

Novell Nterprise™ Linux* Services

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LAB GUIDE

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Novell, Inc.
1800 South Novell Place
Provo, UT 84606
U.S.A.

www.novell.com

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About This Guide

Most organizations test new products in a lab setting prior to making them available for general use.

This guide is designed to help you set up Novell® Nterprise™ Linux Services (NNLS) in a lab environment using a specific and simplified configuration. The configuration is limited in scope and is meant only to acquaint you with NNLS and provide exposure to the Novell products it contains.

The instructions in this guide will help you do the following:

- ◆ Install a single NNLS server in a new eDirectory™ tree
- ◆ Install all NNLS components on the server
- ◆ Perform simple tasks to get acquainted with basic NNLS services

If you want to install multiple NNLS servers or create a different tree structure than the one specified in this guide, you can still use these instructions as a basic guide for setting up NNLS services in a lab environment. However, you will probably also want to refer to the information found in the following guides:

- ◆ *Novell Nterprise Linux Services Installation Guide*
- ◆ *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*

Documentation Conventions

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

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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.

1

Installing Novell Nterprise Linux Services in a Lab

Use the instructions in this section to install Novell® Nterprise™ Linux Services (NNLS) in your lab.

This section describes the following tasks:

- ◆ “Have the Required Lab Setup” on page 9
- ◆ “Download and Create Installation Media” on page 11
- ◆ “Mount the .iso Image File” on page 12
- ◆ “Install the Server Software” on page 13

Have the Required Lab Setup

For the tasks and exercises described in this guide, you will need the following:

- A Linux server that meets the following requirements:
 - ◆ Is a server-class computer
 - ◆ Has at least a Pentium* II processor (Pentium 4 at 1.5 GHz recommended)
 - ◆ Has at least 512 MB RAM (1 GB recommended)
 - ◆ Has at least 30 GB free disk space
 - ◆ Has one of the supported Linux platforms installed:
 - ◆ SuSE* Linux Enterprise Server 8.0
 - ◆ Red Hat* Enterprise Linux AS 2.1
 - ◆ Red Hat Enterprise Linux ES 2.1
 - ◆ Complies with the Linux installation requirements specified in “Follow the Server Installation Requirements” on page 10
 - ◆ Has the gettext RPM installed
 - ◆ Has an active IP connection to your lab network and the Internet
- If you intend to test Novell iPrint, you will need a printer with an assigned static IP address and a connection to your lab network.
- For iPrint testing you will also need a printer driver for the printer for your Windows* workstation type (next item).

- ❑ To test iPrint or the GroupWise® Collaboration Client, you will need one or more Windows workstations with Internet Explorer 6 SP1 or later installed and running one of the following operating systems:
 - ◆ Windows XP
 - ◆ Windows 2000
 - ◆ Windows NT* 4
 - ◆ Windows 95/98/ME

IMPORTANT: If you plan to test the GroupWise client, you must ensure that the Windows workstations do not have a GroupWise client installed. Having a client installed will invalidate the installation instructions in this guide.

If you remove a client from a workstation, you must also delete the Novell directory usually located at the root of the local hard drive with all its subdirectories and files.

Follow the Server Installation Requirements

When installing Linux on your target lab server, follow the guidelines explained in this section.

Use a Static IP Address

The NNLS installation and configuration mechanisms require that your lab server use a static IP address rather than obtaining its address through DHCP. This means you must manually change the IP address settings in the RedHat and SuSE installs, both of which use DHCP by default.

Type Only the Hostname

When prompted for a hostname during the Linux install, remember that the hostname doesn't include DNS domain information. For example, enter only mylinuxbox.

Do not include the DNS domain information with the hostname (for example, mylinuxbox.mylab.mycompany.com).

If you include the domain with the hostname, eDirectory and other NNLS components will not install correctly.

Plan Your Partitions in Advance

When partitioning your server's hard drives, you must plan for the items shown in [Table 1](#).

Table 1 Lab Server Partition Requirements

Partition	Minimum Disk Space	Other Considerations	Planned Allocation
/boot	*	* See the documentation for your chosen operating system.	
/swap	*	* This should normally equal twice the RAM installed on your server up to 1 GB. For more information, see the documentation for your chosen operating system.	

Partition	Minimum Disk Space	Other Considerations	Planned Allocation
/	*	* Include all remaining disk space in this partition. Space for the subpartitions (/var, /opt, /usr, /etc, /home) is automatically available as the partitions expand.	

Check /etc/hosts Before Installing NNLS

After you install Linux, you must do the following to ensure proper resolution of the server's IP address by NNLS products.

1 Edit the `/etc/hosts` file on the server.

2 If present, remove the `servername` variable from the

```
127.0.0.1 servername localhost.localdomain localhost
```

line so it reads

```
127.0.0.1 localhost.localdomain localhost
```

3 Add the following line to the hosts file (if not already present):

```
serverip fullyqualifiedhostname servername
```

where `serverip` is the IP address of the NNLS server, `fullyqualifiedhostname` is the server's fully qualified hostname, and `servername` is the hostname of the lab server.

For example, you might add the following to the `/etc/hosts` file:

```
10.1.1.1 mylinuxbox.mylab.mycompany.com mylinuxbox
```

Download and Create Installation Media

As with many Linux products, Novell Nterprise Linux Services (NNLS) is downloaded from the Web. The components you will download and the processes for preparing the files and CD media required are described in the following steps.

IMPORTANT: The steps in this section assume that all three processes occur on the same workstation (either a Windows or a Linux workstation) and do not account for the copying and verifying processes required if multiple machines or mixed platforms are used.

1 To obtain your copy of NNLS, contact your Novell Authorized ResellerSM or see the [Linux product page \(http://www.novell.com/products/linux\)](http://www.novell.com/products/linux) on Novell's Web site.

You will receive an e-mail with a URL for downloading the following files:

- ♦ An eDirectoryTM NICI foundation key file (*.nfk) that is required during the installation. You will also receive an eDirectory license file (*.nlf). This is not required for installing NNLS.
- ♦ *Novell_Nterprise_Linux_Services_1.0.iso*
Contains a CD image with files to install NNLS on your Linux server.

- ◆ *Novell_Nterprise_Linux_1.0_Companion_CD.iso*

Contains a CD image with files to install:

- ◆ The Novell GroupWise Collaboration Client for Windows
- ◆ Novell DirXML[®] drivers for Windows and NetWare
- ◆ Novell NetDrive client

2 Download the files as instructed.

3 Verify the integrity of each .iso file by running an MD5-based checksum utility on it.

For example, on a Linux system you can enter the following command:

```
md5sum filename
```

where *filename* is the name of the .iso file you are verifying.

On a Windows system you will need to obtain a Windows-compatible MD5-based checksum utility from the Web and follow the usage instructions for the utility.

Table 2 lists the MD5 checksum value for each file.

Table 2 MD5 Checksum Values

Filename	MD5 Checksum Value
Novell_Nterprise_Linux_Services_1.0.iso	7111fb9edd285af4a220d91517b6655a
Novell_Nterprise_Linux_1.0_Companion_CD.iso	d76a962e6773024cd5a0c8b9ae33f4a4

4 (Conditional) If you don't have a CD burner, skip to **“Mount the .iso Image File” on page 12.**

5 Using your CD burner and two blank CDs, create a CD from each image file.

6 Label the CDs as follows:

Novell Nterprise Linux Services 1.0

Novell Nterprise Linux Services 1.0 Companion CD

Continue with **“Install the Server Software” on page 13.**

Mount the .iso Image File

If you created NNLS CDs in the previous section, skip to **“Install the Server Software” on page 13.**

If you don't have access to a CD burner, you can still install the software on the Linux server by completing the following instructions. However, you will not be able to install and test the following components because they require the NNLS companion CD:

- ◆ The GroupWise Collaboration Client as instructed in **“Accessing NetMail Using the GroupWise Collaboration Client” on page 50.**
- ◆ Novell NetDrive as instructed in **“NetDrive” on page 52.**
- ◆ Novell DirXML drivers, which are not actually installed and tested in this guide but are referenced in **“A Note about DirXML and the DirXML Starter Pack” on page 24.**

To mount the .iso file on your Linux server:

- 1** If the *Novell_Nterprise_Linux_Services_1.0.iso* file is not already on the NNLS server, copy it to the server and verify its MD5 checksum value as explained in [Step 3 on page 12](#).
- 2** If you have not already done so, access a shell or terminal window on the NNLS server as the root user.
- 3** Create a directory on the server's file system to serve as a mount point for the image.

If you have a SuSE system, enter

```
mkdir /media/iso
```

If you have a Red Hat system, enter

```
mkdir /mnt/iso
```

- 4** Mount the ISO image by entering one of the following commands.

On a SuSE system, enter

```
mount -o loop /file_path_and_filename /media/iso
```

On a Red Hat system, enter

```
mount -o loop /file_path_and_filename /mnt/iso
```

where *file_path_and_filename* is the path to the ISO image file copied to the server in [Step 1](#).

Install the Server Software

Prerequisites

Before installing Novell Nterprise Linux Services (NNLS) on your Linux server, you must have completed the following tasks:

- Ensure that the Linux server on which you are installing NNLS meets the requirements outlined in [“Have the Required Lab Setup” on page 9](#).
- Prepare the software for installation as explained in [“Download and Create Installation Media” on page 11](#).

Procedure

- 1** If you have not already done so, access a shell or terminal window on the NNLS server as the root user.
- 2** (Conditional) If you are installing from a mounted .iso image file, at the system prompt enter

```
cd /mnt/iso
```

and then skip to [Step 5](#).
- 3** Insert the *Novell Nterprise Linux Services 1.0* CD into your Linux server and mount it by entering the command for your system.

