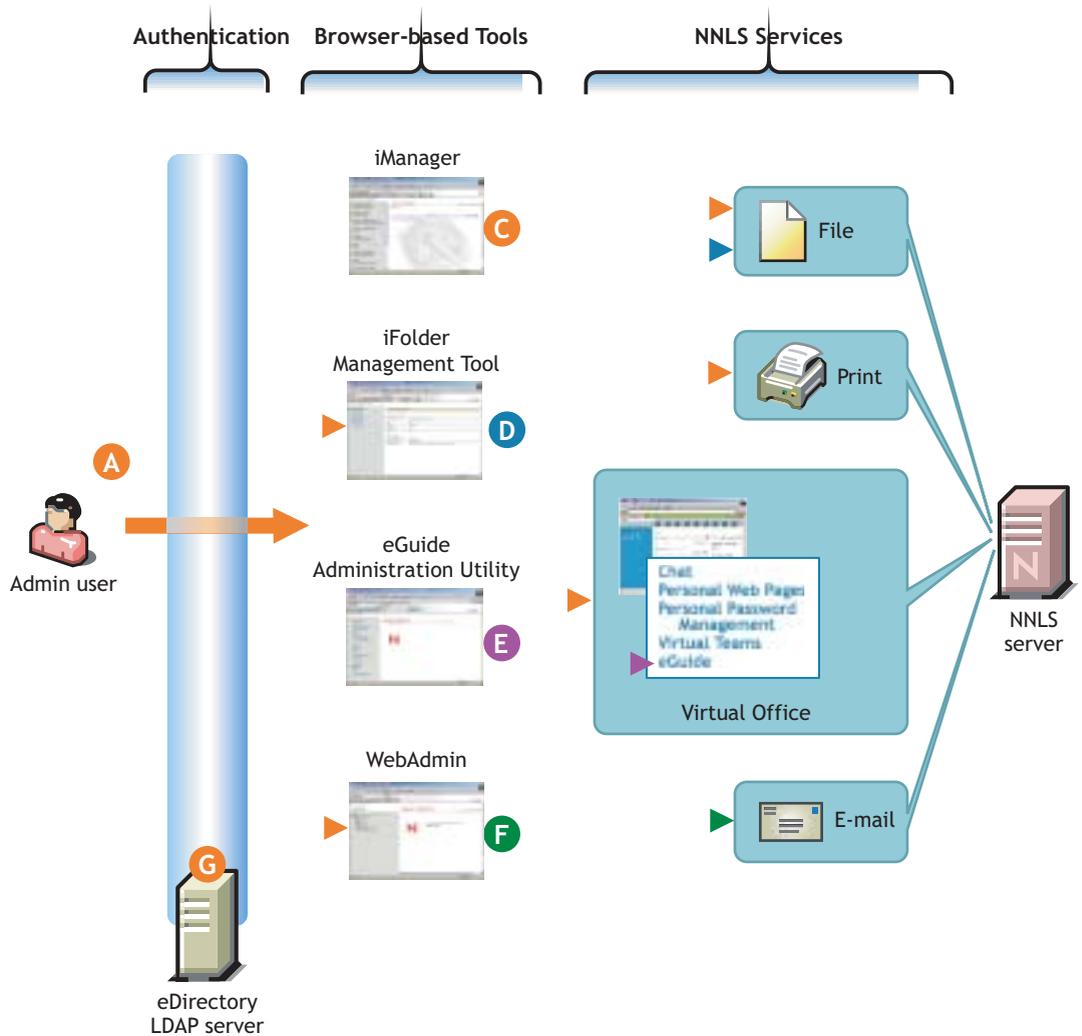


- A** Users can access file, print, and e-mail services on the network depending on which NNLS services you install.
- B** Windows users can access files on the NNLS server through Samba processes installed by NNLS and configured for LDAP authentication through eDirectory.
- C** All users with browser access can have HTTP-based file access, printing to Novell iPrint-enabled printers, and Web-based e-mail access.
- D** Browser users can also access a wide range of network services through Virtual Office, including file, print, and e-mail services.
- E** Virtual Office also offers
 - Chat sessions with other VO users.
 - The ability for users to create personalized Web pages, manage their own passwords, and participate in virtual teams.
 - Access to eGuide, which provides "All the people, places, and things you need to know in a single location."
- F** And NNLS offers various e-mail access methods, including
 - The GroupWise Collaboration Client for NNLS (on Windows).
 - The NetMail Web-based client with WebAccess and WebMail templates.
 Both of these can access the NetMail e-mail server running on the NNLS server.
- G** Service access is controlled either by LDAP-based authentication through the eDirectory LDAP server or directly through eDirectory.

Administrative Tools and Services

Figure 2 illustrates the tools you will use to implement and maintain the NNLS services on your network. For more information, see Chapter 8, “Administrative Tools,” on page 61.

Figure 2



A Admin users use browser-based management tools to manage all NNLS services.

Note: Some management tasks, such as starting and stopping services, involve commands that are executed at a shell prompt. Most tasks, however, involve eDirectory objects and require a graphical administration tool.

B Access to (both HTTP and HTTPS) is controlled through a designated eDirectory LDAP server.

C iManager is the main management tool for NNLS. Almost all administrative tasks are available through iManager, including access to the iFolder Management Tool and WebAdmin. The one exception is the eGuide Administration Utility.

D The iFolder Management Tool lets you manage iFolder functionality, such as LDAP authentication. You also use it to allocate disk space to users and monitor the iFolder server.

E The eGuide Administration Utility lets you control the exposure and management of eDirectory information through the eGuide interface.

F WebAdmin is the administrative tool for the NetMail component. It also manages the Red Carpet daemon included with NNLS.

G Access to use the browser-based management tools is controlled through the eDirectory LDAP server.

Differences from NetWare Releases

Because of the differences between Linux and NetWare[®], some features available in the NetWare releases are not available in NNLS.

- ◆ **Login Scripts:** Login scripts are not part of user access to Linux systems.
- ◆ **Drive Mappings:** Linux file systems do not use drive letters. To access other file systems, including those on the local machine, you create mount points and then mount the other systems.

These mount points can be made to be persistent by including them in the `/etc/fstab` file. For more information, see the `fstab` man pages and the documentation that came with your Linux system.

- ◆ **Disk Quotas:** eDirectory doesn't currently support tracking and controlling local disks on the Linux host.
- ◆ **Novell Client:** The Novell Client[™] is not part of the NNLS 1.0 software package.



User Services

Novell® Nterprise™ Linux Services user services are explained in the following sections:

- ♦ [Chapter 1, “File Services,” on page 16](#)
- ♦ [Chapter 2, “Print Services,” on page 29](#)
- ♦ [Chapter 3, “Messaging Services,” on page 35](#)
- ♦ [Chapter 4, “Virtual Office,” on page 45](#)
- ♦ [Chapter 5, “eGuide,” on page 49](#)

Using the Information in This Section

The information in this section is designed to help you with the following tasks:

1. Understand each service and its potential to help your organization.
2. Plan to install and implement each service.

After you understand NNLS user services, you will need to

1. Plan your eDirectory™ tree as explained in [“Planning Your eDirectory Tree” on page 55](#).
2. Install NNLS services using the instructions in the *Novell Nterprise Linux Services Installation Guide*.
3. Create eDirectory users and other objects to provide service access for your network users, as summarized in [“Creating Users and Groups” on page 56](#).
4. Review the implementation and maintenance sections for each service, beginning with the file service [“Implementation Suggestions” on page 24](#).

Each of these sections provides a summary of the tasks associated with each service and links to detailed service documentation.

1

File Services

The file services in Novell® Nterprise™ Linux Services (NNLS) let you provide Web- and network-based file storage to your network users.

This section contains

- ♦ An [Overview \(page 16\)](#) of NNLS file service components.
- ♦ [Planning Instructions \(page 23\)](#) that can help you
 - ♦ Decide which services to install.
 - ♦ Plan your installation.

NOTE: For installation instructions, see the [Novell Nterprise Linux Services Installation Guide](#).
- ♦ [Implementation Suggestions \(page 24\)](#) for after you install NNLS.
- ♦ [Maintaining File Services \(page 27\)](#) with links to component-specific administration guides and other documentation.

Overview

The file service components in NNLS include the following:

- ♦ [Novell iFolder \(page 17\)](#): Provides a Web- and network-based repository (iFolder® server) that stores master copies of locally accessible files on the NNLS server.
- ♦ [Samba on NNLS \(page 19\)](#): Provides Windows (CIFS and HTTP-WebDAV) access to files stored on the NNLS server's file system.
- ♦ [Novell NetStorage \(page 20\)](#): Is installed as part of [Virtual Office](#) and provides network and Web access to various file services, including NetWare®, iFolder, and Samba services.

NOTE: NetStorage provides only access to other file services. It doesn't provide direct file services.

The file service components in NNLS are mutually compatible—you can install one or more of them on the same NNLS server.

Using the File Services Overviews

The graphical overviews in the following sections introduce each NNLS file service component.

If you don't want to take time to review each graphic, you can decide now which components to install by viewing the information in [“Deciding Which Components Match Your Needs” on page 23](#) in the Planning section. You can then either return to the overviews of the components you have chosen or continue in [“Planning Instructions” on page 23](#).

If you prefer visual presentations, continue with these graphical file service overviews before deciding which ones to install in [“Planning Instructions” on page 23](#).

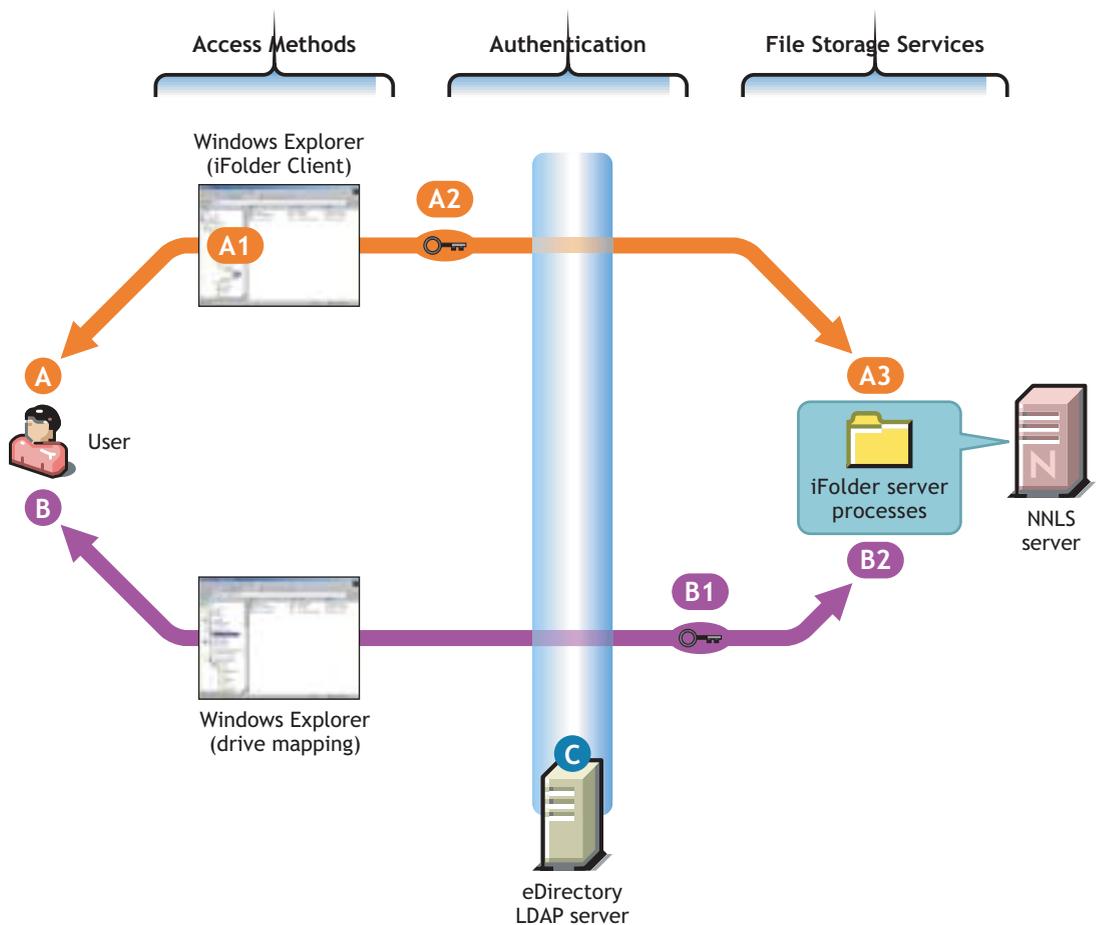
Novell iFolder

Novell iFolder provides a Web- and network-based repository (iFolder server) that stores master copies of locally accessible files.

You can have iFolder components automatically synchronize changes made to local files with those on the iFolder server. You can also let users map drives directly to the iFolder server using Novell NetDrive (located on the *Novell Nterprise Linux Services 1.0 Companion CD*).

Figure 3 on page 18 illustrates how the iFolder product works.

Figure 3 How iFolder Works



iFolder offers two basic options for accessing files.

A Users on any Windows workstation with the iFolder Client installed can access their local iFolder folders and files in Windows Explorer.

A1 Because copies of the files are stored locally, they are always available whether users work online or offline.

A2 Files can be encrypted for transmission to and from storage on the iFolder server.

A3 Local and network copies of each file can be automatically synchronized by the iFolder Client and Server pieces, or users can manually synchronize the files.

B Windows users who install NetDrive can map a network drive to the iFolder server.

B1 Files can be encrypted using a passphrase for transmission to and from storage on the iFolder server.

B2 Users modify their files in a temporary folder on their workstations that is automatically synchronized with the iFolder server storage.

C All file service access is controlled by LDAP-based authentication through the eDirectory LDAP server.

Although shown separately, eDirectory (C) could be installed on the NNLS server.

iFolder offers other access options and features not shown in this graphic, including

- ◆ Web browser access (no iFolder Client required).
- ◆ Pocket PC Web browser access (no iFolder Client required).
- ◆ Concurrent access to multiple iFolder accounts.
- ◆ Collaborative access to a single iFolder account.
- ◆ Thin-client support.