On a SuSE server, enter

```
mount /media/cdrom
```

On a Red Hat server, enter

```
mount /mnt/cdrom
```

4 Change to the installation directory on your server.

On a SuSE server, enter

```
cd /media/cdrom
```

On a Red Hat server, enter

```
cd /mnt/cdrom
```

5 Start the installation script by entering

```
./install.sh
```

6 At the prompts shown in the following table, perform the actions indicated.

Prompt	Action
Selection [install]:	Press Enter.
Express install [no]:	Press Enter.
Selection [finish]:	Press Enter.
--More--	Using the Space key for scrolling, read the license agreement.
Agree to license (y/n):	Enter y .
Please select the NICI Foundation Key (.nfc) file [/mnt/floppy]:	Enter the path and filename to your NICI Foundation Key file obtained from Novell in "Download and Create Installation Media" on page 11.
Selection [New Tree]:	Press Enter.
Enter the new tree name:	Enter acme_tree .
Enter the eDirectory server port [524]:	Press Enter.
Enter the FDN admin name with context (i.e. cn=admin.o=novell):	Enter cn=admin.o=acme .
Enter the Admin password:	Enter a password you will remember.
Re-type password:	Re-enter the same password.
Enter the server context [o=acme]:	Enter ou=servers.o=lab.o=acme .
Enter the LDAP port number [389]:	Press Enter.
<i>various prompts</i>	Press Enter at each prompt until you see the prompt for the domain name of the NetMail™ server.
Enter the Domain Name for the NetMail Server:	Enter the DNS name of the server with its full DNS context. For example, myserver.mycompany.com.
<i>various prompts</i>	Press Enter at each prompt until you see a message that the installation is gathering information for the Red Carpet installation.

Prompt	Action
Enter the e-mail address [admin_name@company_name.com]:	If you want to register for NNLS updates, enter your e-mail address.
<i>Web proxy server questions</i>	Answer the proxy questions for your Linux server.
View summary information [yes]:	Press Enter and view the summary, or type n and press Enter.
Do you want to make any changes? [no]:	Press Enter, or type y and press Enter to make changes.

All the NNLS components are installed on your Linux server.

- 7** When prompted whether to view the readme file, enter **n**.
- 8** When prompted whether to save the configuration file, enter **y**.

This configuration file can be used to create an answer file for subsequent noninteractive installations. For more information on answer files, see “[Performing a Noninteractive Express or Custom Installation](#)” in the *Novell Nterprise Linux Services Installation Guide*.

What’s Next

To begin configuring your NNLS installation, continue with [Chapter 2, “eDirectory and Identity Services,”](#) on page 17.

2

eDirectory and Identity Services

Novell® eDirectory™ is the central, key component of Novell Nterprise™ Linux Services (NNLS) 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

The installation scenario presented in this guide creates a new eDirectory tree named *ACME_TREE* that you can use for testing and learning about NNLS. As you work with the tree and the object it contains, you will begin to better understand the role eDirectory plays.

This section discusses the following:

- ♦ [“Using the eDirectory Information in This Guide” on page 17](#)
- ♦ [“Your Lab’s eDirectory Tree” on page 18](#)
- ♦ [“Create a Context for Your Users and Groups” on page 22](#)
- ♦ [“Create a Group Object for Linux User Management \(LUM\)” on page 23](#)
- ♦ [“Create Users \(eDirectory User Objects\)” on page 23](#)

Using the eDirectory Information in This Guide

Before you install NNLS in a production environment, it is critical that you and your organization take time to plan and design your tree.

However, the instructions in this guide require no planning on your part. In fact, some of the eDirectory objects used in this guide were created in [Chapter 1, “Installing Novell Nterprise Linux Services in a Lab,” on page 9](#).

The information that follows introduces eDirectory.

If you are already familiar with eDirectory and want to skip the planning introduction, we recommend that you

1. View the eDirectory tree structure used in this guide ([Figure 1 on page 19](#)).
2. Then skip to [“Create a Context for Your Users and Groups” on page 22](#).

An Introduction to eDirectory Planning

If you want an efficient and intuitive eDirectory design, you and your organization will need to base it on

- ◆ The layout of your network.
- ◆ The structure of your organization.

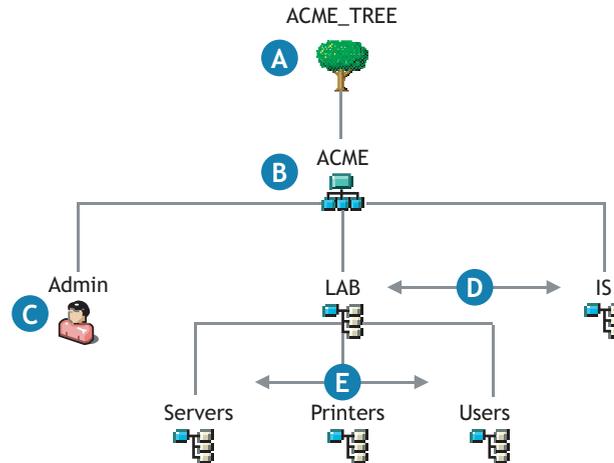
You and your team should carefully think through the issues and design considerations discussed in “[Designing Your Novell eDirectory Network](#)” in the *Novell eDirectory 8.7.3 Administration Guide*.

Your Lab’s eDirectory Tree

Figure 1 illustrates an eDirectory tree like the one you will use in the lab exercises found in this guide. It also illustrates and explains the basic elements you should consider when designing an eDirectory tree.

NOTE: The IS Organizational Unit object is included for explanation purposes and is not created in this guide.

Figure 1 Your Lab's eDirectory Tree



This illustrates the basic elements you should consider when planning your tree.

A The Tree object is the top container object in the tree. It usually contains an Organization object (specified in the install using *O=name*) that represents your company or organization.

B The Organization object is normally the first (and often the only) container object under the Tree object. It is typically named after your organization.

Small organizations keep object management simple by having all other objects, such as users, printers, servers, etc., directly under the Organization object.

Organizations that are large enough to have departments or other organizational units usually decide to have their tree structure reflect their organizational structure.

As shown in this lab example, these organizations create Organizational Unit objects (specified using *OU=name*) that reflect their departments, divisions, geographical locations, etc., as is logical for their organization.

Sometimes large organizations create multiple Organization objects below the Tree object to represent separate business units or subsidiaries.

C Every tree requires a User object named Admin. You will log in as Admin to create or import other User objects and to create the rest of your tree structure.

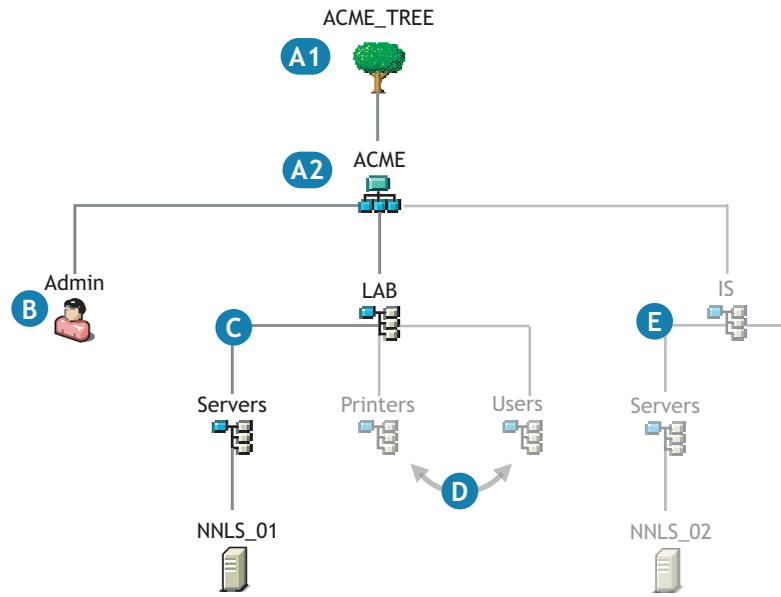
D This example shows two Organizational Unit objects at the department level (LAB and IS).

E It also illustrates how Organizational Unit objects can be nested to provide as complex a hierarchy as is necessary to manage the organization.

Your Current Lab Tree

The eDirectory tree you have created by installing NNLS in your lab is illustrated and explained in [Figure 2](#). The objects that are grayed out are for explanation purposes and do not exist in your current tree. When you finish with this guide, your tree will look more like [Figure 1 on page 19](#).

Figure 2 Your Current Lab Tree



A The NNLS installation process requires that you specify names for the following objects:

- A1 A Tree object
- A2 An Organization object

B One of the first objects you specify during an initial installation is the Admin user.

You should specify that the installation script create the Admin in the Organization container object (`cn=admin.o=your_organization_name`).

During an initial installation, you should also specify this Admin for each parameter that calls for a User object (administrator, proxy user, etc.).

C The NNLS installation process can also create Organizational Unit objects to define a context for the NNLS Server object (NNLS_01).

D All other Organization Unit objects that you have planned for your tree must be created after the installation completes.

E The exception to this is that subsequent installations can create additional contexts (for example, IS > Servers) to contain other NNLS servers (for example, NNLS_02) that you install into the tree.

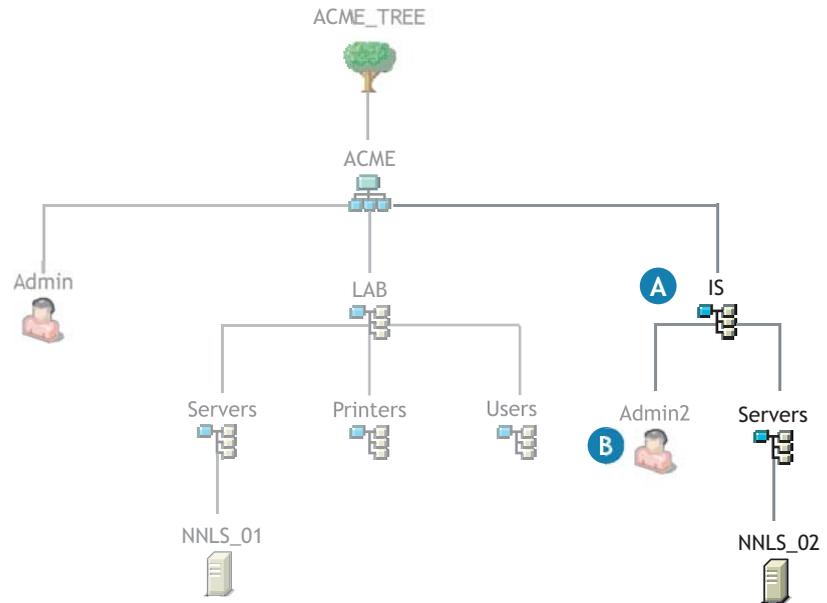
Expanding Your Lab Tree

The instructions in this guide cover only the installation of a single NNLS server in the tree.