For more overview information on iFolder, NetDrive, and other features, see the

- ♦ *[Novell iFolder 2.1 Installation and Administration Guide](#)*
- ♦ *[Novell NetDrive 4.1 User Guide](#)*
- ♦ *[Novell iFolder 2.1 User Guide](#)*

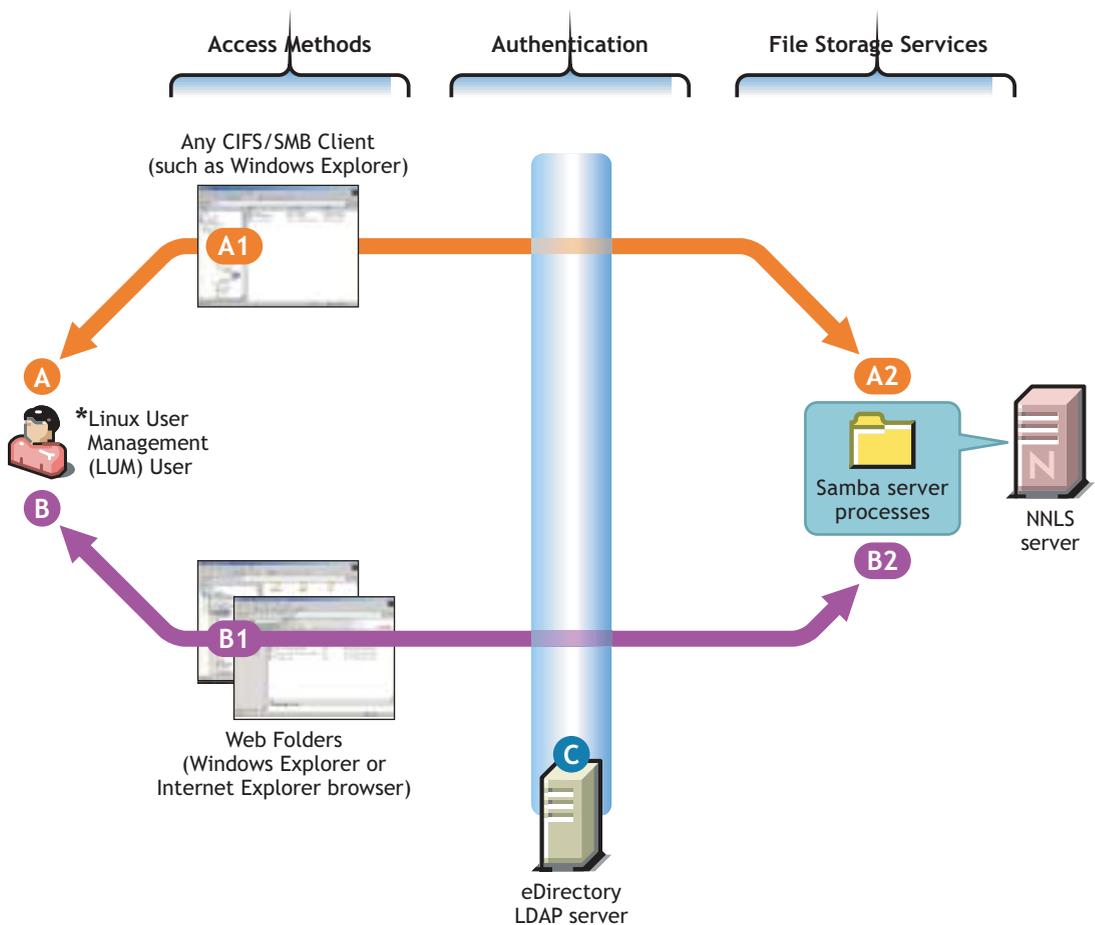
Samba on NNLS

Samba on NNLS provides Windows (CIFS and HTTP-WebDAV) access to files stored on the NNLS server.

Users can access their files on the NNLS server using any CIFS/SMB client (such as Windows Explorer) or through the Web Folders feature in Windows Explorer and the Internet Explorer browser.

Figure 4 on page 20 illustrates how Samba on NNLS works.

Figure 4 How Samba on NNLS Works



* Only Linux User Management (LUM) users can access Samba on NNLS.

Linux User Management users have two basic access options:

A Users with a CIFS client (such as Windows Explorer) can access and modify files on the Samba server.

A1 Users navigate to the Samba share in the same way they do to any Windows share.

A2 Files on the NNLS server are accessed and maintained using Microsoft's CIFS protocol.

B Windows users can also access Samba files by creating a Web Folder.

B1 Users create a Web Folder to the Samba server in Windows Explorer or Internet Explorer.

B2 Files on the NNLS server are accessed and maintained using the HTTP-WebDAV protocol.

C All file service access is controlled by LDAP-based authentication through the eDirectory LDAP server.

Although shown separately, eDirectory could be installed on the NNLS server.

Because Samba is an open source initiative, more overview information is available on the Web. In addition to Linux, Samba initiatives provide support for other platforms such as Apple* Computer's operating systems. See ["Additional Information" on page 80](#).

Novell NetStorage

NetStorage is installed as part of **Virtual Office** and provides Web-based access to network-based file storage.

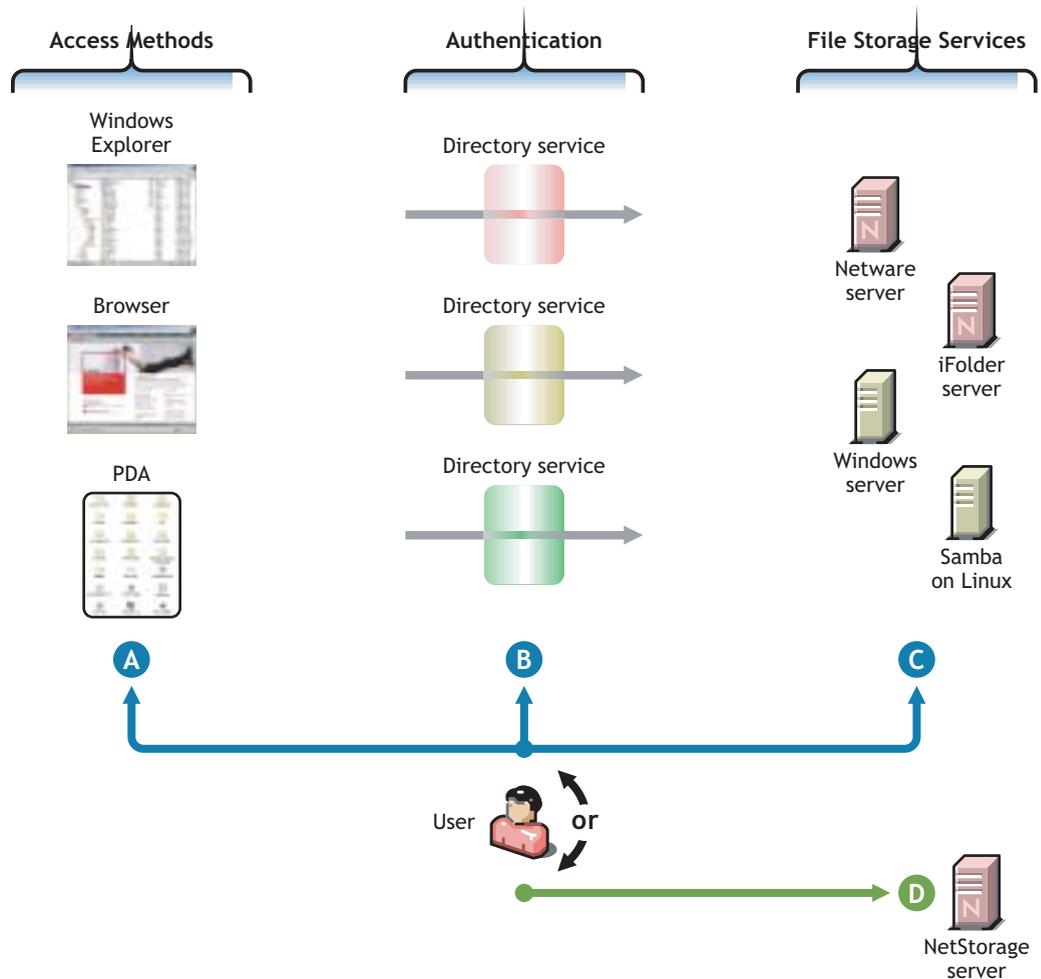
Initially, the NetStorage solution can appear to be quite complex. However, if you understand the problems it addresses, it is actually quite straight-forward and easy to set up and use.

Common Network File Storage Problems

Most network users have one or more preferred methods for accessing and storing their files. Many large networks contain diverse file storage systems that need to be protected from unauthorized access.

These information-age realities lead to the problems illustrated in the following figure.

Figure 5 Common Network File Storage Problems



Network file access is often confusing and frustrating to users.

A Browser or PDA access can be business-critical to those who must travel. However, access method support varies widely among file service providers.

B Authentication helps organizations ensure that their information assets are secure. However, utilizing different authentication methods often leads to frustration and lost productivity.

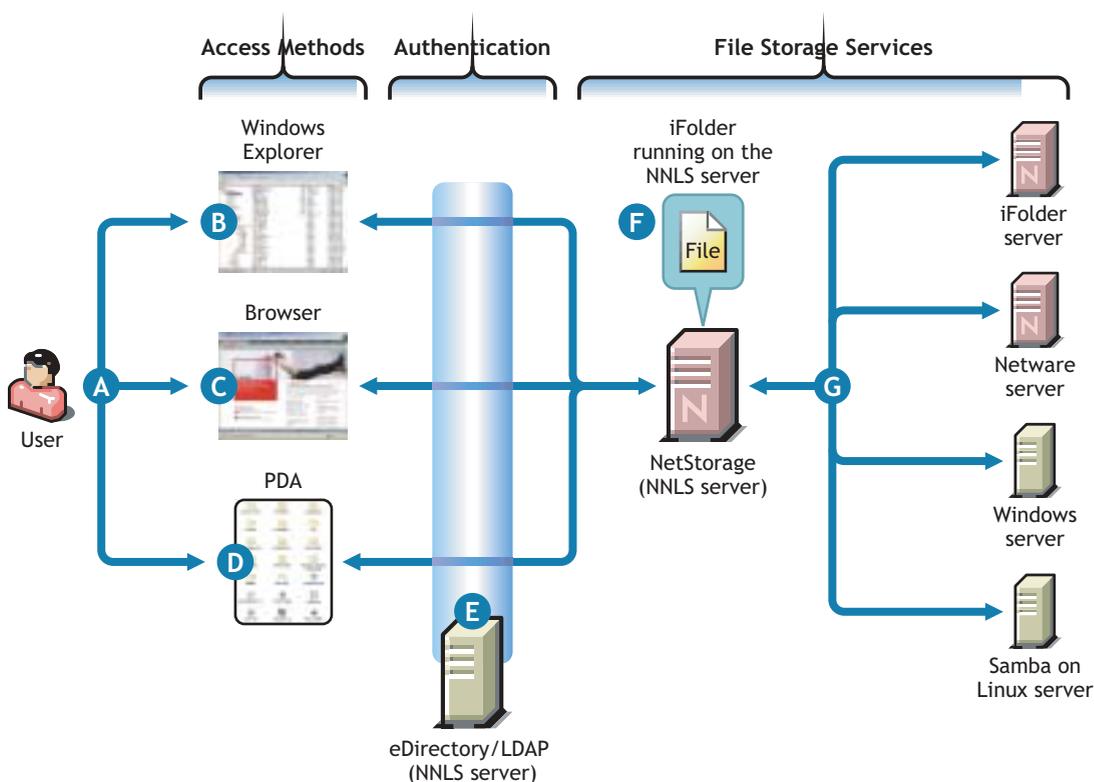
C Having diverse file storage services only adds to the complexity and confusion.

D Novell NetStorage ties all of these issues together with an easy-to-administer, easy-to-use solution.

The NetStorage Solution

With Novell NetStorage, users can access and maintain their files on various types of storage systems from various access points, as illustrated in the following figure.

Figure 6 How NetStorage Works



A Users have read and write access to files from Windows Explorer (B), a Web browser (C), or a PDA (D).

B Windows users can access files using the Web Folders feature in Windows Explorer and the HTTP protocol with WebDAV extensions.

C Browser users can also access files by directly connecting to the NetStorage server.

D PDA users can access their files by directly connecting to the NetStorage server.

E File service access is controlled by LDAP-based authentication through the eDirectory LDAP server.

Although shown separately, eDirectory could be installed on the NNLS server.

F iFolder files stored on the NNLS server are automatically available if you install iFolder and accept the NetStorage installation defaults.

G You can provide access to files stored on other network servers defined as Storage Locations, including

- iFolder servers installed on either NetWare or other NNLS servers.
- NetWare servers.
- Windows servers.
- Other Linux servers with Samba support installed and configured.

For more detailed information about NetStorage, see the *NetStorage Administration Guide*.

Planning Instructions

You can install one or more of the file service components included in NNLS. Functional overviews of each component are included in [“Overview” on page 16](#).

Deciding Which Components Match Your Needs

To decide which file service components to install, you should match service features to your file service requirements.

Table 1 NNLS File Services Feature Breakdown

Requirement	iFolder Features	Samba on NNLS Features	NetStorage Features
Access Method:	<ul style="list-style-type: none"> ◆ Windows Explorer ◆ Mapped drives ◆ Offline access with file synchronization (between local and network copies) on reconnect 	<ul style="list-style-type: none"> ◆ Windows Explorer ◆ Any CIFS/SMB client ◆ Remote (Web Folders in the Internet Explorer browser) 	<ul style="list-style-type: none"> ◆ Personal Digital Assistant (PDA) ◆ Windows Explorer ◆ Browsers ◆ Web Folders (Internet Explorer browser or Windows Explorer) ◆ Remote (browser-based)
Back-End File Storage:	<ul style="list-style-type: none"> ◆ iFolder file repository on NNLS server 	<ul style="list-style-type: none"> ◆ Linux file system on NNLS server 	<ul style="list-style-type: none"> ◆ NetWare servers ◆ iFolder servers ◆ Windows servers ◆ Samba servers <p>NOTE: NetStorage only provides access to other file services.</p>
Security:	<ul style="list-style-type: none"> ◆ Secure LDAP Authentication 	<ul style="list-style-type: none"> ◆ Secure LDAP Authentication 	<ul style="list-style-type: none"> ◆ Secure LDAP Authentication

Planning Your File Services

To plan for your NNLS file services:

- 1 If you have not already done so, print the PDF version of the [“NNLS Planning Worksheet”](#) located in the *Novell Nterprise Linux Services Installation Guide*.
- 2 For the file services you plan to install, compute the total additional RAM required (above the basic system requirement).

Refer to the following points for help:

- ◆ **iFolder:** Suggestions for calculating the additional RAM you will need are contained in [“Preparing to Install iFolder”](#) in the *Novell iFolder 2.1 Installation and Administration Guide*.
- ◆ **Samba:** There are no additional RAM requirements.
- ◆ **NetStorage:** There are no additional RAM requirements.

- 3 Record the additional RAM required in the “**Server Hardware Requirements**” section of the “**NNLS Planning Worksheet**” you printed in **Step 1**.
- 4 For the file services you plan to install, compute the total additional disk space required (above the basic system requirement).
Refer to the following points for help:
 - ◆ **iFolder:** Suggestions for calculating the additional disk space you will need are contained in “**Preparing to Install iFolder**” in the *Novell iFolder 2.1 Installation and Administration Guide*.
 - ◆ **Samba:** You should allocate enough disk space for the partition containing the /home directory to meet your users’ file storage needs.
 - ◆ **NetStorage:** There are no disk space requirements because NetStorage provides only access to other file storage services.
- 5 Record the additional disk space required in the “**Server Hardware Requirements**” section of the “**NNLS Planning Worksheet**” you printed in **Step 1**.
- 6 For the file services you plan to install, complete the corresponding section in the “**NNLS Planning Worksheet**” in the *Novell Nterprise Linux Services Installation Guide* as follows:
 - ◆ “**iFolder**” information, including the eDirectory™, ports, user data path, and other information indicated.
 - ◆ “**Samba**” information, including the eDirectory, ports, authentication, and other information indicated, including whether you plan to remove any existing Samba installations on the Linux server.
 - ◆ NetStorage planning is included in the “**Virtual Office**” section of the worksheet and includes information related to authentication for using NetStorage and the creation of the default iFolder Storage Provider link.

Implementation Suggestions

iFolder

The following implementation points are provided only as introductory information. To begin using iFolder, see the *Novell iFolder 2.1 Installation and Administration Guide*.

Managing iFolder

You manage iFolder through the iFolder Management Console, which you can access directly or through iManager. For more information, see “**Using the iFolder Management Console**” in the *Novell iFolder 2.1 Installation and Administration Guide*.

Configuring the iFolder Server

Before you let users log in to the iFolder server, complete the setup tasks in “**Configuring Your First iFolder Server**” in the *Novell iFolder 2.1 Installation and Administration Guide*.

Creating and Enabling iFolder Users

To provide user access to iFolder:

1. Create User objects in eDirectory.
2. Enable the User objects as iFolder users.
3. Have users create their iFolder accounts in one of the following ways:
 - ◆ Install and use the iFolder Client to access the iFolder server
 - ◆ Install and use NetDrive to access the iFolder server
 - ◆ Use the Java* applet available on your iFolder Web site

For example, users would enter

```
http://ip_address/iFolder
```

where *ip_address* is the address of the iFolder server.

They would then click the Login link on the page.

WARNING: If users access iFolder for the first time through NetStorage, they are not given the opportunity to create a passphrase. This means that their files and folders are not encrypted on the iFolder server.

For more information, see [“Managing iFolder User Accounts”](#) in the *Novell iFolder 2.1 Installation and Administration Guide*.

Samba

To use Novell’s implementation of Samba file services on your NNLS server, you must have installed the service using the instructions in [“Installing Nterprise Linux Services”](#) in the *Novell Nterprise Linux Services Installation Guide*.

After installing the NNLS software, you must do the following:

1. Create an eDirectory user account for each user you want to have access to Samba file services on the NNLS server.
2. Create a home directory for each user by logging in to the server as the user from a shell prompt.

If you are new to NNLS, we recommend you use the step-by-step instructions located in [“eDirectory and Identity Services”](#) in the *Novell Nterprise Linux Services Lab Guide* for specific instructions on creating eDirectory objects (users, groups, and containers) on an NNLS server. Then see [“Create Samba User Home Directories”](#) in the same guide to finish preparing the server for Samba file service access.

All users whose accounts have been enabled for Samba access can access the NNLS server as they would any Windows server.

For more information on Novell’s implementation of Samba, see [Appendix B, “Samba Support in NNLS,”](#) on page 77.

NetStorage

The implementation points in the following sections are provided only as introductory information. For more information about using NetStorage, see the *NetStorage Administration Guide*.

Creating Storage Locations

You create access points from NetStorage to other file systems by creating Storage Location objects in eDirectory. For instructions on creating Storage Locations, see “[Creating a Storage Location Object](#)” in the *NetStorage Administration Guide*.

If You Performed an Express Installation

If you performed an express installation, your NetStorage installation already contains two Storage Locations:

- ◆ A shared folder on the NNLS server which contains a Read Me.html file that explains how to create Storage Location objects
- ◆ iFolder access to your NNLS iFolder server

TIP: iFolder access in NetStorage is controlled through the iFolder Storage Provider task in iManager and does not involve a storage location. For more information about the iManager task, see the context-sensitive help in iManager.

If You Performed a Custom Installation

If you performed a custom installation, your NetStorage installation contains the shared folder referenced in the previous section, but it might not contain an iFolder link depending on whether you specified an “[iFolder Server IP Address or Hostname](#)” (*Novell Nterprise Linux Services Installation Guide*) while installing Virtual Office.

iFolder Requires Additional Setup

If your NetStorage installation has an iFolder link, you must complete all the instructions in “[iFolder](#)” on page 24 before attempting to let users access the service.

Assigning User and Group Access Rights

Because NetStorage provides only access to other file storage systems, the users and groups that access the other systems through NetStorage must be created and granted file and directory access on those systems.

For example:

- ◆ NetWare users must exist in the eDirectory tree where the NetWare server resides and have access rights to the files and directories on the NetWare server.
- ◆ Windows users must exist on the Windows systems and have the required access rights to the files and directories on those systems.
- ◆ If your users will access iFolder files on the NNLS server, they must be defined as LUM users (and Samba users for Samba access) on the NNLS server.

IMPORTANT: The usernames and passwords used to authenticate to the NetStorage (NNLS) server through eDirectory must match the usernames and passwords defined on the target systems.

Authenticating to Access Other Target Systems

The NNLS installation establishes a primary authentication domain for NetStorage. To access any storage location, users must exist somewhere in this primary domain. When it receives an authentication request, NetStorage searches for the username in the context you specified during NNLS installation and in all its subcontexts.

Authentication to other file systems is often controlled by other authentication domains. For example, you might create a storage location on the NNLS server that points to a NetWare server that resides in a different eDirectory tree. To access this storage location, users must authenticate to the other tree.

This means that you must specify an additional context in the NetStorage configuration as a nonprimary authentication domain.

When defining a nonprimary authentication domain, you must

- ◆ Ensure that the username and password in the nonprimary domain matches the username and password in the primary domain.
- ◆ Specify the context where User objects reside. NetStorage doesn't search the subcontexts of nonprimary authentication domains.

For more information about managing NetStorage authentication domains, see [“Authentication Domains”](#) in the *NetStorage Administration Guide*.

NetStorage Authentication Is Not Persistent by Default

By default, users must reauthenticate each time they access NetStorage in a browser. This is true even if another browser window is open and authenticated on the same workstation.

The reason for this is that persistent cookies are not enabled by default.

This setting can be changed. For more information, see [“Persistent Cookies”](#) in the *NetStorage Administration Guide*.

Maintaining File Services

Use the links in this section to access detailed information on maintaining NNLS file services.

iFolder

Monitoring the iFolder Service Load

As the iFolder service load increases, you might need to increase the server capacity by installing additional RAM or adding disk space.

Use the iFolder Management Console to monitor how the server is meeting the needs of your iFolder users. For more information, see [“Monitoring Your iFolder System”](#) in the *Novell iFolder 2.1 Installation and Administration Guide*.

Consulting the iFolder Documentation

iFolder documentation includes the following information:

- ◆ *Novell iFolder 2.1 Installation and Administration Guide*: Provides comprehensive information for administrators on configuring and managing iFolder servers in the enterprise environment and includes the following:
 - ◆ A conceptual overview
 - ◆ Scenarios for deployment
 - ◆ Planning and management issues
 - ◆ Instructions for using the iFolder Management Console to manage iFolder

- ◆ *Novell iFolder Quick Start*: Introduces the iFolder client and provides information on installing and configuring the iFolder client on Windows workstations and laptops.
- ◆ *Novell iFolder 2.1 User Guide*: Provides comprehensive information on installing, managing, and using the iFolder client on workstations and laptops. It contains
 - ◆ A conceptual overview.
 - ◆ Scenarios for use.
 - ◆ Instructions for setting iFolder client preferences.
 - ◆ Information on securely accessing files from a handheld device or using a Web browser and Novell NetDrive.
- ◆ *Novell NetDrive 4.1 User Guide*: Provides information on installing and using NetDrive 4.1.
- ◆ *Novell iFolder 2.1 Readme*: Provides information on known issues for the iFolder server and client.
- ◆ *Novell NetDrive 4.1 Readme*: Provides information on known issues for NetDrive 4.1.

Samba

Information on the NNLS implementation of Samba is contained in [Appendix B, “Samba Support in NNLS,”](#) on page 77.

NetStorage

Your NetStorage installation can change as your network changes and evolves by providing access to new or consolidated storage locations. For information about the kinds of tasks you can perform to keep your NetStorage implementation current, see the *NetStorage Administration Guide*.

2 Print Services

Novell® Nterprise™ Linux Services includes Novell iPrint, a powerful and easy-to-implement printing solution that provides print-anywhere functionality to your network users.

This section contains

- ♦ An [Overview \(page 29\)](#) of Novell iPrint.
- ♦ [Planning Instructions \(page 32\)](#) that can help you plan your iPrint installation.
- ♦ [Implementation Suggestions \(page 32\)](#) for after you install NNLS.
- ♦ [Maintenance Suggestions \(page 34\)](#) with links to component-specific administration guides and other documentation.

NOTE: For installation instructions, see the [Novell Nterprise Linux Services Installation Guide](#).

Overview

Novell iPrint lets Windows users

- ♦ Quickly locate any local or remote printer using their Web browser.
- ♦ Easily install and configure a located printer with the click of a mouse.
- ♦ Print to installed printers from any location (including the Web) using an IP connection.

The information in this section provides a high-level overview of Novell iPrint print services. It is designed to acquaint you with basic iPrint functionality so you will understand

- ♦ The configuration steps you need to perform to provide iPrint print services.
- ♦ How iPrint functions from the user's perspective.

Using This Overview

If you already know that you want to provide NNLS print services for your users and you understand how iPrint works, skip the overviews and continue with [“Planning Instructions” on page 32](#).

If you want to learn more about iPrint, continue with this overview section.

iPrint Components

A Novell iPrint installation consists of various components, most of which are represented by objects in your eDirectory™ tree:

- ♦ **Print Driver Store:** This is a repository that stores the drivers on the NNLS server for your network printers. It is the first component you configure and is represented by an object in eDirectory that you create.

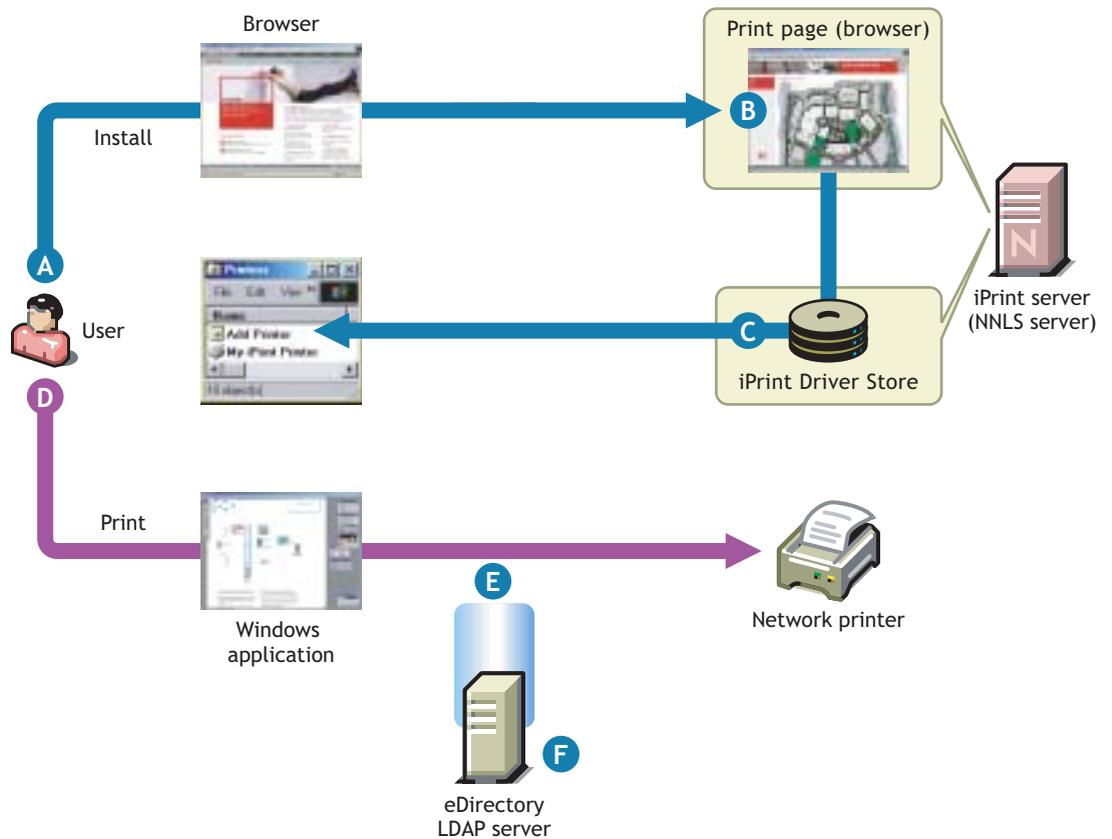
- ◆ **Printer Drivers:** These are the printer drivers that are stored in the Driver Store and are automatically installed on workstations when users select a target printer. Printer drivers exist as file structures within the driver store and are not represented by objects in eDirectory.
- ◆ **Printer Objects:** These are eDirectory objects you create that store information about the printers available through iPrint. The information stored in an object is used each time its associated printer is added to a workstation's list of available printers.
- ◆ **Print Manager:** This is a daemon that runs on the NNLS server. It receives print jobs from users and forwards them to the target printer when it is ready. It is represented by and controlled through an eDirectory object that you configure.
- ◆ **iPrint Client:** This is a set of browser plug-ins that is automatically installed on a workstation the first time it interacts with iPrint. It is required to navigate through the iPrint Web pages, select a target printer, and install the print driver.

For more information on iPrint, see “[Overview](#)” in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

iPrint Functionality

[Figure 7 on page 31](#) describes how iPrint functions from a user perspective.

Figure 7 How iPrint Works



- A** A user needing to use a printer for the first time accesses the organization's print page on the Web.
- If the iPrint browser plug-ins (iPrint Client) were not previously installed, they are automatically downloaded and installed.
- B** The Web page lets the user browse to the target printer using location lists and maps that you have previously created for the site where the printer is located.
- By default, iPrint generates a printer list for the printers hosted on the server.
- C** When the user selects the target printer, its driver is automatically installed and configured.
- D** The user can now submit print jobs to the installed printer from any Windows application.
- E** By default, users with access to the NNLS server (for example, those within the firewall or with access to resources within the firewall) can install printer drivers and print to iPrint printers without authenticating to iPrint services.
- You can require authentication if needed.
- F** Although shown separately, eDirectory could be installed on the NNLS server.

Planning Instructions

Use the following checklist to help you plan your iPrint installation:

- If you have not already done so, print the PDF version of the “[NNLS Planning Worksheet](#)” located in the *Novell Nterprise Linux Services Installation Guide*.
- iPrint has no additional RAM requirements.
- Most iPrint installations (even in large enterprises) do not require additional disk space for associated print job spooling.

However, if you anticipate very heavy print usage and want to plan for additional disk space in that regard, the iPrint spooler area is located in the /var partition or directory structure.

If desired, you can record the additional disk space required in the “[Server Hardware Requirements](#)” section of the “[NNLS Planning Worksheet](#)” you printed in [Step 1](#).

- To finish planning your iPrint installation, complete the “[iPrint](#)” section in the “[NNLS Planning Worksheet](#)” (*Novell Nterprise Linux Services Installation Guide*).

Implementation Suggestions

The information in this section provides only summary implementation points. For complete iPrint documentation, see the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

Initial Setup

After your NNLS server is installed, you need to do the following to complete your iPrint installation:

1 Create a Print Driver Store.

This stores the drivers for your network printers. Each Printer object you create for your network needs to reference a printer driver in this store. When users subsequently install printers, the correct drivers for the Windows platform running on their workstation are downloaded from the store and installed.

You create the Driver Store using iManager. For specific instructions, see “[Create an iPrint Driver Store](#)” in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

2 Add a printer driver to the Driver Store for each printer/Windows platform combination needed.

For example, If you have Windows XP and Windows 2000 workstations on your network and you have four different printer types, you need to add four printer drivers for each platform (a total of eight printer drivers) to the Driver Store.

You add printer drivers to the store using iManager. For specific instructions, see “[Updating Printer Drivers](#)” in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

3 Create a Print Manager object.

The Print Manager receives print jobs from users and forwards them to the target printer when it is ready. It must be running for you to create Printer objects.

The Print Manager is the novell-ipsmd daemon that runs on the NNLS server. The daemon is associated with a Print Manager object you create in eDirectory and is usually started and stopped using iManager.

You create the Print Manager object using iManager. For specific instructions, see [“Create a Print Manager”](#) in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

4 Create Printer objects.

You must create a Printer object for each printer you want users to access through iPrint. These objects store information about the printer that is used each time the printer is installed on a workstation.

You create Printer objects using iManager. For specific instructions, see [“Create a Printer”](#) in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

5 (Optional) Create location-based printing Web pages.

By default, each iPrint installation includes the creation of a Default Printer List Web page that users can access to install iPrint printers.

You have the option of enhancing the browsing experience by creating location-based printing Web pages that feature either lists of printers by location, maps of the buildings showing each printer, or a combination of both.

If your organization is located at multiple sites or even in a building with multiple floors, providing location-based print Web pages can greatly simplify printing for your users.

Your iPrint installation contains the iPrint Map Designer to help you easily create location maps with clickable printer icons. For more information, see [“Setting Up Location-Based Printing”](#) in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

6 Provide instructions to users for accessing iPrint printers.

After performing the Steps above, your network is ready for iPrint functionality. You need only tell users how to access your printing Web pages. Novell iPrint does the rest.