If you were to decide to install additional servers in the tree, the processes you would follow could involve some preparatory tasks as illustrated in [Figure 3](#).

As mentioned, the installation of additional servers is not covered in this lab guide. For more information, see [“Running `install.sh` after Initial Installation”](#) in the *Novell Nterprise Linux Services Installation Guide*.

Figure 3 An Expanded Tree



- A During subsequent installations into the same tree, you can create new Organizational Unit objects to provide a context for the NNLS server being installed.
- B If you want to specify other admins in the NNLS installation parameters, you must create User objects and assign them all the rights and permissions that are required for the parameter before you start the installation.

Note: Although the IS Organizational Unit object is illustrated as though it is created during the installation, if the Admin2 User object is created for use during the subsequent installation, the IS container object would also need to be created before running the install.

Access iManager

Novell iManager is the main browser-based tool you will use to manage eDirectory and your NNLS services.

To start iManager and prepare your browser for future sessions:

- 1 In a browser, start iManager by entering the following URL:

`http://IP_or_DNS/nps/iManager`

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

If your server has a DNS name on your network, the NNLS installation will have used that name when creating the SSL certificate for the server. We recommend that you use that name in all NNLS access URLs.

- 2 (Conditional) If you do not receive a security alert (typically a pop-up message stating that the certificate is not trusted by your browser), skip to **“Create a Context for Your Users and Groups”** on page 22.

If you receive a security alert, it is because the eDirectory certificate authority (CA) that issued the certificate for your NNLS server is not recognized by your browser as a valid CA.

In this case, you have the following options:

- ◆ You can click Yes to proceed each time you receive an alert.
If you prefer this option, skip to [“Create a Context for Your Users and Groups” on page 22](#).
- ◆ You can avoid future messages when using the browser by importing the CA’s certificate (also called the root certificate).
If you want to do this, continue with [Step 3](#).
- ◆ You can purchase and install a server certificate from a third-party CA that the browser recognizes.

This process is beyond the scope of this guide. For more information, see the documentation for your Linux platform and [“Using Certificate Authorities from Third-Party Providers”](#) in the *Novell eDirectory 8.7.3 Administration Guide*.

- 3** In the Security Alert pop-up dialog box, click View Certificate.
- 4** Click Install Certificate > Next.
- 5** Select the Place All Certificates in the Following Store option.
- 6** Click Browse.
- 7** Select Trusted Root Certification Authorities.
- 8** Click OK > Next > Finish.
- 9** Confirm that you want to add the certificate to the root store.
- 10** Click OK > OK > Yes.

Create a Context for Your Users and Groups

All NNLS products 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 Group object that you can assign the users to.

If you reviewed [“An Introduction to eDirectory Planning” on page 18](#), you might have noticed an Organizational Unit object in [Figure 2](#) and [Figure 3](#) named Users. It is usually helpful to have at least one Organization Unit object to contain user-related objects, such as User objects and Group objects.

Create an Organizational Unit container object named Users in the lab Organizational Unit object by completing the following steps:

- 1** Log in to iManager as Admin.
- 2** Click the View Objects icon .
- 3** In the left pane, click the Down-arrow  next to the acme Organization object .
- 4** Click lab, then select Create Object from the drop-down list.
- 5** From the Available Object Classes list, select Organizational Unit and then click OK.
- 6** In the Organizational Unit name field, type **Users**.
- 7** Click OK.

Do not close iManager. Continue with the next section, [Create a Group Object for Linux User Management \(LUM\)](#).

Create a Group Object for Linux User Management (LUM)

If you want to have eDirectory users access PAM-enabled services such as login, passwd, etc., on an NNLS server or Linux workstation, you will need to install Linux User Management (LUM).

LUM is also required if you want Samba (Windows CIFS/SMB) file services available from the NNLS server available to eDirectory users.

- 1 Continuing from **Step 7** in the previous section, click the Down-arrow  next to lab .
- 2 Click Users, then select Create Group from the drop-down list.
- 3 In the Group Name field, type **LUMUsers**.
- 4 Click OK > OK.
- 5 Click the Browse icon  next to the Linux Config field.
- 6 In the Object Selector window, click the Down-arrow next to the acme object.
- 7 Click UNIX Config.
- 8 In the main iManager window, click OK > OK.

Do not close iManager. Continue with the next section, **Create Users (eDirectory User Objects)**.

Create Users (eDirectory User Objects)

For the lab exercises, you will need to create the users shown in **Table 3**.

Table 3 Users to Create

Field Name	User 1	User 2	User 3	Other Users
Username:	ajohns	bjohnson	cmartin	Some NNLS file services can be accessed from Windows without requiring a username and password if the eDirectory usernames and passwords match those used to log in to Windows. To prepare for testing these file services, create eDirectory users that match the Windows users you will use to log in to the Windows workstations in the lab. Alternatively, you can create Windows users that match the three eDirectory usernames listed in this table.
First name:	Arnold	Bobby	Chris	
Last name:	Johns	Johnson	Martin	

- 1 Continuing from **Step 8** in the previous section, in the left pane click Users and then select Create User from the drop-down list.
- 2 In the Username field, type a Username shown in **Table 3**.
- 3 Type the first name (optional) and last name (required) for ajohns as shown in **Table 3**.
- 4 Do not check Create Home Directory.
This is a NetWare option only.
- 5 Type the same password in both the Password and Retype Password fields.

If the user you are creating is to match a Windows user as described in [Table 3](#), be sure the password matches the password in Windows.

- 6** Do not check Set Simple Password.

This is not required for NNLS.

- 7** (Optional) If desired, type a Title and other information you want to appear in eGuide search results.

- 8** Click OK > OK.

- 9** Click the Browse icon  to locate a Primary Group for the user.

- 10** In the Object Selector window, click the Down-arrow  next to the lab object.

- 11** Click the Down-arrow  next to the Users object.

- 12** Click LUMUsers.

- 13** Do not change the Samba settings.

If you do, a Samba password will not be set and you will not be able to complete the Samba-related tasks in this guide.

- 14** Click OK > OK.

- 15** Repeat this process for the other users listed in [Table 3](#) and for any additional User objects you want to create.

A Note about DirXML and the DirXML Starter Pack

If your organization has more than one directory storing user information, you should consider implementing Novell DirXML[®]. Novell Nterprise Linux Services 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.

Not only can you import User objects into eDirectory rather than creating them as you have in this section, but you can use DirXML to keep all the user data (including passwords) that are stored 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.

The DirXML documentation includes a lab guide that you can use to learn more about the starter pack and the full-featured DirXML product. For more information, see the [DirXML Starter Pack Lab Guide for Novell Nterprise Linux Services](#).

What's Next

When you have created all the User objects for your lab, continue with [Chapter 3, “Samba \(Windows File Services\) on NNLS,”](#) on page 25.

3

Samba (Windows File Services) on NNLS

Samba is an open-source, free software suite that lets you use the Microsoft* SMB/CIFS networking protocol with Linux computers and other platforms. Samba lets Windows users access the Novell® Nterprise™ Linux Services (NNLS) server like they would a Windows file server.

Samba is freely available under the GNU General Public License.

This section discusses the following:

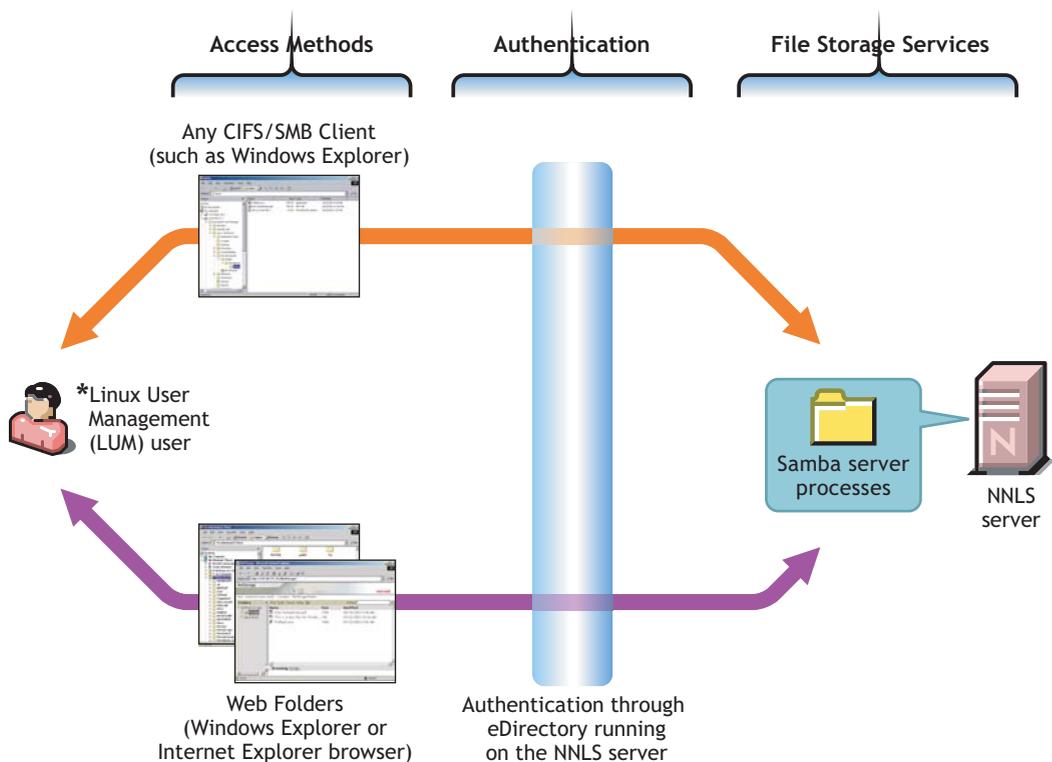
- ♦ [“Overview” on page 25](#)
- ♦ [“Create Samba User Home Directories” on page 26](#)

Overview

[Figure 4](#) illustrates the file services that are enabled by completing the steps in [“Create Samba User Home Directories” on page 26](#).

A more detailed overview of Samba file services on NNLS is found in [“Samba on NNLS”](#) in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*.