Other Implementation Tasks

In addition to the tasks described in [“Initial Setup” on page 32](#), there are additional tasks you might want or need to consider. These are documented in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services* and include such tasks as

- ◆ [“Using a Proxy Server”](#): These are often used in connection with firewalls. Users requiring remote printing capabilities might need to be aware of the simple setup this requires.
- ◆ [“Installing User Printers”](#): If a Windows computer has different users during the day with different printing needs, you can configure iPrint so that users see only the printers they should use.
- ◆ [“Setting Up iPrint on Terminal Servers”](#): You can set up iPrint on a terminal server so that server clients can print to iPrint printers.
- ◆ [“Creating an Installed Printer Name Profile”](#): On Windows NT*, 2000, and XP workstations, you can have the automated installation create a more user-friendly name than the default UNC/URL path format that is normally used.

Maintenance Suggestions

As you add printers to your network or move them to different locations, you should update your iPrint installation to reflect these changes using the information in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

After your installation is completed and users are printing, you can monitor print performance using the information located in “Using the iPrint Manager Health Monitor” in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

For more information on iPrint and its functionality within NNLS, see the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

3

Messaging Services

Novell® Nterprise™ Linux Services includes two Novell e-mail products:

- ◆ NetMail™ 3.5
- ◆ GroupWise® 6.5 Collaboration Client

This section contains

- ◆ An [Overview \(page 35\)](#) of Netmail and the GroupWise client.
- ◆ [Planning Instructions \(page 39\)](#) that can help you plan your NetMail installation and roll out the client to your network users.
- ◆ [Implementation Suggestions \(page 40\)](#) for after you install NNLS and the GroupWise client.
- ◆ [Maintenance Suggestions \(page 43\)](#) with links to component-specific administration guides and other documentation.

NOTE: For installation instructions, see the [Novell Nterprise Linux Services Installation Guide](#).

Overview

The information in this section provides a high-level overview of the messaging services available in NNLS. It is designed to acquaint you with the default functionality available after you perform an NNLS installation.

Novell Nterprise Linux Services includes

- ◆ **Novell NetMail 3.5:** A flexible and powerful e-mail solution that promotes collaboration within your organization and can easily scale to match your organization's growth.

NetMail 3.5 provides

- ◆ Standard e-mail functionality.
- ◆ Calendaring, scheduling, and busy searching.
- ◆ Tasks and notes.
- ◆ Self-administration of passwords, vacation messages, etc.
- ◆ Optional user access to administrative functions that include adding, modifying, and deleting e-mail users.

IMPORTANT: NetMail 3.5 is a feature-rich e-mail product that is both powerful and flexible. It isn't possible to illustrate its many features and configuration possibilities in an overview. However, some of these are introduced in ["Implementation Suggestions" on page 40](#), and the [Novell NetMail 3.5 Administration Guide](#) contains extensive detail about all the features included in NetMail 3.5.

- ◆ **Novell GroupWise 6.5 Collaboration Client:** This GroupWise client includes some customizations for working with the NetMail 3.5 e-mail server. For more information, see ["GroupWise Collaboration Client" on page 38](#).

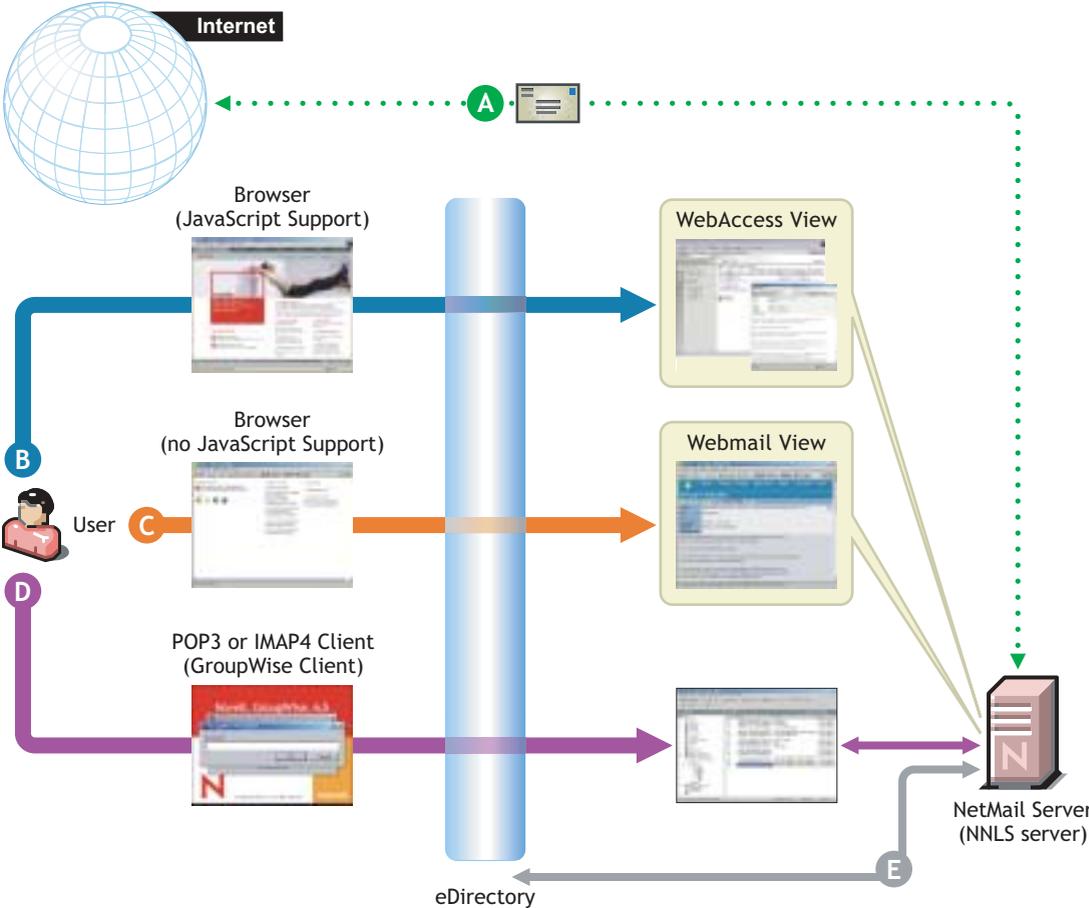
Using This Overview

If you already know that you want to provide e-mail services from your NNLS server and you understand how NetMail 3.5 and the Collaboration Client work, skip this overview and continue with [“Planning Instructions” on page 39](#).

Novell NetMail 3.5 and the GroupWise 6.5 Collaboration Client

[Figure 8 on page 37](#) illustrates the e-mail functionality that is available following an NNLS and GroupWise client installation and completion of the required NetMail post-install configuration tasks outlined in [“Implementation Suggestions” on page 40](#).

Figure 8 How NetMail and the GroupWise Client Work



A You can configure the NetMail server to receive and transmit e-mail messages for users in any eDirectory context.

Users have three basic options for accessing their e-mail accounts:

- B** If they are using a JavaScript-enabled browser, they can access the WebAccess template by connecting to the NetMail messaging server. The WebAccess template provides
 - Standard e-mail client functionality
 - Calendaring, scheduling, and busy searching
 - Tasks and notes
 - Self administration (passwords, vacation messages, etc.)
 - Conditional access to administrative functions (adding, modifying, deleting users)

C If they are using a browser that has no JavaScript support, they must access the Webmail view. This provides the same functionality as WebAccess, except for administrative functions.

D Finally, users can access the NetMail server using a local POP3 or IMAP4 mail client, such as the GroupWise Collaboration Client that is included with NNLS.

E All e-mail service access is controlled by authentication through eDirectory on the NNLS server.

Functional Changes

This section summarizes feature enhancements and changes in NNLS e-mail components compared with their previous versions.

NetMail 3.5

NetMail 3.5 supports the following new functionality:

- ◆ Busy searching
- ◆ Shared folders
- ◆ User proxy
- ◆ Nsure auditing services

More information on these feature enhancements is available in the *Novell NetMail 3.5 Administration Guide*.

GroupWise Collaboration Client

The GroupWise Collaboration Client has been enhanced to work with a NetMail 3.5 back end. More detailed information is available in the online help included with an installed GroupWise client.

New Features

The following features are new in the Novell GroupWise 6.5 Collaboration Client for Novell Nterprise Linux Services 1.0:

- ◆ **IMAP4 Shared Folders:** You can share your IMAP4 account folders with other users in the same IMAP4 domain. For example, you can share your NetMail folders with other users in the NetMail domain. The IMAP4 domain must support sharing folders.

For more information on this feature, look in the GroupWise online help for instructions on sharing a folder with other users, seeing the IMAP4 folders that are shared with you, and downloading POP3 and IMAP4 accounts to GroupWise.

- ◆ **Free Busy Search on a CAP Server:** You can perform a free busy search on other users in your NetMail account domain or on users in any other IMAP4 account domain that supports CAP (Calendar Access Protocol).

Before you can perform a free busy search, you need to add a CAP server account using the CAP tab in the Accounts dialog box.

For more information on busy searching and scheduling, look in the GroupWise online help for instructions on adding a CAP account to GroupWise, modifying the properties of a CAP account, and scheduling appointments for other users.

- ◆ **Remote (Offline) Mode:** You can run this client in two different modes:
 - ◆ **Remote:** This automatically connects to your NetMail system and IMAP4/POP3/NNTP accounts at periods you specify.
 - ◆ **Remote (Offline):** This never automatically connects. Working offline is beneficial when you are working on a disconnected laptop and do not need to connect, and also when you want to reduce charges for online time.

If you select to connect while in Remote (Offline) mode, your mode is changed to Remote mode and a connection is made. After the connection has completed, you can return to Remote (Offline) mode by clicking File > Work Offline.

For more information, look in the online help for the different ways you can run GroupWise.

Unsupported Features

Unless you run this GroupWise Collaboration Client against a GroupWise back end, the following functionality shown in the user interface is not supported:

- ◆ Online and caching modes
- ◆ Proxy
- ◆ GroupWise Client rules (although NetMail rules that are set up in NetMail are supported)
- ◆ Document management
- ◆ Junk mail handling
- ◆ Shared address books
- ◆ Routing slips (sending messages to several users in defined, consecutive order)
- ◆ Status tracking (seeing status information on the Properties page of a sent item)
- ◆ Notify

Planning Instructions

Use the information in this section to plan your NetMail 3.5 and GroupWise client installations.

NetMail 3.5

Use the information in [Table 2](#) to help you determine how to plan your NetMail 3.5 implementation.

Table 2 Where to Go for Planning Information

If You Are	Use the Planning Information In	Use the Installation Instructions In
Upgrading an existing NetMail installation	“Upgrading to NetMail 3.5” in the <i>Novell NetMail 3.5 Administration Guide</i>	“Upgrading to NetMail 3.5” in the <i>Novell NetMail 3.5 Administration Guide</i>
Installing a single e-mail server	This section	<i>Novell Nterprise Linux Services Installation Guide</i>
Installing multiple e-mail servers	“Planning Your NetMail System” in the <i>Novell NetMail 3.5 Administration Guide</i> .	<i>Novell Nterprise Linux Services Installation Guide</i>
Unsure what to do	“Planning Your NetMail System” in the <i>Novell NetMail 3.5 Administration Guide</i> .	<i>Novell Nterprise Linux Services Installation Guide</i>

To plan a NetMail 3.5 installation on a single server:

- 1 If you have not already done so, print the PDF version of the [“NNLS Planning Worksheet”](#) located in the *Novell Nterprise Linux Services Installation Guide*.

- 2 Record the additional RAM required in the “[Server Hardware Requirements](#)” section of the “[NNLS Planning Worksheet](#)” you printed in [Step 1](#).

NetMail 3.5 RAM requirements are summarized as follows:

- ◆ 32 MB supports up to 50 simultaneous connections with a standard NNLS NetMail 3.5 installation.
- ◆ More specific RAM requirements vary depending on the messaging system configuration you choose. For more information, see “[Planning Your NetMail System](#)” in the *Novell NetMail 3.5 Administration Guide*.

- 3 Record the additional disk space required in the “[Server Hardware Requirements](#)” section of the “[NNLS Planning Worksheet](#)” you printed in [Step 1](#).

IMPORTANT: You must plan for the message store, message spooling area, event logging data store (Nsure Audit functionality), and other disk space requirements on the /var partition. For more information, see the “[Planning Your NetMail System](#)” in the *Novell NetMail 3.5 Administration Guide*.

NetMail 3.5 system disk space requirements are included in the amounts listed for NNLS in the “[NNLS Planning Worksheet](#)” found in the *Novell Nterprise Linux Services Installation Guide*

- 4 To finish planning your NetMail installation, complete the “[NetMail](#)” section in the “[NNLS Planning Worksheet](#)” (*Novell Nterprise Linux Services Installation Guide*).
- 5 Develop a plan for letting your network users know the steps for accessing their e-mail accounts.

For more information, see “[Using WebAccess and Webmail](#)” in the *Novell NetMail 3.5 Administration Guide*.

GroupWise 6.5 Collaboration Client

If you want your Windows users to access the NetMail 3.5 server using a POP3 or IMAP4 client rather than through a Web browser, you can install the GroupWise client on their workstations.

To plan your GroupWise client installation:

- 1 Determine how you will distribute the client software and install it on target workstations.
- 2 Determine whether you want users to connect to the NetMail 3.5 (NNLS) server using a POP3 or an IMAP4 connection.

TIP: POP3 downloads e-mail messages to the local machine and removes them from the NetMail 3.5 server. When downloaded, they are no longer available on other workstations.

IMAP4 preserves copies of messages on the server until they are deleted.

- 3 Identify the steps required to configure the client to access your NetMail server and how you will communicate these steps to your users.

Implementation Suggestions

This section provides only a summary of implementation pointers. For complete implementation information, see the *Novell NetMail 3.5 Administration Guide* and the online help available in an installed GroupWise 6.5 Collaboration Client.

Upgrading to NetMail 3.5

The NNLS installation scripts perform only new installations. They will not upgrade an existing installation.

If you are upgrading from a previous NetMail version, you must following the instructions in “Upgrading to NetMail 3.5” in the *Novell NetMail 3.5 Administration Guide*.

Installing NetMail 3.5

To install NetMail 3.5 on a new server, follow the instructions in the *Novell Nterprise Linux Services Installation Guide*.

NetMail 3.5

The NNLS installation creates and configures all the agents and other objects that a basic NetMail 3.5 system requires, including the following:

- ◆ A Messaging Server object
- ◆ An NMAP agent
- ◆ A POP agent
- ◆ An iMAP agent
- ◆ A Modular Web agent
- ◆ Other required agents

This section outlines the additional steps you need to perform to begin providing basic e-mail services using NetMail 3.5.

The *Novell NetMail 3.5 Administration Guide* provides extensive information on the capabilities of NetMail 3.5 and is an excellent source for helping you customize your NetMail installation.

Setting Up Users and Address Books

Before users can begin using your e-mail system, you will need to create User objects for them in eDirectory™. You might also want to provide one or more address books for them to use.

- 1 Create one or more eDirectory containers for your network users.
- 2 Configure the NMAP agent with one or more eDirectory contexts for your NetMail users.

For more information, see “Configuring the NMAP Agent” (the Context option) in the *Novell NetMail 3.5 Administration Guide*.

The context of your NNLS server is automatically configured for e-mail services. However, most administrators prefer to define separate contexts for network users.

- 3 Create users in the contexts you have created and configured.
- 4 Configure the Address Book agent.

For more information, see “Configuring the Address Book Agent” in the *Novell NetMail 3.5 Administration Guide*.

Monitoring Disk Space Usage

You should closely monitor the disk space used for event logging (Nsure Audit data store). The volume of events logged causes store data to grow rapidly. If the data store and the local cache run out of disk space, the messaging system stops.

For more information, see [“Auditing Your Messaging System”](#) in the *Novell NetMail 3.5 Administration Guide*.

Other Topics

Table 3 summarizes a few additional topics you might want to consider and provides direct links to the appropriate documentation.

Table 3

Topic	Link
Fault Tolerance	“Building Fault Tolerance in NetMail” (<i>Novell NetMail 3.5 Administration Guide</i>)
Using WebAdmin to administer NetMail 3.5	“WebAdmin” (<i>Novell NetMail 3.5 Administration Guide</i>)
System administration tasks	“System Administration” (<i>Novell NetMail 3.5 Administration Guide</i>)
Managing SSL certificates and providing authentication services	“Setting Up TLS and SSL” and “Authenticating SMTP Connections” (<i>Novell NetMail 3.5 Administration Guide</i>)
Protecting your system from spam, viruses, and other security risks	“Protecting Your System from Spam” and “Providing AntiVirus Protection” (<i>Novell NetMail 3.5 Administration Guide</i>)
Auditing your e-mail system	“Auditing Your Messaging System” (<i>Novell NetMail 3.5 Administration Guide</i>)

GroupWise Collaboration Client

To install the client on a Windows workstation:

- 1 Insert the *Novell Nterprise Linux Services 1.0 Companion CD* into the workstation’s CD drive.
- 2 Browse to the \win32 directory and run setup.exe.
- 3 In the Select StartUp Folder Software dialog box, make sure GroupWise Notify is deselected. Notify detects incoming mail, but the sender information shown is not correct.
- 4 In the Software Integrations dialog box, make sure all software programs are deselected. Installing software integrations with the Collaboration Client causes the client to generate errors.

To begin using the GroupWise client with NetMail, see [“Using the Novell GroupWise 6.5 Collaboration Client for Novell Nterprise Linux Services 1.0 \(v6.5 for NNLS 1.0\)”](#) in the *GroupWise 6.5 Windows Client User Guide*.

Maintenance Suggestions

Of all the services provided with NNLS, e-mail services will probably be used by the most used and require the most attention.

As users settle into using the system you will need to rely on the *Novell NetMail 3.5 Administration Guide* for help with common maintenance tasks, such as

- ◆ Monitoring disk space usage and possibly setting mailbox quotas.
- ◆ Ensuring that the system is filtering out unwanted spam and that your virus protection is current and working correctly.
- ◆ Addressing user requests such as changing passwords and fixing mailboxes that have been corrupted.

The Table of Contents of the *Novell NetMail 3.5 Administration Guide* is an excellent resource for reminding you of the system administration tasks you should cover.

4

Virtual Office

Novell® Nterprise™ Linux Services include Virtual Office, a Web portal that provide access to NNLS services for your customers, employees and partners—anytime, anywhere.

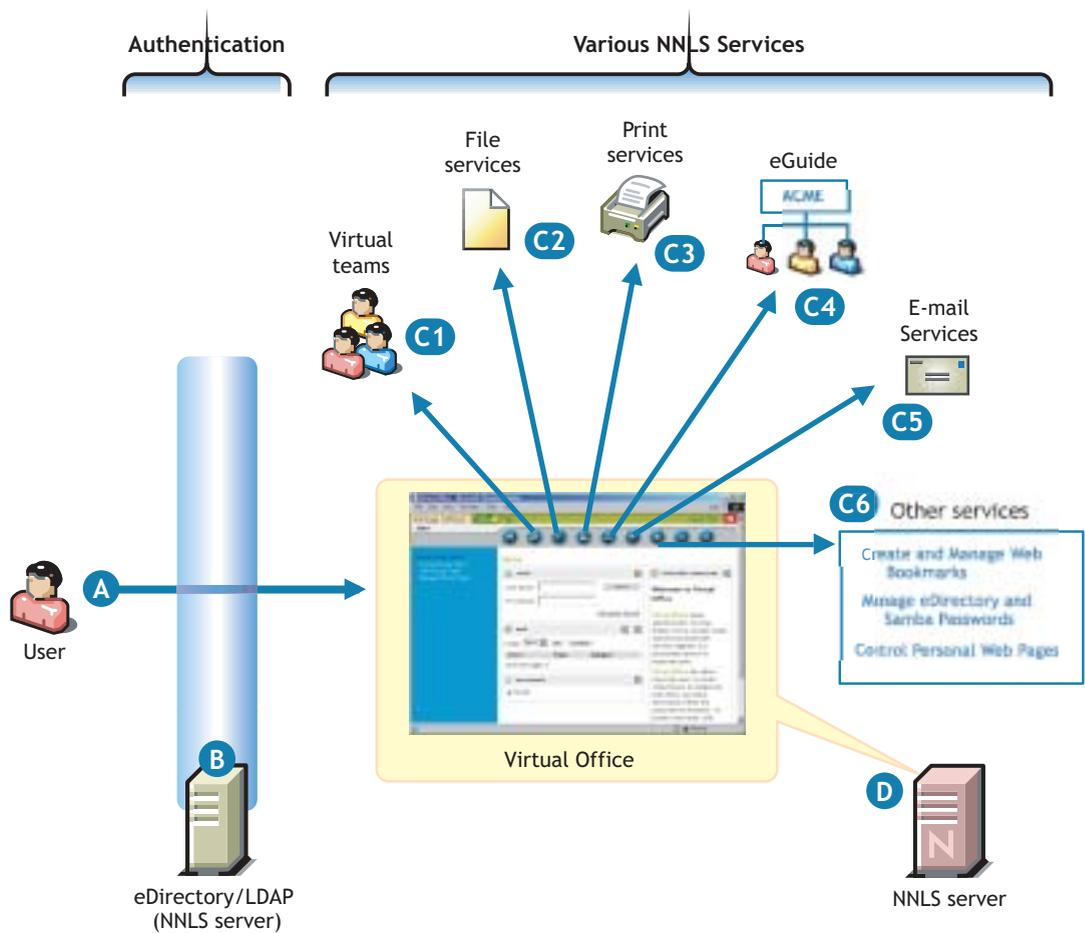
This section contains

- ♦ “Overview” on page 45
- ♦ “Planning Instructions” on page 47
- ♦ “Implementation Suggestions” on page 47
- ♦ “Maintenance Suggestions” on page 48

Overview

Figure 9 on page 46 illustrates the NNLS services that Virtual Office makes accessible through a Web browser.

Figure 9 How Virtual Office Works



A Users access the Virtual Office services portal through a Web browser.

B Access to Virtual Office and its associated services is controlled by LDAP-based authentication through the eDirectory LDAP server.

Although shown separately, eDirectory could be installed on the NNLS server.

C Depending on the services you have installed and the way you have configured Virtual Office, users can do the following :

C1 Create and participate in virtual teams of eDirectory users.

Team members can chat with other team members online, exchange files, share Web links, and do other team-related tasks using the Virtual Office portal.

C2 Access files through NetStorage, including iFolder files, NetWare file systems, and Windows file systems that you have configured NetStorage to interface with.

C3 Access and print to any printers that you have set up for iPrint services.

C4 Access eGuide and search for all the important people, places, and things you have configured eGuide to provide.

C5 Access NetMail running on NNLS and use the many e-mail features that it provides, including calendaring.

C6 Access numerous other services, including one that lets them change their eDirectory password and synchronize the change with NNLS Samba services.

D In addition to hosting Virtual Office, the NNLS server might host some or all of the services shown.

On the other hand, it might host only the Virtual Office portal while the services it links to are running on other servers.

You determine this through the way you configure Virtual Office to run.

Planning Instructions

- 1 If you have not already done so, print the PDF version of the “[NNLS Planning Worksheet](#)” located in the *Novell Nterprise Linux Services Installation Guide*.
- 2 On the worksheet, record the eDirectory™ address on the server that Virtual Office will use and the admin name and password the install script will use to install Virtual Office.
- 3 Record the NetStorage information on the worksheet.

This information will be used to create:

- ◆ The primary authentication domain that NetStorage uses for authenticating users seeking access.
 - ◆ An optional iFolder® Storage Provider link so that users can access iFolder through NetStorage.
- 4 (Optional) Although not included on the installation planning worksheet, if you plan to configure Virtual Office to provide links to file, print, e-mail, or other services that are not installed on the same NNLS server as Virtual Office is, you might want to identify the IP address and other information for those services.

For information on what is needed to configure Virtual Office, see the *Novell Virtual Office Configuration Guide*.

Implementation Suggestions

NetStorage and eGuide are automatically installed as part of Virtual Office. If NetMail™ and iPrint are installed on the same NNLS server, they are also made accessible through the Virtual Office interface.

Of these four services, only eGuide requires no further configuration before it can be used. Instructions for preparing the other services for use are included in their respective sections in this guide.

Although Virtual Office doesn't require additional configuration, you can easily change the default settings using iManager. For example, you can

- ◆ Post messages to the Virtual Office home page.
- ◆ Control whether service icons appear in the interface.
- ◆ Configure Virtual Office to access NetStorage or eGuide through an Internet proxy server.
- ◆ Configure Virtual Office to access other file, print, or e-mail services.

For information on getting started with Virtual Office, see the *Novell Virtual Office Configuration Guide* and the online help installed with Virtual Office.

Maintenance Suggestions

As your network grows and changes over time, you can use iManager to change your Virtual Office installation so that it continues to provide single-point access to network services. For more information, see the *Novell Virtual Office Configuration Guide*.

5

eGuide

Installing Virtual Office as part of Novell® Nterprise™ Linux Services automatically installs Novell eGuide as well.

This section contains

- ♦ [“Overview” on page 49](#)
- ♦ [“Planning Instructions” on page 50](#)
- ♦ [“Implementation Suggestions” on page 51](#)
- ♦ [“Maintenance Suggestions” on page 51](#)

Overview

eGuide lets you use the information in eDirectory™ to create a “white pages” directory for your organization that users can access from their Web browser.

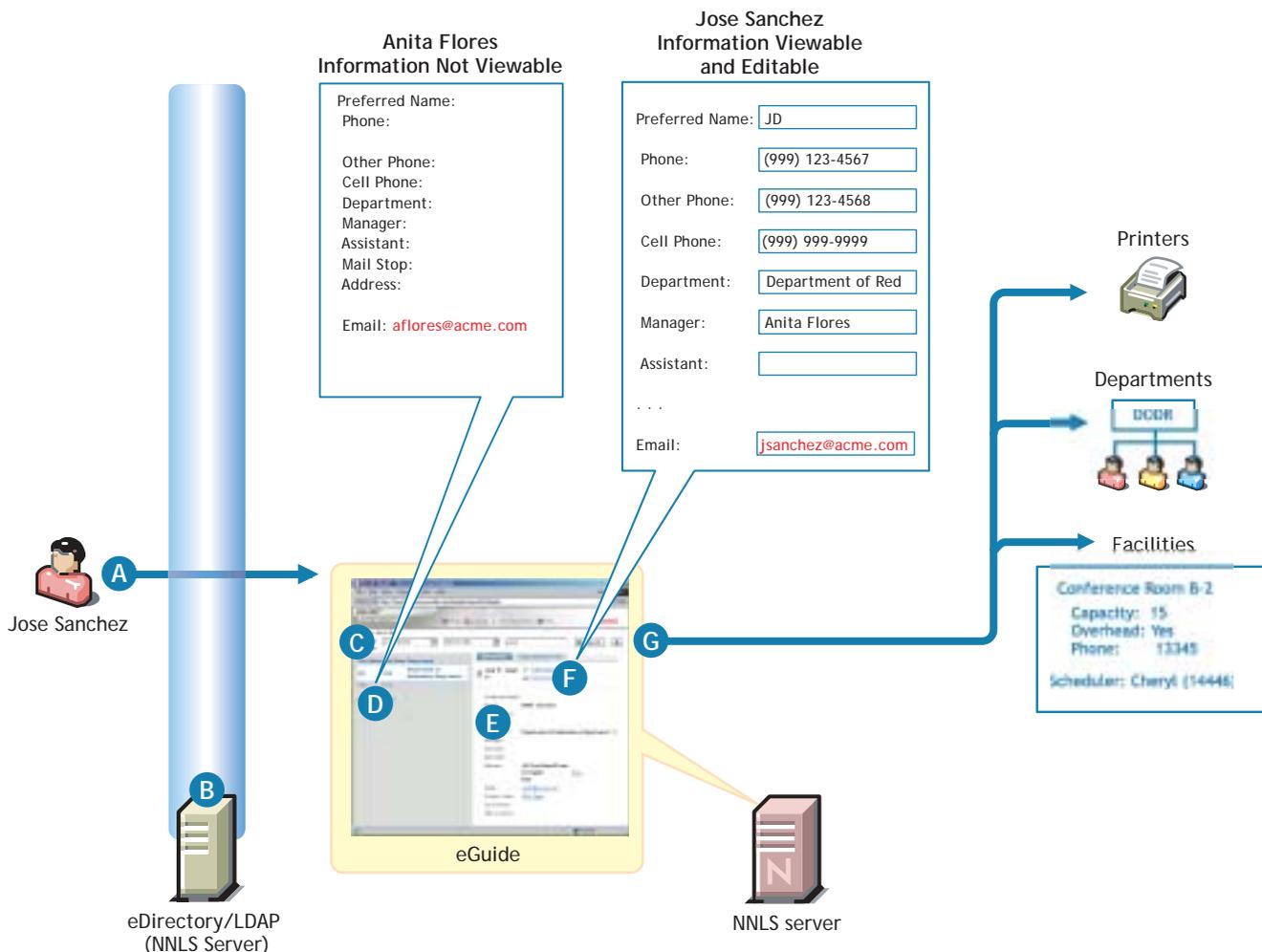
You can configure eGuide to publish any information that you choose to store in eDirectory.

For example, the default eGuide installation in NNLS lets users search for the names of all eDirectory User objects on your system. It lets them see the details for their own User objects that are stored in eDirectory, but it doesn't let them modify the eDirectory information. If they access other User objects, they can see only the e-mail address attributes associated with those objects.

You can configure eGuide so that users can see information for other users in your organization, such as their telephone numbers, office locations, job titles, and any other information you choose to store in eDirectory. You can also configure eGuide so that users can maintain their own information in eDirectory. You can even let them choose the information they want other users to be able to access.

[Figure 10 on page 50](#) summarizes the eGuide functionality available by default in NNLS 1.0.

Figure 10 How eGuide Works



A An eDirectory user named Jose Sanchez logs into eGuide.

B Access to eGuide is controlled through LDAP-based authentication through the eDirectory LDAP server.

Although shown separately, eDirectory could be installed on the NNLS server.

C Jose performs a search using the asterisk (*) wildcard and sees two entries: Anita Flores and Jose Sanchez.

D If Jose clicks Anita's name, by default Anita's eDirectory information is not shown (except for her e-mail address).

The information to display is administrator configurable.

E On the other hand, Jose can see his own information.

F Although not available by default, the eGuide administrator can configure eGuide so that Jose can also edit some of his information and the changes will be stored in eDirectory.

G Although not configured by default, you can let users search on any object types you create in eDirectory. Users can then find the people, places, things, and information they need to be productive and self-sufficient.

Planning Instructions

Because eGuide is installed as part of Virtual office, there are no installation parameters to identify. The planning you do for eGuide should involve the following considerations:

- ◆ Whether you want eGuide available to your users. You can configure Virtual Office so that eGuide is not exposed in the interface.

- ◆ The eDirectory objects you want to expose through eGuide.
- ◆ The role you want users to play in accessing and maintaining eDirectory information through eGuide.

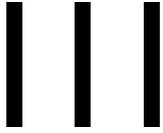
For more information on planning your eGuide implementation, see “[eGuide Product Overview](#)” in the *Novell eGuide 2.1.2 Administration Guide*.

Implementation Suggestions

You can implement your eGuide plans using the information in “[Using the eGuide Administration Utility](#)” and other appropriate sections in the *Novell eGuide 2.1.2 Administration Guide*.

Maintenance Suggestions

As both your organization and your network evolve, you should ensure that eGuide is helping you achieve your organizational objectives. The information in the *Novell eGuide 2.1.2 Administration Guide* can help you maintain your eGuide implementation.