Figure 4 Samba on NNLS



Create Samba User Home Directories

As you created User objects in “[Create Users \(eDirectory User Objects\)](#)” on page 23, you were told not to change the Samba settings ([Step 13 on page 24](#)). If you followed this advice, the User objects you have created are enabled for access to Samba on NNLS.

However, before users can access Samba, you must create user home directories by logging in as each user from a shell prompt on the Linux server.

- 1 While logged in as the root user, access a shell prompt on the NNLS server.

Many Linux administrators don’t load a graphical user interface (GUI) on their Linux servers and, therefore, always work through a shell prompt.

If you are running a GUI, you can access a shell prompt by pressing Ctrl+Alt+F1.

IMPORTANT: Do not attempt to complete this procedure from a shell prompt launched from within the GUI or from a remote session, such as an SSH session. If you do, the home directory creation process will fail.

- 2 Log in to the shell prompt by entering a username and password that you created in “[Create Users \(eDirectory User Objects\)](#)” on page 23.

The system should report that a home directory has been created.

- 3 At the system prompt, enter `exit`
- 4 Repeat [Step 2](#) and [Step 3](#) for each User object you want to give access to Samba services.
- 5 (Conditional) When you have finished creating home directories for all your Samba users, if you are running a GUI, press Ctrl+Alt+F7 to return to the GUI screen:

What's Next

If you want to test Samba file services at this point, go to [“Using Samba \(Windows File Services\)”](#) on page 49.

Otherwise, continue with [Chapter 4, “Messaging Services,”](#) on page 29.

4

Messaging Services

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

- ◆ **NetMail™ 3.5:** A flexible and powerful e-mail server that supports
 - ◆ Standard e-mail functionality.
 - ◆ Calendaring, scheduling, and busy searching.
 - ◆ Tasks, notes, and much more.
- ◆ **GroupWise® 6.5 Collaboration Client:** The latest client from Novell’s award-winning GroupWise 6.5 product with enhancements for working with the NetMail 3.5 server.

This section discusses the following:

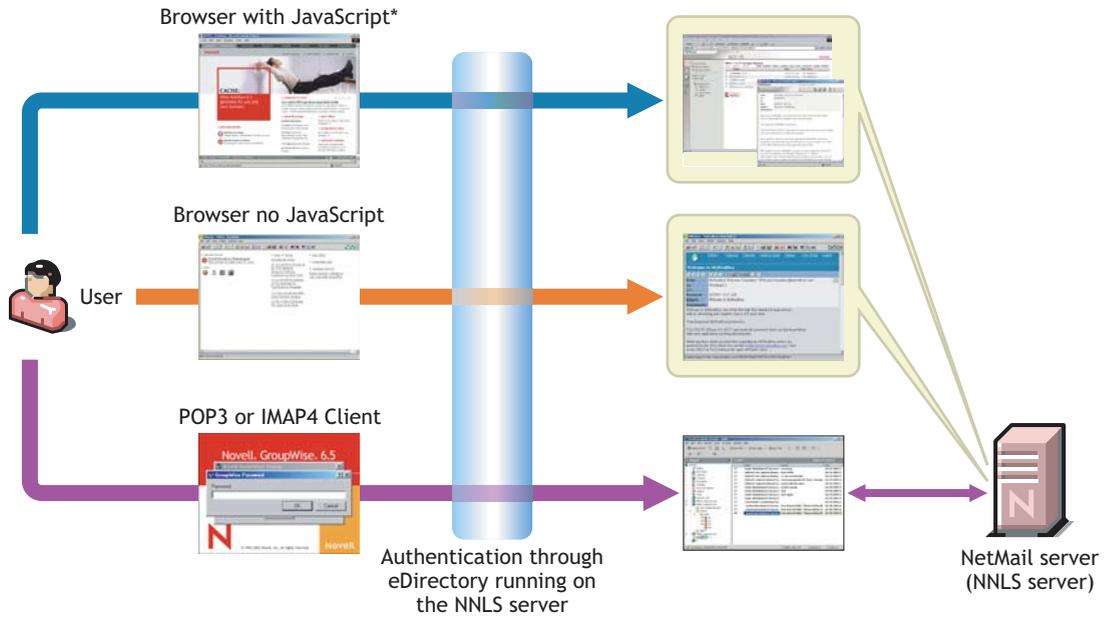
- ◆ [“Overview” on page 29](#)
- ◆ [“Configure NetMail for Your Users” on page 30](#)
- ◆ [“Configure the NetMail Address Books” on page 31](#)
- ◆ [“Install the GroupWise 6.5 Collaboration Client” on page 31](#)

Overview

[Figure 5 on page 30](#) illustrates the e-mail services that are enabled by completing the steps in the sections that follow.

A more detailed overview of NNLS e-mail services on NNLS is found in [“Novell NetMail 3.5 and the GroupWise 6.5 Collaboration Client”](#) in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*.

Figure 5 E-mail Services on NNLS



To prepare your NNLS server for the e-mail services illustrated in [Figure 5](#), you must complete the instructions in the following sections.

NOTE: The exercises in this guide provide only a simple demonstration of users on the same NNLS server communicating with each other.

If you want to test e-mail interaction with the Internet, you will need to use an official domain name and follow the instructions for configuring the SMTP Agent located in “SMTP Agent” in the *Novell NetMail 3.5 Administration Guide*.

If you want to test SMTP mail transfers between separate systems in the lab, you need to configure the agent. Using an official domain name is not required; you only need a DNS server on the LAN that the lab is running on.

Configure NetMail for Your Users

In this section you configure the NMAP Agent in eDirectory™ to work with your Users container object.

The NMAP Agent manages all message processing and delivery from the time a message enters the message queue to when it is delivered to the user's mailbox or passed off for delivery via the Internet. Every messaging system requires at least one NMAP Agent, and every user within the messaging system must be included in one of the NMAP Agent contexts.

- 1 In iManager, click the Roles and Tasks icon .
- 2 Click NetMail Management > Launch NetMail Management.
- 3 Click the Browse icon .
- 4 Click the Up-arrow icon  twice, then click the Web Administration Server object.
- 5 Click OK.
- 6 Click Yes on the certificate warning.
- 7 In Novell WebAdmin, click the Plus sign (+) next to Internet Services.

- 8** Click the Plus sign (+) next to the Messaging Server object.
- 9** Click the NMAP Agent.
- 10** In the right pane, click the Context tab.
- 11** Click the Browse icon .
- 12** In the Browse window, click the Plus sign (+) next to the acme Organization object.
- 13** Click the Plus sign (+) next to the lab container object.
- 14** Click Users (the name itself, not the Plus sign next to it).
- 15** Click Save.
The context for your users appears in the Managed Contexts list.
- 16** Click Save.
- 17** Check to ensure that a Success message appears to the right of the tabs near the top of the page.

Configure the NetMail Address Books

- 1** Continuing from **Step 17** in the previous section, in the left pane click the Plus sign (+) next to Modular Web Agent.
- 2** Click IMS Mail Module.
- 3** In the Address Book section under Personal, check Enabled.
- 4** Under System-wide, check Enabled.
- 5** In the empty field below the Disabled option, type the IP address of the NNLS server followed by : **52389**.
- 6** Click Save.
- 7** Close WebAdmin by clicking the Exit icon  and then closing the window.
- 8** At the NNLS server shell prompt, enter the following commands:

```
/etc/init.d/novell-netmail stop  
/etc/init.d/novell-netmail start
```

If you want to test NetMail services at this point, go to [“Accessing NetMail Using a Browser” on page 49](#).

Otherwise, continue with the next section, [Install the GroupWise 6.5 Collaboration Client](#).

Install the GroupWise 6.5 Collaboration Client

To install the collaboration client on Windows workstations in your lab:

- 1** At a Windows workstation, insert the *Novell Nterprise Linux Services Companion CD*.
- 2** Click Start > Run.
- 3** Browse to the Groupwise_Nterprise_Linux\win32 directory on the companion CD and run setup.exe.

- 4** As the software installs, do the following:
 - 4a** In the Select StartUp Folder Software dialog box, make sure GroupWise Notify is deselected.
 - 4b** In the Software Integrations dialog box, make sure all software programs are deselected.
 - 4c** In the Setup Complete dialog box, deselect the option to launch GroupWise.
 - 4d** Click Finish.
- 5** On the desktop, right-click the GroupWise icon and then click Properties.
- 6** In the Target field, type a space and then `/pr-c:\remote_mailbox` where *remote_mailbox* is a directory path on the local hard drive to where you want the GroupWise database to be created and maintained.
- 7** Click OK.

What's Next

If you want to test the GroupWise client at this point, go to [“Accessing NetMail Using the GroupWise Collaboration Client” on page 50.](#)

Otherwise, continue with [Chapter 5, “Novell iFolder,” on page 33.](#)

5

Novell iFolder

As a key file service component of Novell® Nterprise™ Linux Services (NNLS), Novell iFolder® provides a Web- and network-based repository (iFolder server) that stores master copies of locally accessible files.