Management Services

Novell® Nterprise™ Linux Services (NNLS) management tools and other information are explained in the following sections:

- ♦ [Chapter 6, “eDirectory,” on page 55](#)
- ♦ [Chapter 7, “Identity Management Services,” on page 57](#)
- ♦ [Chapter 8, “Administrative Tools,” on page 61](#)
- ♦ [Chapter 9, “Authentication and LDAP;” on page 67](#)

6 eDirectory

Novell® eDirectory™ is the central, key component of Novell Nterprise™ Linux Services and provides the following:

- ◆ Centralized identity management
- ◆ The underlying infrastructure for managing your network servers and the services they provide
- ◆ Access security both within the firewall and from the Web

This section discusses the following tasks:

- ◆ [“Managing eDirectory” on page 55](#)
- ◆ [“Planning Your eDirectory Tree” on page 55](#)
- ◆ [“Creating Users and Groups” on page 56](#)

Managing eDirectory

iManager is the NNLS 1.0 eDirectory management tool and is used for all eDirectory management and most NNLS component management tasks, including the following:

- ◆ Creating eDirectory objects
- ◆ Managing eDirectory objects
- ◆ Configuring and managing NNLS service component controls in eDirectory
- ◆ Accessing other NNLS component management tools

For information on using iManager, see the *Novell iManager 2.0.x Administration Guide*.

Planning Your eDirectory Tree

If you don't have eDirectory installed on your network, it is critical that you and your organization take time to plan and design your eDirectory tree prior to installing NNLS.

The *Novell Nterprise Linux Services Lab Guide* provides an [“Introduction to eDirectory Planning”](#) that you should find useful for getting started with eDirectory.

For detailed information on getting started using eDirectory, see [“Installing or Upgrading Novell eDirectory on Linux”](#) in the *Novell eDirectory 8.7.3 Installation Guide*.

Creating Users and Groups

All NNLS components require that you create User objects to represent the users on your system. The Linux User Management and Samba components also require that you create a LUM Group object that you can assign the users to.

In addition to these basic objects, it is usually helpful to organize your tree structure using Organizational Unit objects to represent the structure of your organization and to serve as container objects to help manage the users, groups, servers, printers, and other organization resources you manage through eDirectory.

The *Novell Nterprise Linux Services Lab Guide* provides basic instructions for creating container objects as well as Group and User objects in eDirectory.

For detailed information on understanding, creating, and managing the various objects your organization might require, see the *Novell eDirectory 8.7.3 Installation Guide*.

7

Identity Management Services

The identity management services provided by Novell® Nterprise™ Linux Services (NNLS) leverage Novell eDirectory™ and can strengthen your organization's security and decrease your management costs.

This section discusses the following topics:

- ◆ [DirXML Starter Pack \(page 57\)](#)
- ◆ [Linux User Management \(LUM\) \(page 57\)](#)
- ◆ [Password Management and Samba Passwords \(page 59\)](#)

DirXML Starter Pack

NNLS includes the DirXML® Starter Pack, which includes support for synchronizing information held in NT Domains, Active Directory* Domains, and eDirectory trees as well as trial drivers for other directories and databases that come with the full-featured DirXML product.

DirXML lets you do the following:

- ◆ Import User objects into eDirectory
- ◆ Keep all the user data (including passwords) in your different databases synchronized with each other

When data from one system changes, DirXML detects and propagates these changes to other connected systems based on the business policies you define.

For overview, planning, and implementation instructions, see the *[DirXML Starter Pack Lab Guide for Novell Nterprise Linux Services](#)*.

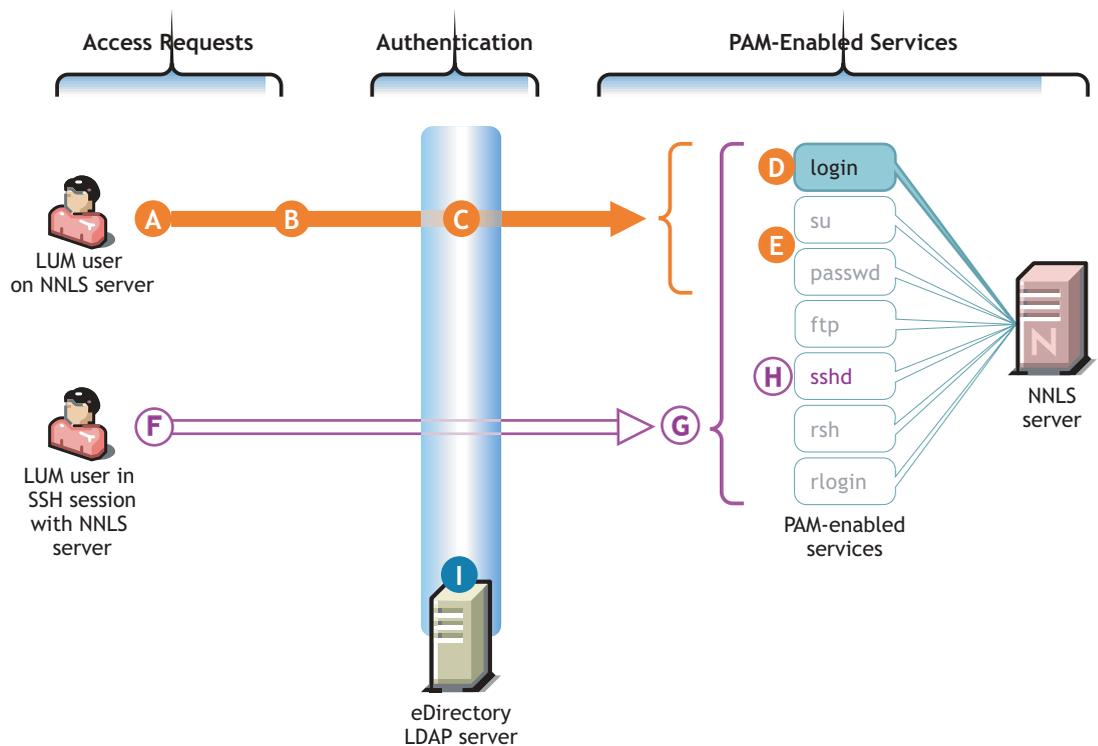
Linux User Management (LUM)

Linux User Management lets you create eDirectory users that can then access the NNLS server. This is required if either of the following applies to your NNLS implementation:

- ◆ You want users who are accessing PAM-enabled services, such as login or ftp, on a Linux workstation or the NNLS server to authenticate through eDirectory.
- ◆ You are providing Samba file services on the NNLS server to Windows users on your network.

[Figure 11 on page 58](#) illustrates how the Linux User Management services in NNLS control access to the NNLS server.

Figure 11 What Linux User Management (LUM) Does



This scenario reflects the default configuration of PAM-enabled services for leveraging NNLS Linux User Management (LUM).

- A A LUM (eDirectory) user requests to log in to the NNLS server.
- B Because login is a PAM-enabled service, when the system doesn't find a local user account for the eDirectory user, it checks the PAM configuration files to see whether an alternate authentication method is defined for login.
- C The install has configured the login command with an alternative authentication method: the eDirectory LDAP server.
- D Because login is configured to allow LDAP authentication through the eDirectory server, the user is granted access to the server.
- E Although the su and passwd commands could be available when working on the server, they are not configured to authenticate against eDirectory by default.

Therefore, if the LUM user attempts to use these commands, the request fails.

- F The same LUM user could try to log in to the server through an SSH session on a remote workstation. However, for an eDirectory/LUM user to establish an SSH session, the sshd command (H) must be LUM enabled.
- G While there are only three services that can be made available on the server, there are seven services (including sshd) that are potentially available when working remotely.
- H By default, sshd is not configured to leverage the eDirectory LDAP server like the login command is. Therefore, if the eDirectory/LUM user attempts to establish the SSH session, the login request fails.
- I Although shown separately, eDirectory could be installed on the NNLS server.

Table 4 on page 59 summarizes the functions of the various PAM-enabled services that can be controlled by having LUM installed. As illustrated in Figure 11 above, only the login command is enabled for LUM support during the NNLS installation.

If you want to enable other PAM-enabled services for access by LUM users, you should plan to do this during the NNLS installation process. For more information, see “Linux User Management” in the *Novell Nterprise Linux Services Installation Guide*.

Table 4 PAM-enabled Services Controlled by LUM

Command	Where Executed	Task
ftp	Another host	Transfer files to and from the NNLS server, which is a remote host in this case.
login	NNLS server or in an SSH session with NNLS server	Log in to the NNLS server, either directly or in an SSH session with the server.
passwd	NNLS server or in an SSH session with NNLS server	Change the eDirectory password.
rlogin	Another host	Log in to the NNLS server, which is a remote host in this case.
rsh	Another host	Execute a command on the NNLS server, which is a remote host in this case.
sshd	Another host	Establish a secure encrypted connection with the NNLS server, which is a remote host in this case.
su	NNLS server or in an SSH session with NNLS server.	Temporarily become another user. This is most often used to temporarily become the root user, who is not a LUM user and is, therefore, not affected by LUM.

Password Management and Samba Passwords

In NNLS 1.0, eDirectory users can change their own passwords by default.

If you have installed the NNLS distribution of Samba file services, be aware that the Samba password is stored separately from the eDirectory password in eDirectory.

If your eDirectory users have Samba accounts, they should change their passwords using Virtual Office to ensure that the eDirectory and Samba passwords are synchronized. Otherwise, changing the eDirectory password using another method doesn't automatically change the Samba password as well.

Users can change their eDirectory password and have their Samba password changed at the same time by completing the following steps:

- 1 In a Web browser, launch Virtual Office by entering the following URL in the Address field:
http://IP_or_DNS/vo
where *IP_or_DNS* is the IP address or full DNS name of the NNLS server.
- 2 Log in to Virtual Office using the eDirectory username and password for the account being changed.
- 3 Click the Padlock icon .
- 4 Type the current eDirectory password.
- 5 Retype the new eDirectory password to confirm it.
- 6 Leave the Synchronize Samba Password option checked.
- 7 Click OK.

8

Administrative Tools

This section provides information about the administrative tools used to manage Novell® Nterprise™ Linux Services (NNLS) components, and it discusses the following:

- ♦ [Accessing the NNLS Server \(page 61\)](#)
- ♦ [Overview of Management Tools \(page 62\)](#)
- ♦ [Starting and Stopping Services from the Command Line \(page 63\)](#)
- ♦ [Be Sure to Run the iManager Configuration Wizard \(page 64\)](#)

Accessing the NNLS Server

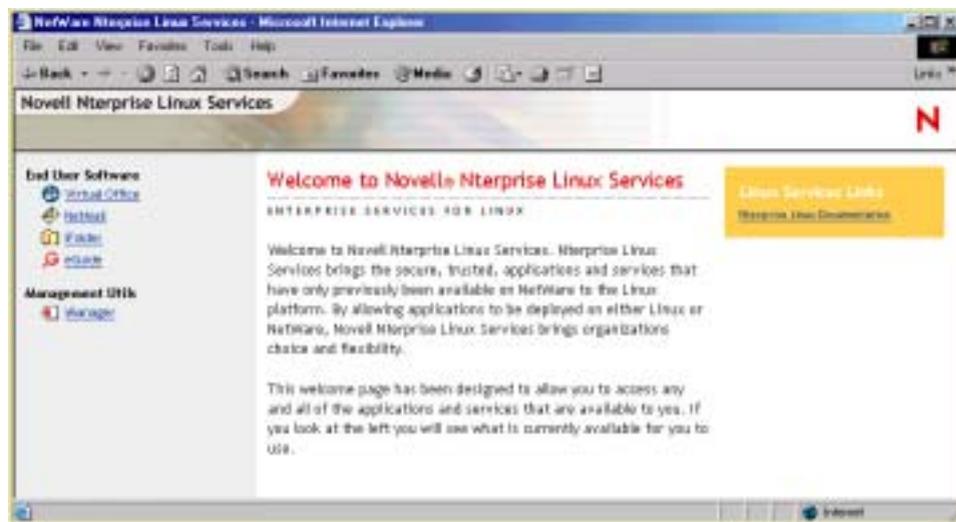
After the NNLS server is installed, you can access it using a browser by entering its IP address or DNS name in the Address field:

`http://IP_or_DNS`

where *IP_or_DNS* is the IP address or DNS name of the server.

Figure 12 shows the default server page that displays with links to various services and iManager:

Figure 12 The Default NNLS Server Page



IMPORTANT: Do not access the End User Software links until you have configured the services you are implementing as explained in the implementation sections in this guide or in [“Getting Acquainted with NNLS”](#) in the *Novell Nterprise Linux Services Lab Guide*.

Overview of Management Tools

With the exception of one task (creating home directories for Samba users), we recommend that all NNLS management be performed using the browser-based tools. This ensures that all the system commands required to execute various tasks are performed in proper order and that none of them is overlooked.

Table 5 is a quick reference for accessing NNLS management tools. Specific instructions for the tasks listed are found in the administration guides and other documentation for the services each tool manages.

Table 5 NNLS Management Tool Quick Reference

Tool	Tasks	Access Method or URL	Notes
eGuide Administrator	Configure: <ul style="list-style-type: none"> ◆ LDAP data sources ◆ Searching ◆ Look and feel ◆ Security 	http://IP_or_DNS/eGuide/admin https://IP_or_DNS/eGuide/admin	For more information on using the eGuide Administrator tool, see the <i>Novell eGuide 2.1.2 Administration Guide</i> .
iFolder® Management Tool	<ul style="list-style-type: none"> ◆ Manage iFolder servers ◆ Manage iFolder users ◆ Monitor resource usage ◆ Generate system reports 	https://IP_or_DNS/iFolderServer/Admin	Although the home page is displayed after an http request, logging into the tool requires an https request and connection. For more information on using the iFolder Management Tool, see the <i>Novell iFolder 2.1 Installation and Administration Guide</i> .
iManager	<ul style="list-style-type: none"> ◆ Manage eDirectory™ ◆ Create and manage users, groups, and other objects ◆ Manage NNLS services ◆ Access the iFolder management tool and Web Admin 	http://IP_or_DNS/nps/iManager https://IP_or_DNS/nps/iManager	Requires an SSL connection (HTTPS). Both HTTP and HTTPS requests establish the SSL connection. For more information on using iManager, see the <i>Novell iManager 2.0.x Administration Guide</i> .
WebAdmin	<ul style="list-style-type: none"> ◆ Manage NetMail ◆ Manage the Red Carpet daemon (Novell Resource Management) 	http://IP_or_DNS:8018 https://IP_or_DNS:8020	WebAdmin is used to administer NetMail™ and Novell Resource Management (Red Carpet™ daemon). You can use one of the URLs shown or access the tool through iManager. For more information on using WebAdmin, see the <i>Novell NetMail 3.5 Administration Guide</i> .

NOTE: Administrators who are familiar with other Novell products might expect to see ConsoleOne® listed. However, because no NNLS components require ConsoleOne, it is not included with the product.

Starting and Stopping Services from the Command Line

We recommend using the browser-based tools outlined in “[Overview of Management Tools](#)” on [page 62](#) for managing all NNLS services. However, if you need to stop or start services from the command line, use the following command:

```
/etc/init.d/script_name command
```

where *script_name* and *command* are any of the values listed in the Script Name and Commands columns in [Table 6](#).

Table 6

Service	Script Name	Commands	Notes
Apache Web server	novell-httpd	start stop restart reload force-reload	You should always ensure that Tomcat (novell-tomcat4) is running when the Apache Web server (novell-httpd) is started.
eDirectory	ndsd	start stop restart reload status	eDirectory SLP support (slpuasa) should be running before you start eDirectory (ndsd).
eDirectory SLP support	slpuasa	start stop	eDirectory SLP support is not usually stopped. When stopping the support is required, be sure to start it again before starting eDirectory (ndsd).
eDirectory SNMP support	ndssnmpsa	start stop	
iPrint	novell-idsd novell-ipsmd	start stop reload status	This runs only when iPrint is configured.
Linux User Management	namcd	start stop	
NetMail	novell-netmail	start stop	NetMail (novell-netmail) requires NetMail auditing (novell-naudit) to run.
NetMail auditing	novell-naudit	start stop restart force-reload status	This service is not usually stopped. When stopping is required, stop the service only after stopping NetMail and be sure to start it up again before starting NetMail.
Red Carpet	rcd	start stop restart status	

Service	Script Name	Commands	Notes
Resource Management (Red Carpet)	novell-rmrcdlink	start stop restart status	If you change the IP address used by the daemon, you then need to run this script once.
Samba	novell-smb	start stop restart reload force-reload	
Samba CIFS support	novell-winbind	start stop restart reload force-reload	
Tomcat	novell-tomcat4	start stop restart condrestart	
WebAdmin	novell-webadmin	start stop	

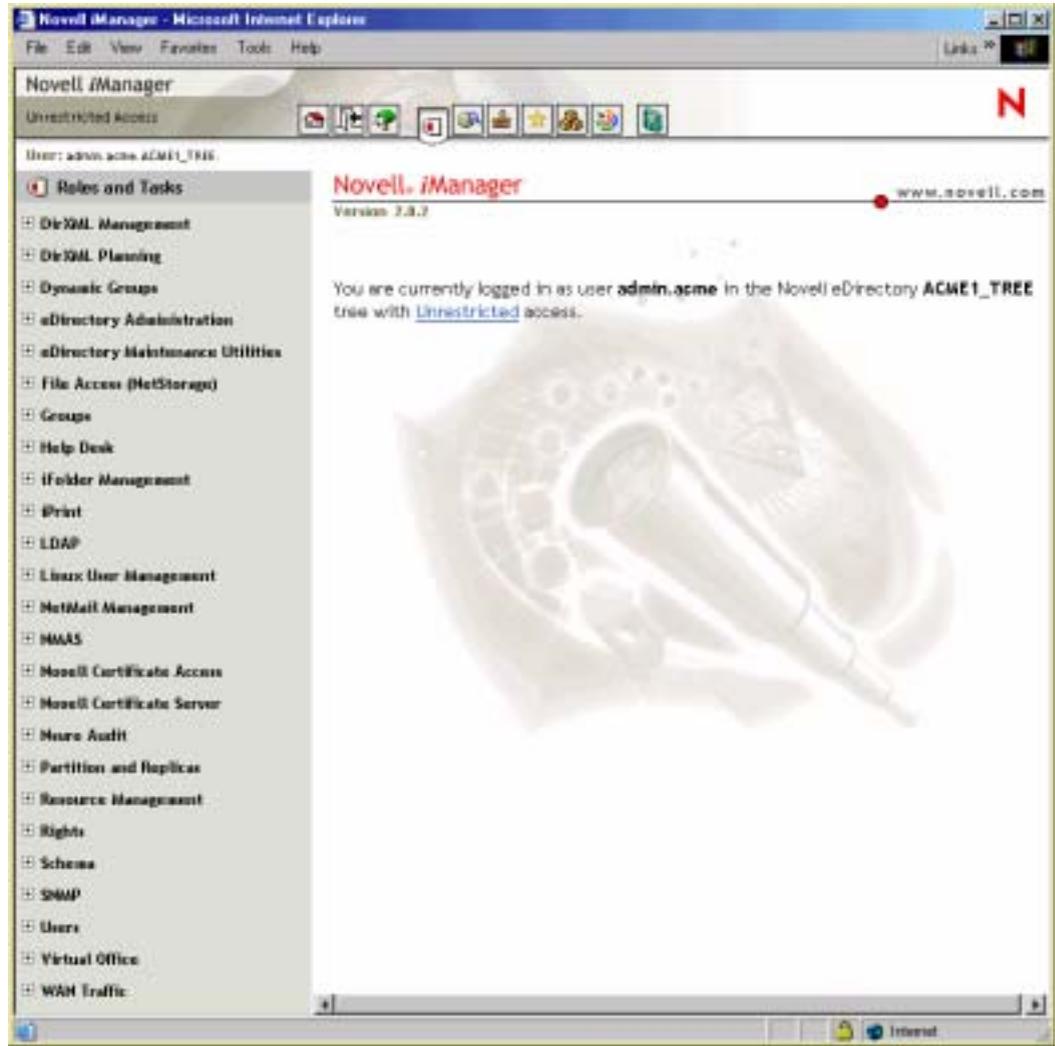
Be Sure to Run the iManager Configuration Wizard

In “[Installing RBS](#)” in the *Novell iManager 2.0.x Administration Guide*, you are instructed to run the iManager Configuration Wizard before using iManager.

When iManager is installed in connection with NNLS, various roles and tasks are configured, as shown in [Figure 13 on page 65](#).

These roles and tasks are available to all the users you create until you run the configuration wizard. After that, the roles and tasks are available only to the Admin user and other users or groups you specifically designate.

Figure 13 iManager Roles and Tasks



For more information on iManager, see the *Novell iManager 2.0.x Administration Guide*.

9

Authentication and LDAP

This section contains information about user authentication in NNLS and includes the following topics:

- ◆ [NMAAS \(page 67\)](#)
- ◆ [Modifying Service Authentication Settings Created by the NNLS Installation \(page 67\)](#)
- ◆ [Advanced Certificate Information \(page 69\)](#)

NMAAS

As a key identity services component of NNLS, Novell® Modular Authentication Services (NMAAS™) helps you protect information on your network by bringing together additional ways of authenticating to eDirectory™, such as smart cards and tokens.

NMAAS lets you require users to

- ◆ State who they are.
- ◆ Prove that they are who they say they are.
- ◆ Periodically respond during periods of inactivity to stay connected.

To get started using NMAAS, see the [Novell Modular Authentication Services \(NMAAS\) 2.3 Administration Guide](#).

Modifying Service Authentication Settings Created by the NNLS Installation

During installation, NNLS services and their associated management tools are configured to point to an eDirectory server for authentication.

You can change the authentication settings for each service or tool by completing the steps outlined in [Table 7](#).

Table 7 Modifying Service Authentication Settings

NNLS Component	Instructions
DirXML® Starter Pack	Authentication to configure and manage DirXML is handled through iManager.
eGuide	eGuide authentication is managed through the iManager Virtual Office plug-in.
iFolder®	See the instructions in “ Replacing a User LDAP Server for a Linux-Based iFolder 2.1.2 Server ” in the Novell iFolder 2.1 Installation and Administration Guide .

NLS Component	Instructions
iManager	<p>Use a standard UNIX editor to modify the System.Directory/Address= entry in the /var/opt/novell/iManager/nps/WEB-INF/PortalServlet.properties file.</p> <p>For example, change</p> <pre>System.DirectoryAddress=10.1.1.1\:636</pre> <p>to</p> <pre>System.DirectoryAddress=10.1.1.2\:636</pre>
iPrint	<p>Use a standard UNIX editor to modify the AuthLDAPURL entry in /etc/opt/novell/iprint/httpd/conf/ipp.conf.</p> <p>For example, change</p> <pre>AuthLDAPURL "ldaps://10.1.1.1/o=acme???(objectClass=user) "</pre> <p>to</p> <pre>AuthLDAPURL "ldaps://10.1.1.2/o=acme???(objectClass=user) "</pre>
Linux User Management	<p>Use a standard UNIX editor to modify the preferred-server= entry in the /etc/nam.conf file.</p> <p>For example, change</p> <pre>preferred-server=10.1.1.1</pre> <p>to</p> <pre>preferred-server=10.1.1.2</pre>
NetMail™	<p>NetMail requires that users authenticate through eDirectory installed and running on the same NLS server.</p>
NetStorage	<p>NetStorage authentication is managed using iManager. See the online help for the Authentication Domains task in the File Access (NetStorage) role.</p>
Samba	<p>Use a standard UNIX editor to modify the ldap server= entry in the /etc/opt/novell/samba/smb.conf.</p> <p>For example, change</p> <pre>ldap server=10.1.1.1</pre> <p>to</p> <pre>ldap server=10.1.1.2</pre>
Virtual Office	<p>Virtual Office leverages the iManager LDAP configuration.</p>
WebAdmin (RCD management)	<p>See “Modifying the Service Authentication Settings for WebAdmin (Resource Management Plug-in)” on page 69.</p>

Modifying the Service Authentication Settings for WebAdmin (Resource Management Plug-in)

To change the IP address or the eDirectory server used by WebAdmin:

- 1 At the NNLS server console, shut down WebAdmin by entering

```
/etc/init.d/novell-webadmin stop
```

- 2 Uninstall WebAdmin by entering

```
/opt/novell/bin/webadmin uninstall fdn_admin_name password
```

where *fdn_admin_name* is the fully distinguished admin name (for example, cn=admin.o=novell or admin.novell) and *password* is the admin password.

- 3 Create the file `/etc/mdb.conf` and include the following line in it:

```
driver=mdbds referral=IP_or_DNS
```

where *IP_or_DNS* is the DNS name or IP address of the target eDirectory server and replica.

To have WebAdmin communicate with a replica on the same server, simply delete the `/etc/mdb.conf` file.

- 4 Reinstall WebAdmin and create the correct Web Configuration object by entering

```
/opt/novell/bin/webadmin install fdn_admin_name password
```

where *fdn_admin_name* is the fully distinguished admin name (for example, cn=admin.o=novell or admin.novell) and *password* is the admin password.

- 5 Assign the correct ports to WebAdmin by entering

```
/opt/novell/bin/webadmin -x -p:http_port -s:https_port fdn_admin password
```

where *http_port* and *https_port* are the ports used by HTTP and HTTPS, respectively (for example, 8018 and 8020 [the defaults]), *fdn_admin_name* is the fully distinguished admin name (for example, cn=admin.o=novell or admin.novell) and *password* is the admin password.

For example, you might enter

```
/opt/novell/bin/webadmin -x -p:8018 -s:8020 admin.novell mypassword
```

The Novell Resource Management snap-in for iManager finds the correct ports no matter what they are set to.

- 6 Start WebAdmin by entering

```
/etc/init.d/novell-webadmin start
```

Advanced Certificate Information

This section contains information about the authentication certificates used by each of the NNLS components.

Apache

The Apache Web server that is installed with NNLS is not configured as an LDAP client by default. The `/etc/opt/novell/httpd/conf/httpd.conf` file contains an LDAP section toward the end

that has been commented out. This can be modified to turn on LDAP authentication and configure the settings. The file can point to either a .B64 or .DER certificate for server authentication.

To enable HTTPS connectivity, the NNLS install creates a default certificate using OpenSSL and adds it to the JVM* (keytool) for Tomcat to use.

eGuide

eGuide uses the same basic mechanisms as iManager, except that it doesn't retrieve a certificate from the server if a certificate isn't found in the keystore.

iFolder

Novell iFolder can use either *no SSL* or *SSL with server authentication*. For more information on iFolder certificate management, see *Novell iFolder 2.1 Installation and Administration Guide*.

iManager and Virtual Office

Virtual Office requires that iManager is installed and configured. Both products use LDAP over SSL, meaning that all communications with the LDAP server are encrypted.

However, if server authentication is not configured, iManager retrieves a certificate from the server and then uses that certificate for encryption.

If server authentication is configured, the administrator can add the server's exported certificate to the JVM CACerts keystore using the Java keytool tool.

iPrint

iPrint is not configured by default to require user authentication. This can be changed using iManager. For more information, see “[Setting Up a Secure Printing Environment](#)” in the *Novell iPrint Administration Guide for Novell Nterprise Linux Services*.

Linux User Management (LUM)

LUM looks for certificates in /var/nam. The certificates are named *IP.cer* or *DNS.der* where *IP* and *DNS* represent the IP address and DNS name of the server, respectively.

LUM automatically retrieves a certificate if one is not supplied.

You can edit the /etc/nam.conf file to change the name of the certificate file or the location to another directory on the file system. LUM uses .der files.

NetMail

NetMail uses eDirectory running on the same server for user authentication.

Samba

Because Samba uses OpenLDAP, certificate management uses the OpenLDAP certificate management features.

During the NNLS install for Samba, you are asked for the location of a .B64 certificate. Unless you are the first server of a new eDirectory tree and you plan to use its LDAP server for user authentication, you must specify the certificate location.

IMPORTANT: The certificate filename must not contain spaces.

If you specify a certificate location, the certificate is copied to `/etc/ssl` and the `/etc/opt/novell/openldap/ldap.conf` file is modified to point to the certificate and to use SSL with server authentication.

After the installation is completed, you can edit the `ldap.conf` file either to not use SSL or to point to another certificate received from an external CA.

IV

Reference Information

This section contains the following NNLS reference materials:

- ◆ [Appendix A, “Quick Reference to NNLS User Services,” on page 75](#)
- ◆ [Appendix B, “Samba Support in NNLS,” on page 77](#)
- ◆ [Appendix C, “Apache Web Server and Tomcat Servlet Container,” on page 81](#)

A

Quick Reference to NNLS User Services

Use **Table 8** as a quick reference for providing your network users with instructions for accessing each NNLS service.

Table 8 NNLS User Services Quick Reference

Service	Access Method or URL	Notes
eGuide	http://server_ip_address_or_dns_name/eGuide https://server_ip_address_or_dns_name:443/eGuide	
iFolder [®]	http://server_ip_address_or_dns_name/iFolder https://server_ip_address_or_dns_name/iFolder	Specifying a secure port is not required for a secure HTTP connection to iFolder.
iPrint	http://server_ip_address_or_dns_name/ipp https://server_ip_address_or_dns_name:443/ipp	
NetMail [™]	http://server_ip_address_or_dns_name:52080 https://server_ip_address_or_dns_name:52443	
NetStorage	http://server_ip_address_or_dns_name/NetStorage https://server_ip_address_or_dns_name:443/NetStorage	
Samba	Map a network drive in Windows Explorer. Create a Web Folder in Internet Explorer.	
Virtual Office	http://server_ip_address_or_dns_name/vo	You can specify HTTPS and the secure port (443) if desired. Both URLs establish a secure connection with the NNLS server.

B

Samba Support in NNLS

This section contains information about the NNLS distribution of Samba.

Overview

What Is Samba?

Samba is a suite of tools that lets you use the Microsoft SMB/CIFS networking protocol with Linux computers and other platforms.

Samba lets a Linux computer function as a

- ♦ **Windows Server:** By enabling the computer to provide Windows file and print services to end users.
- ♦ **Windows Client:** By enabling the computer to access and use Windows file and print services, whether they originate on a Windows server or a Linux server with Samba installed.

The Samba implementation in NNLS focuses on providing authenticated file services from the Linux server to end users working on Windows client workstations.

About Samba in NNLS

The Samba distribution installed with NNLS is configured for the following functionality:

- ♦ Samba users are created in eDirectory™ using Linux User Management (LUM) tools included with NNLS.
- ♦ Home directories are automatically created and appropriate file access rights are automatically assigned the first time a LUM user logs in to the NNLS server from a shell prompt.
- ♦ Access to Samba services requires that users authenticate using secure LDAP to the eDirectory database specified during NNLS installation.

This documentation focuses primarily on how Novell has configured Samba as an OpenLDAP client to use the eDirectory LDAP server for user authentication. For more information about Samba, refer to the links contained in [“Additional Information” on page 80](#).

Components

The Samba distribution included with NNLS consists of the RPMs and configuration files outlined in the sections that follow.

Samba RPM

NNLS includes a Novell customized version of the Samba package (novell-samba-2.2.8a . . .).

In compliance with Samba standards, we have added the switches `-with-ldapsam` and `-with-ssl` and recompiled the Red Hat RPM to provide secure LDAP authentication support for Samba users.