This section discusses the following:

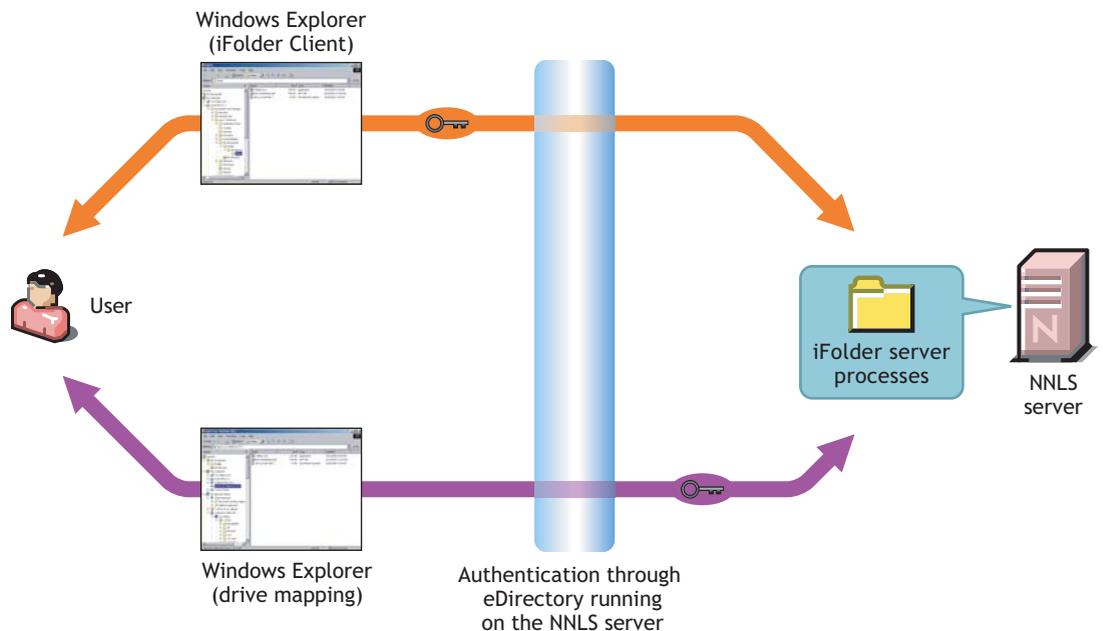
- ♦ “Overview” on page 33
- ♦ “Set Up User Search Contexts” on page 34
- ♦ “Enable iFolder Users” on page 34

Overview

Figure 6 illustrates the file services that are enabled by completing the steps in the sections that follow.

A more detailed overview of iFolder file services on NNLS is found in “Novell iFolder” in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*.

Figure 6 iFolder File Services on NNLS



Set Up User Search Contexts

- 1 Start the iFolder Management tool by entering the following URL in a browser Address field:
`https://IP_or_DNS/iFolderServer/Admin`
where IP_or_DNS is the IP address or DNS name of your NNLS server.
If your server has a DNS name on your network, the NNLS installation will have used that name when creating the SSL certificate for the server. To avoid certificate mismatch messages, use the DNS name in all access URLs.
- 2 Click the Global Settings icon .
- 3 Log in as Admin.
- 4 In the left pane, click User LDAPs.
- 5 In the right pane, click the iFolder LDAP Server link.
- 6 In the Contexts to Search section, check the Search Subcontexts option.
- 7 Click Update.

Enable iFolder Users

The following steps should not be necessary for the lab installation because all users created after iFolder is installed are automatically enabled for iFolder. However, it is a good idea to confirm that network users are in fact enabled for iFolder access.

- 1 Continuing from [Step 7](#) in the previous section, click the User Management icon .
- 2 In the left pane, click Advanced Search.
- 3 In the right pane, click Search.
Notice that the users created since iFolder was installed are enabled for iFolder access .
- 4 (Optional) Use the options in the User Management dialog to enable additional users for iFolder.

What's Next

If you want to test iFolder file services at this point, go to [“Using iFolder” on page 51](#).

Otherwise, continue with [Chapter 6, “Virtual Office,” on page 35](#).

6

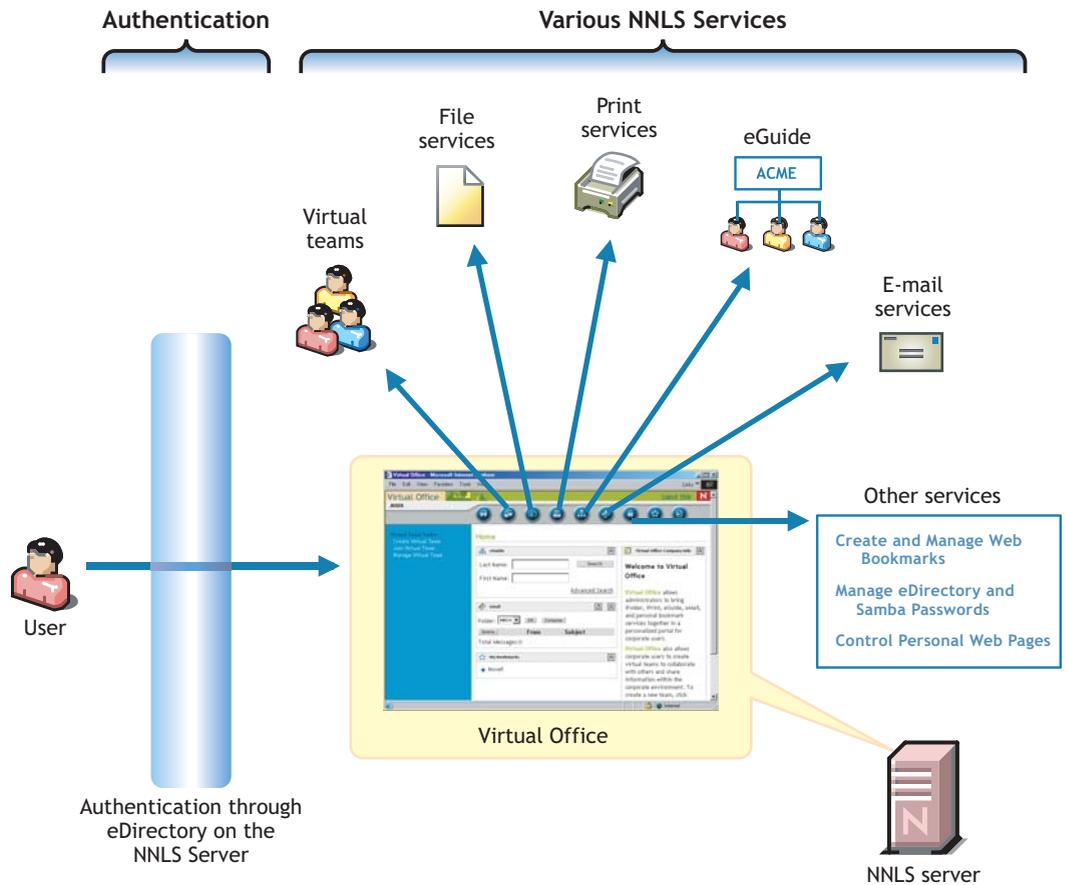
Virtual Office

As a key productivity component of Novell® Nterprise™ Linux Services (NNLS), Novell Virtual Office provides Web access to NNLS services.

Figure 7 illustrates the services that are available by default on the lab installation of NNLS outlined in this guide.

A more detailed overview of Virtual Office on NNLS is found in “**Overview**” in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*.

Figure 7



What's Next

After you have completed the instructions in this guide, your Virtual Office installation is complete and requires no further configuration.

If you want to test Virtual Office at this point, go to [“Using Virtual Office” on page 53](#).

Otherwise, continue with [Chapter 7, “iPrint,” on page 37](#).

7

iPrint

As the print services component of Novell[®] Nterprise[™] Linux Services (NNLS), Novell iPrint provides a powerful and easy-to-implement printing solution that lets your network users print from any Windows workstation to any network printer.

This section discusses the following:

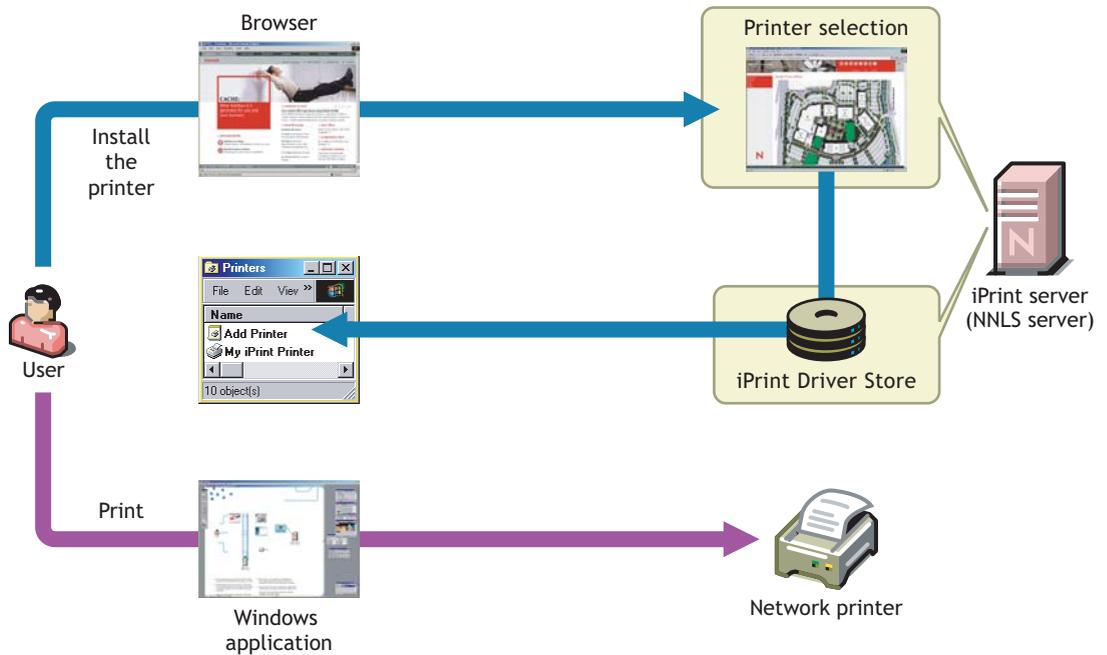
- ◆ “Overview” on page 37
- ◆ “Create an eDirectory Context for Printers” on page 38
- ◆ “Create a Print Driver Store” on page 38
- ◆ “Add Printer Drivers to the Driver Store from the Windows Platforms” on page 39
- ◆ “Create a Print Manager Object” on page 40
- ◆ “Create iPrint Printer Objects” on page 40

Overview

Figure 8 on page 38 illustrates the printing services that are enabled by completing the steps in the sections that follow.

A more detailed overview of iPrint services on NNLS is found in “iPrint Functionality” in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*.

Figure 8 iPrint on NNLS



Create an eDirectory Context for Printers

System administrators often create one or more container objects just for network printers. Obviously, this is an optional organizational preference issue. Printers can be placed wherever makes sense for your organization.