The smb.conf Configuration File

In compliance with Linux Standards Base (LSB) requirements, we have placed the Samba configuration file (`smb.conf`) in the `/etc/opt/novell/samba` directory on the NNLS server.

The Novell implementation of Samba requires that the `smb.conf` file contain the entries explained in [Table 9](#).

Table 9 Required Entries in the `smb.conf` File

Section	Entry Name	Description	Example or Default
[global]	ldap admin dn =	<p>Specifies the Distinguished Name (DN) that Samba uses for contacting the eDirectory LDAP server to retrieve user account information for users requesting access to Samba shares.</p> <p>The password for the DN specified at install time is encrypted by the installation process and stored in the Secret Store (<code>secrets.tdb</code>) on the NNLS server.</p> <p>If the DN name is changed in eDirectory, the name specified in this file must be changed as well.</p> <p>If the DN password is changed, the new password must be stored using the <code>smbpasswd</code> command. For more information, see “Samba Passwords” on page 80.</p>	Example: <code>ldap admin dn = cn=admin,o=novell</code>
	ldap ssl =	<p>Specifies that Samba should use SSL for communications with the LDAP server (eDirectory).</p> <p>Secure LDAP requires that this be set to on.</p>	Default: <code>ldap ssl = on</code>
	ldap port =	<p>Specifies the port used for secure LDAP communications between Samba and the LDAP server (eDirectory).</p> <p>This value can be changed if your network uses a different port for secure LDAP communications.</p>	Default: <code>ldap port = 636</code>
	ldap server =	<p>Specifies the LDAP server's hostname.</p> <p>Either the full DNS name or the IP address can be used.</p>	Example: <code>ldap server = nnls.provo.novell.com</code> Default: <code>ldap server = i.i.i.i</code> where <i>i.i.i.i</i> = the IP address of the eDirectory server.
	security =	<p>This specifies the security mode.</p> <p>The value must be set to <i>user</i>.</p> <p>For more information, see www.samba.org</p>	Default (required): <code>security = user</code>

Section	Entry Name	Description	Example or Default
	encrypt passwords =	This specifies that passwords received from Windows clients will be encrypted. This value must be set to yes. For more information, see www.samba.org	Default (required): encrypt passwords = yes
	workgroup =	This specifies the Windows workgroup that the Samba server will either join (if it exists) or effectively create (if the name is new).	Example: workgroup = mygroup Default: workgroup = workgroup
	netbios name =	This is the LDAP name and context of the LDAP (eDirectory) server used for secure LDAP authentication.	Example: netbios name = cn=nnls,o=novell
[homes]	comment =	This specifies the name that appears after the Samba server name in Network Neighborhood on the Windows client. If this and the following two entries are set as specified, there is no need to specify individual shares for users' home directories.	Default: comment = Home Directories
	browseable =	This specifies whether all the home directories appear in Network Neighborhood.	Default: browseable = no
	writable =	This specifies whether users can create and modify files.	Default: writable = yes

The ldap.conf Configuration File

Samba on Linux uses the OpenLDAP client libraries `libldap.so` and `libldap_r.so`. `ldap.conf` is the configuration file for OpenLDAP.

In compliance with Linux Standards Base (LSB) requirements, we have placed the `ldap.conf` file in the `/etc/opt/novell/openldap` directory on the NNLS server.

If you install the NNLS server into an existing tree, you must specify a trusted root certificate during NNLS installation if you want to use SSL. The `ldap.conf` file on your NNLS server will then have the following certificate-related entries:

- ◆ `TLS_CACERT /etc/ssl/certname.cert`
- ◆ `TLS_REQCERT demand`

If you are installing a new directory tree, the `ldap.conf` file will have the following entry:

- ◆ `TLS_REQCERT allow`

For more information on the `ldap.conf` file, see the `ldap.conf` man page.

Create Users in iManager

We recommend you create users using the iManager utility. Otherwise, you will need to run various Linux User Management command line utilities to assign the users to a LUM group and to set their Samba passwords.

Samba Passwords

When you create eDirectory users after installing NNLS, they are also created as LUM users by default and assigned their eDirectory password as their Samba password. If they subsequently change their eDirectory password, they should make the change through the Change Password function available in Virtual Office and ensure that the Synchronize Samba Password option is selected (checked).

Additional Information

For more information about the origin, purposes, and functionality of Samba, refer to the following links:

www.samba.org (<http://www.samba.org>)

www.openldap.org/samba-2.2.8/docs/htmldocs/Samba-LDAP-HOWTO.html (<http://www.openldap.org>)

www.unav.es/cti/ldap-smb/ldap-smb-2_2-howto.html (http://www.unav.es/cti/ldap-smb/ldap-smb-2_2-howto.html)

www.google.com/grphp (<http://www.google.com/grphp>)



Apache Web Server and Tomcat Servlet Container

The Apache Web Server 2.0.48 and Tomcat Servlet Container 4.1.28 are included with Novell® Nterprise™ Linux Services (NNLS) 1.0. Both are installed by default and used by products such as eGuide, iManager, Novell iFolder®, iPrint, and Virtual Office. Customized Apache modules and Tomcat Web applications are also installed for use by these products.

The build of Apache comes from the Apache Foundation Web site and was compiled using the Apache Worker Multi-Processing Module (MPM). For more information about MPMs, see [Multi-Processing Modules \(http://httpd.apache.org/docs-2.0/mpm.html\)](http://httpd.apache.org/docs-2.0/mpm.html) on the Apache.org Web site.

The build of Tomcat came directly from the binary tarball on the jakarta.apache.org Web site.

This section discusses the following topics:

- ◆ [If Apache or Tomcat Is Already Installed \(page 81\)](#)
- ◆ [Configuring Apache \(page 81\)](#)
- ◆ [Configuring Tomcat \(page 82\)](#)
- ◆ [Starting or Stopping Apache or Tomcat \(page 83\)](#)
- ◆ [Managing Multiple Instances of Apache \(page 84\)](#)

If Apache or Tomcat Is Already Installed

When NNLS is installed to a server that is already running Apache or Tomcat, these instances are disabled and the standard ports used by them are reassigned for use by NNLS versions of Apache and Tomcat.

After NNLS is installed, if you want to use the previously installed services, you must assign them new port numbers and re-enable them to run at boot time.

TIP: You can enable Apache to start at boot time using the run-level editor for the Linux distribution you are running.

Configuring Apache

Apache is managed primarily by modifying the values of directives found in Apache configuration files. This is true on any platform. For example, if your server encountered stack overflow errors and you determined that you needed to increase the thread stack size, you would open `/etc/opt/novell/httpd/httpd.conf`, locate the `ThreadStackSize` directive, specify a higher stack size number, and then save the configuration file.

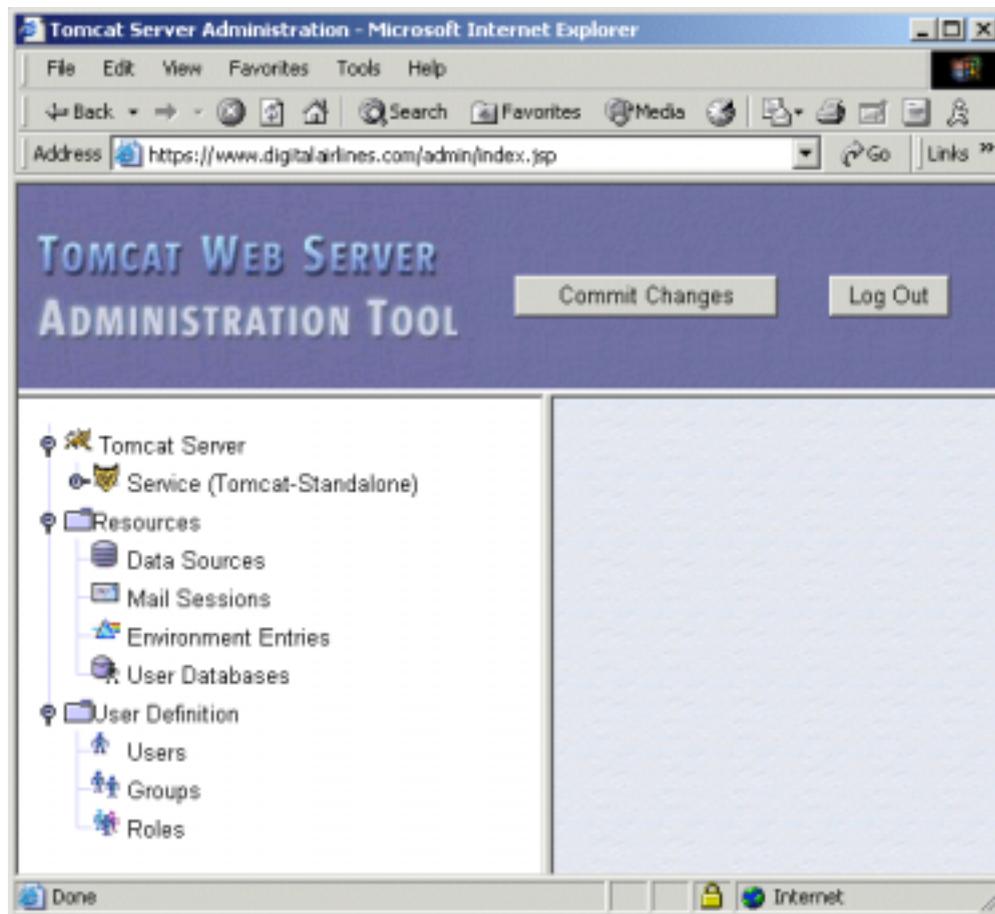
On NNLS, the configuration files are stored in the `/etc/opt/novell/httpd` directory. Its default document root is set to `/var/opt/novell/httpd/htdocs`.

In addition to directives, Apache modules are used to extend the basic functionality of the Web server. Several Novell products included with NNLS require the use of specially written Apache modules. For example, `mod_ifolder` is included when you install the Novell iFolder product, and `mod_ipp` is included when you install Novell iPrint.

For complete documentation on how to configure and manage Apache, see the [Apache HTTP Server Version 2.0 documentation \(http://httpd.apache.org/docs-2.0\)](http://httpd.apache.org/docs-2.0) on the Apache.org Web site.

Configuring Tomcat

The Tomcat Administration Tool, referred to as Tomcat Admin, is a Web-based administration tool created by the Apache Foundation. Changes made to Tomcat using Tomcat Admin can be saved persistently so that the changes remain when Tomcat is restarted, or they can be applied to the current session only.



Defining a User for Tomcat Admin

For security reasons, you must first modify the `tomcat-users.xml` file before you can use Tomcat Admin on NNLS.

- 1 Open the `/etc/opt/novell/tomcat4/tomcat-users.xml` file.
- 2 Either locate an existing user or define a new user.
- 3 Type **admin, user** in the Roles section of the defined user.

4 Save your changes to the tomcat-users.xml file and exit it.

5 Restart Tomcat

See “Starting or Stopping Apache or Tomcat” on page 83.

When logging in to Tomcat Admin, use the username and password of the user you modified or defined.

Accessing Tomcat Admin

1 In a Web browser, enter

`https://domain_name/admin/`

in the Address field, replacing *domain_name* with either your server's domain name or IP address.

IMPORTANT: You must include the trailing slash mark (/) at the end of the URL. If you do not include it, the server might return a 404 Not Found error.

2 When prompted for a username and password, enter the username and password you specified in the tomcat-users.xml file.

Refer to the [Tomcat Administration Tool documentation \(http://java.sun.com/webservices/docs/1.0/tutorial/doc/Admintool.html\)](http://java.sun.com/webservices/docs/1.0/tutorial/doc/Admintool.html) for more information about using Tomcat Admin.

Locating the Configuration Files and Web Application Directory

The location of Tomcat's configuration files and Web application directory varies from platform to platform.

On NNLS, the configuration files are stored in the `/etc/opt/novell/tomcat4` directory. The default Web application directory is set to `/var/opt/novell/tomcat4/webapps`.

Starting or Stopping Apache or Tomcat

The commands used to start or stop Apache or Tomcat also vary depending on the platform that you are running them on.

To start or stop Apache on NNLS:

To start Apache, open a Linux command prompt and enter `/etc/init.d/novell-httpd start`.

To stop Apache, enter `/etc/init.d/novell-httpd stop`.

To start or stop Tomcat on NNLS:

To start Tomcat, open a Linux command prompt and enter `/etc/init.d/novell-tomcat4 start`.

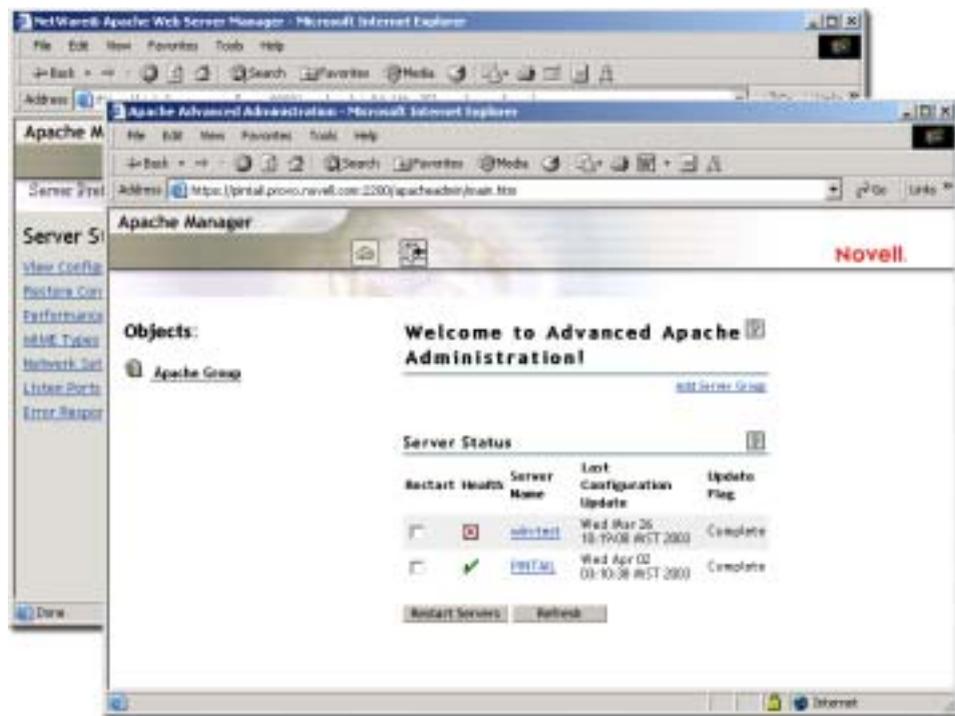
To stop Tomcat, enter `/etc/init.d/novell-tomcat4 stop`.

Managing Multiple Instances of Apache

IMPORTANT: To use Apache Manager, you *must* have a NetWare® 6.5 server installed and running somewhere in your network.

If you are running multiple instances of Apache on various platforms in your network—sometimes called a *server farm*—you can control them all by using Apache Manager. Apache Manager is a Novell sponsored open source product that provides single-point access to (and control over) all of your Web servers.

Figure 14 Apache Manager's Single Server and Multiple Server Administration Pages.



Because Apache Manager modifies the configuration files for you, it decreases the potential of human error, saving you time and unnecessary frustration. Also, Apache Manager lets you control Apache from anywhere that you have Internet access, even from remote locations, provided you have access rights to connect through your company firewall.

The Apache Manager application runs on NetWare 6.5 (and is included with NetWare 6.5). You must download and install the Apache Manager daemon onto each of your Linux servers.

For more information about Apache Manager, see [Installing the Apache Manager Daemon on Windows or Linux](http://www.novell.com/documentation/lg/nw65/web_apache/data/an7c52l.html) (http://www.novell.com/documentation/lg/nw65/web_apache/data/an7c52l.html) in the *Apache Web Server Administration Guide for NetWare 6.5* (http://www.novell.com/documentation/lg/nw65/web_apache/data/a7hjvxo.html).