- 1 Start iManager by entering the following URL in a browser Address field:
`http://IP_or_DNS/nps/iManager`
where *IP_or_DNS* is the IP address or DNS name of your NNLS server.
- 2 Log in to iManager as Admin.
- 3 Click the View Objects icon .
- 4 In the left pane, click the Down-arrow  next to the acme Organization object.
- 5 Click lab, then select Create Object from the drop-down list.
- 6 From the Available Object Classes list, select Organizational Unit and then click OK.
- 7 In the Organizational Unit Name field, type **Printers**.
- 8 Click OK > OK.

Create a Print Driver Store

- 1 In iManager, click the Roles and Tasks icon .
- 2 Click iPrint > Create Driver Store.
- 3 In the Driver Store Name field, type **Print_Drivers**.
- 4 Click the Browse icon  next to the Container Name field.

- 5** Click the Down-arrow  next to lab, then click the Printers Organizational Unit object.
- 6** Click the Browse icon  next to the eDir Server field.
- 7** Click the Down-arrow  next to lab, click the Down-arrow  next to Servers, then click your NNLS server name.
- 8** Click OK > OK.

Add Printer Drivers to the Driver Store from the Windows Platforms

You can load printer drivers to the Driver Store using driver files. However, because most Windows workstations have an extensive list of printer drivers available on the system, the simplest way to add drivers is to load them directly from a workstation.

In other words, you can load the Windows XP drivers from a Windows XP workstation, Windows 2000 drivers from a Windows 2000 workstation, etc.

Complete the following steps once for each of the following Windows platforms that you have in your lab:

- ♦ Windows XP
- ♦ Windows 2000
- ♦ Windows NT 4
- ♦ Windows 95/98/ME

- 1** Open a browser on the workstation and enter the following URL in the Address field:

`http://IP_or_DNS/ipp`

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

- 2** Click Install iPrint Client.
- 3** Click Open.
- 4** Read the license agreement, then click I Agree.
- 5** After the client installs, click Finish.
- 6** Close the browser.
- 7** If it is not already running, start iManager (<http://server/nps/iManager>) and log in as Admin.
- 8** Click iPrint > Manage Driver Store.
- 9** Click the Browse icon  next to the iPrint Driver Store Name field.
- 10** Browse to the Printers container (acme > lab > printers), then click the Print_Drivers object.
- 11** Click OK.
- 12** Click the Drivers tab.
- 13** Click the link for your workstation type (Windows XP, Windows 2000, etc.).
- 14** Click Add from System.
- 15** In the Add Resource dialog box, select the correct driver for the printer you plan to use for the lab test.
- 16** Click OK.

- 17** (Optional) To test multiple printers, repeat **Step 14** through **Step 16** for each printer you want to test.
- 18** When finished, click Apply > OK.

Create a Print Manager Object

The iPrint Manager is represented by and managed through a Print Manager object in eDirectory™. It is a daemon that runs on the NNLS server, and it must be running when you create Print objects. After printing is set up, the iPrint manager receives print job requests and forwards them to printers when the printers are ready.

- 1** Continuing from **Step 18** in the previous section, click iPrint > Create Print Manager.
- 2** In the Manager Name field, type the following:
`iPrint_Manager`
- 3** Click the Browse icon  next to the Container Name field.
- 4** Click the Down-arrow  next to lab, then click Printers.
- 5** Click the Browse icon  next to the eDir Server field.
- 6** Click the Down-arrow  next to lab, click the Down-arrow  next to Servers, then click your NNLS server name.
- 7** Click the Browse icon  next to the Driver Store field.
- 8** Click the Down-arrow  next to lab, click the Down-arrow  next to Printers, then click Print_Drivers.
- 9** Click OK > OK.

Create iPrint Printer Objects

You can create iPrint Printer objects for all your printers that have drivers in the Driver Store and an IP address or DNS name.

- 1** In iManager, click the Roles and Tasks icon .
- 2** Click iPrint > Create Printer.
- 3** In the Printer Name field, type a name for your printer.
- 4** Click the Browse icon  next to the Container Name field.
- 5** Click the Down-arrow  next to lab, then click Printers.
- 6** Click the Browse icon  next to the Manager Name field.
- 7** Click the Down-arrow  next to lab, click the Down-arrow  next to Printers, then click iPrint_Manager.
- 8** Type the DNS name or IP address of the printer in the field indicated.
- 9** Type a location so users will know where to find the printer.
- 10** (Optional) Type a description.
- 11** Click Next.
- 12** Select the appropriate drivers for each Windows platform you are testing.

13 Click Next.

14 Click OK.

What's Next

If you want to test iPrint at this point, go to [“Using iPrint” on page 54](#).

Otherwise, continue with [Chapter 8, “NetStorage,” on page 43](#).

8

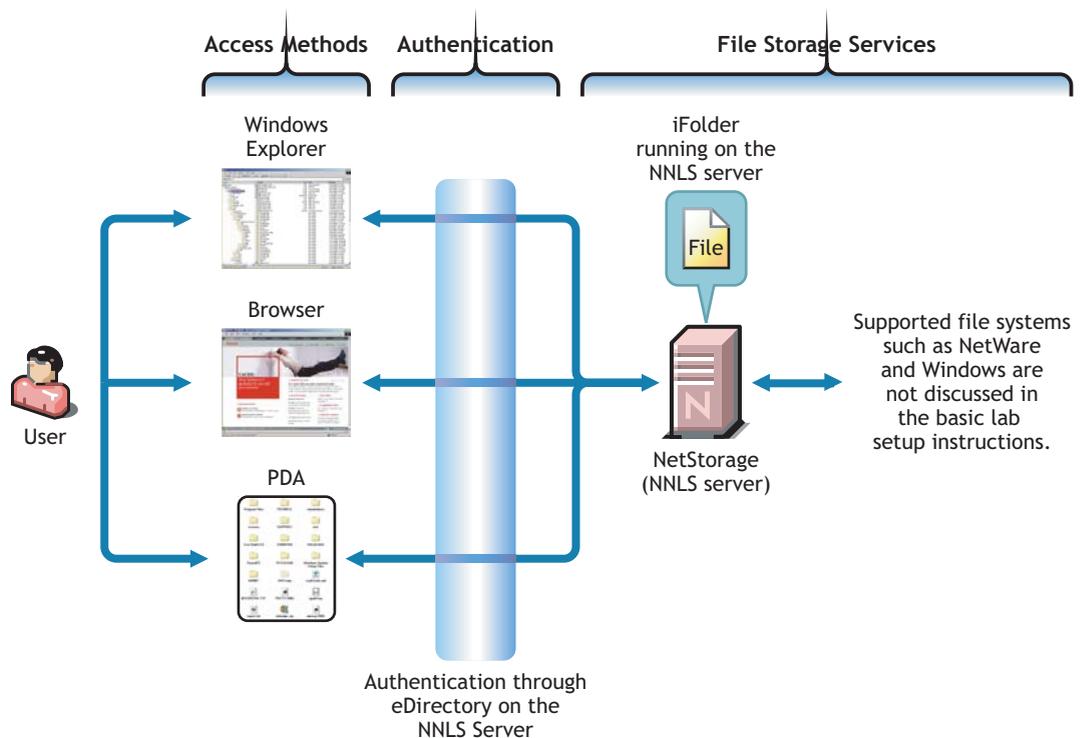
NetStorage

As a versatile file services component of Novell® Nterprise™ Linux Services (NNLS), Novell NetStorage provides the file services behind the Files button in Virtual Office and is installed as part of Virtual Office. However, NetStorage can also be accessed directly rather than through Virtual Office.

Figure 9 illustrates the NetStorage file services that are enabled by default.

A more detailed overview of NetStorage file services on NNLS is found in “Novell NetStorage” in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*.

Figure 9 NetStorage on NNLS



In NNLS, the default NetStorage installation provides access to two folders:

- ♦ A shared folder on the local file system that contains a ReadMe.html file with instructions for creating NetStorage Storage Location objects.
- ♦ An iFolder Storage Provider link to the Novell iFolder® data store on the server.

In NNLS, access to iFolder through NetStorage is automatically configured.

IMPORTANT: If you follow the steps outlined in Chapter 11, “Getting Acquainted with NNLS,” on page 49, this will ensure that the setup processes outlined in “Access User Accounts Using the iFolder

[Client](#) on [page 51](#) are completed for all lab users before they access NetStorage. If any users access their files for the first time through NetStorage or Virtual Office, they are not prompted to set a passphrase and their data is not encrypted in the iFolder data store.

What's Next

If you have already tested iFolder (see the Important note above) and you want to test NetStorage file services at this point, go to [“Using NetStorage” on page 54](#).

Otherwise, continue with [Chapter 9, “eGuide,” on page 45](#).

9

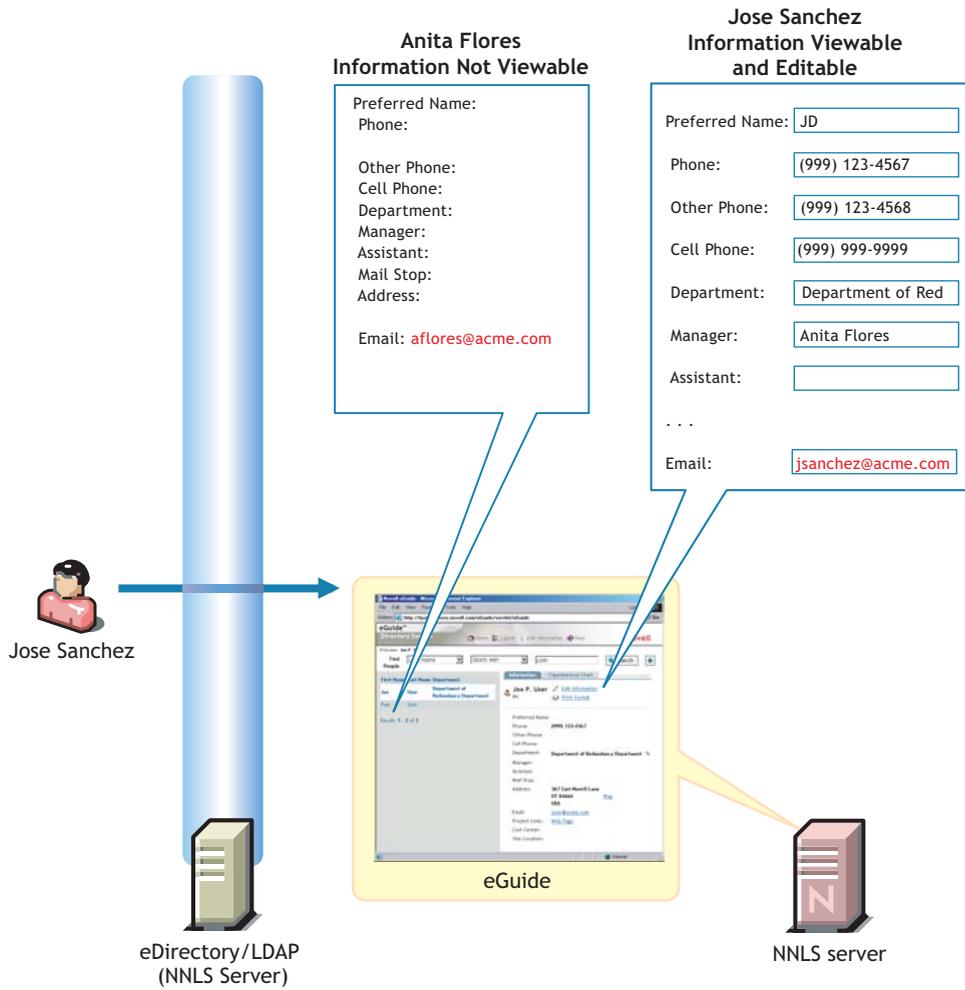
eGuide

Novell® eGuide provides user access to information stored in eDirectory™ and other LDAP-compliant data sources and is installed as part of Virtual Office in Novell Nterprise™ Linux Services (NNLS). eGuide can provide your users with “white pages” access to user information and much more—basically, any information you choose to store in eDirectory objects can be exposed to users through eGuide.

Figure 10 on page 46 illustrates that by default eGuide on NNLS lets users view their own information and see limited information about other users on the system.

A more detailed overview of eGuide on NNLS is found in “**eGuide**” in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*.

Figure 10 eGuide on NNLS



What's Next

If you want to test eGuide at this point, go to [“Using eGuide” on page 54](#).

Otherwise, continue with [Chapter 10, “Linux User Management \(LUM\),” on page 47](#).

10 Linux User Management (LUM)

Novell® Linux User Management (LUM) is a key component of Novell Nterprise™ Linux Services (NNLS) and provides two basic functions:

- ♦ It lets you create Linux User objects in eDirectory™ for Windows users who will access Samba file services on your NNLS server, as demonstrated earlier in this guide.
- ♦ It lets you require users who are accessing PAM-enabled services, such as login or ftp, on the NNLS server to authenticate through eDirectory.

Figure 11 illustrates how LUM works with PAM-enabled services. For a more detailed overview, see “Linux User Management (LUM)” in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*.

Figure 11 Linux User Management on NNLS

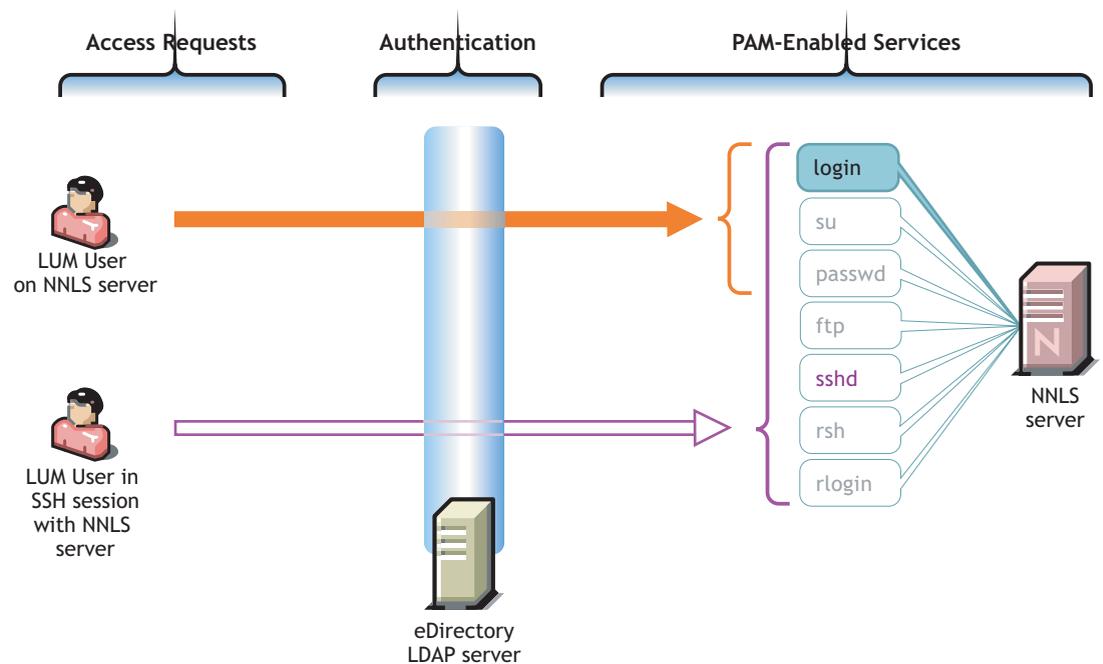


Table 4 on page 48 shows the PAM-enabled services that can be controlled by having LUM installed. By default, only the login command is enabled for LUM support during the NNLS installation.

Table 4 PAM-enabled Services

Command	Where Executed	Function for LUM Users
ftp	Another host	Transfer files to and from the NNLS server after supplying an eDirectory/LUM username and password.
login	NNLS server or in an SSH session with the NNLS server	Log in to the NNLS server using an eDirectory/LUM username and password, either directly or in an SSH session with the server if sshd is also enabled.
passwd	NNLS server or in an SSH session with the NNLS server	Change the eDirectory password for the current user. NOTE: The recommended method for changing passwords in NNLS is through Virtual Office. For more information, see “Password Management and Samba Passwords” in the <i>Novell Nterprise Linux Services Overview, Planning, and Implementation Guide</i> .
rlogin	Another host	Log in to the NNLS server from a remote host system shell prompt after supplying an eDirectory/LUM username and password.
rsh	Another host	Execute a command on the NNLS server from a remote host system shell prompt after supplying an eDirectory/LUM username and password.
sshd	Another host	Establish a secure encrypted connection with the NNLS server after supplying an eDirectory/LUM username and password.
su	NNLS server or in an SSH session with the NNLS server	While logged in as an eDirectory/LUM user, temporarily become another user. This is most often used to temporarily become the root user (who is purposely not a LUM user) to administer the local Linux machine will full system privileges.

The user-creation steps you completed earlier in this guide ([“Create Users \(eDirectory User Objects\)” on page 23](#)) created three LUM users with rights to log in to the NNLS server.

What’s New

If you want to test LUM services at this point, go to [“Using Linux User Management \(LUM\)” on page 55](#).

Otherwise, continue with [Chapter 11, “Getting Acquainted with NNLS,” on page 49](#).

11

Getting Acquainted with NNLS

After you have installed Novell® Nterprise™ Linux Services (NNLS) and completed the configuration instructions located in the preceding sections, your NNLS server is ready for lab use.

The instructions and information in this section will acquaint you with the basic services available in NNLS. More detailed service overviews are available in the *Novell Nterprise Linux Services Overview, Planning, and Implementation Guide*. For comprehensive documentation for each service, see the administration guides and other documentation listed on the [NNLS documentation Web site \(http://www.novell.com/documentation/lg/nls\)](http://www.novell.com/documentation/lg/nls).

Using Samba (Windows File Services)

NOTE: To perform the steps in this section, you must have completed all the instructions in [Chapter 3, “Samba \(Windows File Services\) on NNLS,” on page 25](#).

- 1 In Windows Explorer, click Tools > Map Network Drive.
- 2 In the Folder field, type the following:

```
\\IP_or_DNS\username
```

where *IP_or_DNS* is the IP address or full DNS name of the NNLS server, and *username* is the login name of the Samba user.
- 3 (Conditional) If the Samba username and password don't match the username and password that you used to log in to the Windows workstation, click the Different Username link and specify the username and password of a Samba user you created in eDirectory.
- 4 Click Finish.
- 5 Drag some files from Windows Explorer or the desktop into the Samba folder.
- 6 At the NNLS server shell prompt as the root user, access the `/home/username` directory and verify that the files you placed in the Samba folder appear on the server.

By default, this drive mapping will be available each time the user logs in to the Windows workstation.

Accessing NetMail Using a Browser

NOTE: To perform the steps in this section, you must have completed all the instructions in [Chapter 4, “Messaging Services,” on page 29](#).

- 1 Using a Java*-enabled Web browser, access NetMail™ using the following URL:

```
http://IP_or_DNS:52080
```

where *IP_or_DNS* is the IP address or DNS name of your NNLS server.
- 2 Log in as bjohnson.

3 (Optional) To open the NetMail help window and explore the WebAccess interface documentation, click the help icon .

4 In the left-most pane of the WebAccess window, click the Compose icon .

5 Click the Address Book button.

6 In the Search For field, type **john**.

7 Click Search.

Notice that both Arnold Johns and Bobby Johnson are listed in the System-Wide address book.

Each string you type in the Search For field will be matched against the

- ◆ Username
- ◆ First name
- ◆ Last name

of all eDirectory™ users in the NetMail search context.

8 Select Arnold Johns, then click To:.

Notice that Arnold's e-mail address appears in the Current Recipients list on the right.

9 Select Bobby Johnson > then click CC:.

Bjohnson's e-mail address now also appears in the list.

10 Click Compose to return to the Mail Message window.

11 Type a subject and a short message.

12 Click Send.

13 Click the View Mailbox icon  to refresh bjohnson's Inbox.

Notice that the e-mail you just created appears in the list.

14 Click the Exit icon .

15 Click the Login link and log in as cmartin.

16 Click the Compose icon .

17 On the Change To line, click Appointment.

18 Create an appointment and address and send it to the two other eDirectory users (ajohns and bjohnson).

19 Click the View Calendar icon .

Notice that the appointment you just created appears in your list of appointments.

Accessing NetMail Using the GroupWise Collaboration Client

NOTE: To perform the steps in this section, you must have also completed all the instructions in "Install the GroupWise 6.5 Collaboration Client" on page 31.

Create a NetMail Account

1 At the Windows workstation with the GroupWise® Collaboration client installed, launch the client by double-clicking the GroupWise desktop icon.

IMPORTANT: If you have not previously set up remote dialing on the computer, a dialog is launched that prompts for a country and area code. To continue with the client setup, specify the requested information. Doing so will not affect the GroupWise client.

- 2** Answer Yes to the prompt to create the database path.
- 3** In the Create Account dialog box, type **ajohns** as the name for the account.
- 4** In the Account Type drop-down list, select IMAP4.
- 5** Click Next.
- 6** In the Incoming field, type the full DNS name or IP address of the NNLS server.
- 7** In the Login Name field, type **ajohns**.
- 8** Click the next two fields to automatically populate them with the correct information.
- 9** In the From Name field, type Arnold Johns.
- 10** Click Next > Next.
- 11** Using the Up and Down buttons, position the new folder relative to those that already exist. For example, move it to the top of the list.
- 12** Click Finish.

Access the NetMail Account

- 1** In the GroupWise client, click the ajohns account you created in the previous procedure.
- 2** Log in to the NetMail server using the eDirectory username and password.
There might be a momentary delay while the database is populated on the local hard drive.
- 3** In the left pane, click the Inbox icon .
Notice that the messages and the appointment created earlier appear in the right pane.

For more information about using the GroupWise Collaboration Client with the NetMail server, click Help > What's New in the GroupWise client.

Using iFolder

NOTE: To perform the steps in this section, you must have completed all the instructions in [Chapter 5, "Novell iFolder," on page 33](#).

Access User Accounts Using the iFolder Client

The steps in this section are required to activate an important feature of Novell iFolder®: encryption of user data in the iFolder data store.

Data encryption is automatically set up when users access their accounts for the first time through the iFolder client or using Novell NetDrive.

On the other hand, if users access their files for the first time through NetStorage or Virtual Office, they are not prompted to set a passphrase and their data is not encrypted in the data store.

- 1** From a browser on a Windows workstation, access the iFolder server using the following URL:

http://IP_or_DNS/iFolder

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

- 2** In the left pane, click the Download link.
- 3** In the Download dialog box, click Open.
- 4** Click Next > Next.
- 5** Read the license agreement, then close the license window.
- 6** Click Yes to accept the license terms.
- 7** (Optional) Specify an alternate location for the program files.
- 8** Click Next > Finish.
- 9** (Optional) Read the iFolder Readme file, then close the Readme window.
- 10** Click Finish to restart the computer.
- 11** After the computer restarts, read the information about using iFolder.
- 12** Click Continue.
- 13** Log in to iFolder using the username and password of the iFolder user who will use the workstation.
- 14** Accept the default iFolder location on the workstation or use the Browse button to specify an alternate location.
- 15** Click OK.
- 16** Leave the Encrypt Files option checked, then click OK.
- 17** Type a passphrase, a confirmation passphrase, and a hint (optional) in the fields provided, and then click OK.
- 18** Click OK to enable passphrase recovery.

Continue with the next section, “[Observing File Synchronization](#).”

Observing File Synchronization

To understand more about how iFolder works, it is helpful to observe the file synchronization processes in action.

- 1** Open the iFolder shortcut on your desktop.
- 2** Double-click the iFolder icon in your system tray, then click View Activity.
- 3** Create one or two test files on your desktop.
- 4** Drag the files to the iFolder Home folder.
- 5** In the View Activity window, observe that the files are copied to the iFolder server.
- 6** Delete a file or drag it back to the desktop and observe how the action is synchronized with the server.

Keep one or two files in the iFolder Home folder and continue with the next section, “[NetDrive](#).”

NetDrive

You can map a network drive to the iFolder directory using Novell NetDrive.

- 1** At a Windows workstation, insert the *Novell Nterprise Linux Services Companion CD*.
- 2** Run the NetDrive.exe installation program found in the NetDrive folder at the root of the CD.

If you require more information, see the *Novell NetDrive 4.1 User Guide*.

- 3** After NetDrive is installed, drag the NetDrive shortcut to the desktop and then double-click the shortcut to run NetDrive.
- 4** Click New Site.
- 5** In the first field, type the name you want used for the drive mapping in Windows Explorer. For example, MyiFolder.
- 6** In the second field, type the IP address or DNS name of the NNLS server.
- 7** Click Finish.
- 8** From the Server Type drop-down list, select iFolder.
- 9** From the Drive drop-down list, select an unused drive letter.
- 10** Select the Connect at Login/Startup option.
- 11** Deselect the Anonymous/Public Logon option.
- 12** Type the iFolder username, password, and passphrase in the appropriate fields.
- 13** Click Connect.

In the window that opens, you should see the sample files you worked with in the previous section “[Observing File Synchronization](#).”

- 14** Arrange the windows on your desktop so that the NetDrive window, the Home folder from the iFolder desktop shortcut, and the View Activity window are all visible.
- 15** In the NetDrive window, change the name of one of the files.

Notice that the View Activity window shows the file being renamed and that the action is synchronized in the Home folder from the desktop shortcut.

The scenario described in this section does not reflect real-world iFolder activity because NetDrive and the iFolder client are not usually used together.

However, this exercise demonstrates that any changes made to the files on the server are synchronized with the local files through the iFolder client.

Using Virtual Office

- 1** Using a Java-enabled Web browser, enter the following URL in the Address field:

```
http://IP_or_DNS/vo
```

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

- 2** Log in with the username you used in the “[Using iFolder](#)” section.

Notice that the E-mail section on the main page lists the e-mail messages in the user’s mailbox.

- 3** In the eGuide section, type **john** in the Last Name field and then click Search.

Both Arnold Johns and Bobby Johnson are listed.

- 4** Move the mouse over each of the icons at the top of the page and notice the label for each icon.

The following sections can be accessed using their own URLs, but for demonstration purposes we will have you access them through Virtual Office.

Using iPrint

NOTE: To perform the steps in this section, you must have completed all the instructions in [Chapter 7, “iPrint,”](#) on page 37.

- 1 In Virtual Office, click the iPrint icon  .
iPrint is installed as part of Virtual Office.
- 2 (Optional) If you have not already installed the iPrint client on this workstation, click the Install iPrint Client link and install the client.
- 3 After the client is installed, click the link to install a printer you created in [“Create iPrint Printer Objects”](#) on page 40.
- 4 Answer the prompts to install the printer on the workstation.
- 5 Access the Printers property page by clicking Start > Settings > Printers.
- 6 Right-click the printer, then click Properties.
- 7 Click Print Test Page.

Using NetStorage

NOTE: To perform the steps in this section, you must have completed all the instructions in [Chapter 5, “Novell iFolder,”](#) on page 33 and in [“Using iFolder”](#) on page 51. Otherwise, if you access the iFolder folder as an eDirectory user, the user’s iFolder account will not be encrypted using the user’s passphrase.

- 1 In Virtual Office, click the Files icon  .
- 2 In the left pane, click the iFolder folder.
- 3 Enter and confirm the passphrase.
- 4 Click Set Passphrase.
- 5 Click the iFolder folder again.
Notice that the files you previously worked with in the iFolder section appear in the right pane.
If you were to change folder contents as you did in [Step 15 on page 53](#), you would see the same coordination through the iFolder client as you did then. All changes to the iFolder data on the server are reflected to locally stored directories and files through the client.
- 6 To read more information about using NetStorage to access other file storage systems, click the Shared folder and double-click the Read Me.html file.

For more information on using NetStorage, see the [NetStorage Administration Guide](#).

Using eGuide

- 1 In Virtual Office, click the eGuide icon  .
- 2 Enter various search strings to display the eDirectory users you have created.
Notice that when you select the currently logged-in user, an Edit Information option is included.

Although this option appears, if users try to edit their information, the change will fail to save. To enable this feature, you must assign Role Based Services or ACLs. For more information, see the [Novell eGuide 2.1.2 Administration Guide](#).

Using Linux User Management (LUM)

The following steps briefly demonstrate how LUM works with PAM-enabled services.

1 At a the NNLS server, open a new shell prompt by pressing `Ctrl+Alt+Fx`, where *Fx* is the function key (F1 through F6) for an unused shell prompt.

2 Log in as the eDirectory user `ajohns`.

The command prompt changes, indicating you are logged in.

3 Open a different shell prompt using a different function key, such as F2.

4 Log in as the root user.

5 Change to the `/etc/pam.d` directory by entering

```
cd /etc/pam.d
```

6 Make a copy of the login file located in the directory by entering

```
cp login login.copy
```

7 Open the original login file for editing by entering

```
vi login
```

8 To enter Insert mode, type

```
i
```

9 Use the Delete key to remove the first five lines of the file, so that the first line reads

```
##PAM-1.0
```

10 Press Escape.

11 Press and hold the Shift key, then press `z+z` in sequence.

12 Return to the first shell prompt and log out as user `ajohns` by entering

```
exit
```

13 Try to log in again as user `ajohns`.

The systems responds that the login request was incorrect.

When you removed the first five lines from the login file, you removed the LUM support from the login command.

14 To restore the LUM support for the login command, change to the shell prompt where you are logged in as the root user, then enter

```
rm login
```

to delete the file you changed in [Step 9](#) and

```
y
```

to confirm file deletion and

```
mv login.copy login
```

to rename the copy file created in [Step 6](#) to the original filename, restoring the original login behavior.

15 Change back to the first shell prompt and log in as `ajohns` to verify that LUM support is restored.

What's Next

After you complete the exercises in this guide, we recommend you do the following:

1. Think about the needs of your organization and how the various NNLS product components can help you address those needs.
2. Go back to the various components and work with them considering the needs you identified.
3. Begin planning your organization's eDirectory tree and the rollout of NNLS services to your organization.

As you plan for, work with, and install NNLS, you should consult the other NNLS product documentation:

Title	Contents
<i>Novell Nterprise Linux Services Installation Guide</i>	Installation planning worksheets and comprehensive installation instructions for all NNLS components.
<i>Novell Nterprise Linux Services Overview, Planning, and Implementation Guide</i>	Detailed overviews of all components, planning information and instructions, and links to configuration and maintenance information in the administration guides associated with each NNLS product component.