

# Novell iFolder™ Professional Edition

2.0

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Installation and Administration Guide

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# About This Guide

This documentation contains instructions on how to install and configure Novell® iFolder™ Professional Edition 2.0.

The guide is intended for network administrators and is divided into the following sections:

- ◆ Chapter 1, “Overview,” on page 11
- ◆ Chapter 2, “Understanding the Novell iFolder Architecture,” on page 15
- ◆ Chapter 3, “Getting Started in Four Steps,” on page 19
- ◆ Chapter 4, “Upgrading from Novell iFolder Standard Edition to Professional Edition,” on page 21
- ◆ Chapter 5, “Installing Novell iFolder on NetWare 5.1 or NetWare 6,” on page 23
- ◆ Chapter 7, “Installing Novell iFolder on Windows NT 4.0 and Windows 2000,” on page 39
- ◆ Chapter 6, “Installing Novell iFolder on Linux 7.2 and Solaris 8,” on page 29
- ◆ Chapter 9, “Configuring Novell iFolder on Novell Cluster Services,” on page 65
- ◆ Chapter 8, “Using the Novell iFolder Management Console,” on page 45
- ◆ Chapter 10, “Tips and Tricks for Optimizing Novell iFolder,” on page 69
- ◆ Appendix A, “In-Depth Look at Authentication, Encryption, and Synchronization,” on page 73
- ◆ Appendix B, “Frequently Asked Questions,” on page 77
- ◆ Appendix C, “Documentation Updates,” on page 79

## **Additional Documentation**

For information on installing the iFolder client, see the *iFolder Quick Start*.

## **Documentation Conventions**

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

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

# 1

## Overview

Novell® iFolder™ Professional Edition lets your mobile professionals access their local files from any computer that has the iFolder client installed and an active Internet connection.

iFolder is like having a single, virtual work folder that you can access from any computer. It's the easy way to synchronize, back up, and access your files—anywhere and anytime. Whether you're working on your office or home computer, a disconnected notebook, or even at an Internet kiosk in an airport halfway around the world, your files are instantly available. The work you do is instantly backed up, so your files are always protected and easily recovered in the event your data is lost. And later, when you move on to a different location and a different computer, your files are automatically updated to reflect the work you did elsewhere—with no floppies or file transfers required.

It no longer matters where you are in the world. With iFolder, you can get your work done without having to e-mail files to yourself or deal with complicated remote logins or temperamental VPN clients. You no longer need to worry about keeping track of your files, because your work environment now revolves around you and your data is with you wherever you are.

### Standard Edition vs. Professional Edition

Novell iFolder Standard Edition shipped with NetWare® 6. This edition included server support for Windows\* NT\* 4/2000 and NetWare 5.1/6. In the future, iFolder Professional Edition will ship with NetWare releases and will provide functionality for the following operating systems: Netware 5.1 and 6, Windows NT 4/2000, Linux Red\* Hat\* 7.2, and Solaris\* 8.

iFolder Professional Edition is available from Novell or from a Novell Authorized Reseller<sup>SM</sup>. iFolder Professional Edition includes all the features of iFolder Standard Edition, plus additional features. For a complete listing of these features, see the next section, "[What's New](#)."

## What's New

### Standard Edition

- ◆ Server support for NetWare 5.1/6 and Windows NT 4/2000
- ◆ Web browser access to iFolder files
- ◆ File encryption to protect them from unauthorized access
- ◆ Automatic synchronization of files between the iFolder server and local workstations through a standard Internet connection
- ◆ Management of iFolder server and accounts through a Web browser

### Professional Edition

- ◆ Server support for NetWare 5.1 and 6, Windows NT 4/2000, Red Hat Linux 7.2, and Solaris 8
- ◆ Large-scale deployment support for installations of two or more iFolder servers that act as a single system
- ◆ Ability for administrators to recover a user's pass phrase
- ◆ Ability of end user to choose the location of the local iFolder directory
- ◆ Pocket PC PDA Web browser access to iFolder
- ◆ Reporting functionality that will generate reports on iFolder users and the iFolder system
- ◆ Enhanced proxy support for iFolder clients
- ◆ Thin-client support for Citrix\* Metaframe\* servers and Windows NT/2000 Terminal Server through Novell NetDrive
- ◆ Ability to map a drive via NetDrive to an iFolder server without a Novell Client<sup>TM</sup>

## Additional Software That Ships with iFolder

- ◆ Novell NetDrive

Novell NetDrive is the software that allows you to map a network drive, using the iFolder protocol, to an iFolder server without a Novell or iFolder client.

The great thing about NetDrive is that it allows you to be logged into multiple iFolder accounts from the same workstation and at the same time.

For more information on how NetDrive works, see the NetDrive documentation, located in the [NetWare 6 Documentation \(http://www.novell.com/documentation/lg/nw6p/index.html\)](http://www.novell.com/documentation/lg/nw6p/index.html).

## What's Next?

Now that you have a basic understanding of how iFolder works, it's time to get started. Installing and configuring your first iFolder server is a four-step process.

For directions on how to install and configure iFolder, see [Chapter 3, "Getting Started in Four Steps,"](#) on page 19.

If you need a more in-depth view of how iFolder works, see [Chapter 2, "Understanding the Novell iFolder Architecture,"](#) on page 15.

## Do You Have a Question?

For a discussion of frequently asked questions, see [Appendix B, "Frequently Asked Questions,"](#) on page 77.

You can also access the [iFolder Cool Solutions Web site \(http://www.novell.com/cool solutions/ifmag\)](http://www.novell.com/cool solutions/ifmag) for solutions, Q & A submitted by iFolder users and admins, TIDs, and other information.



# 2

## Understanding the Novell iFolder Architecture

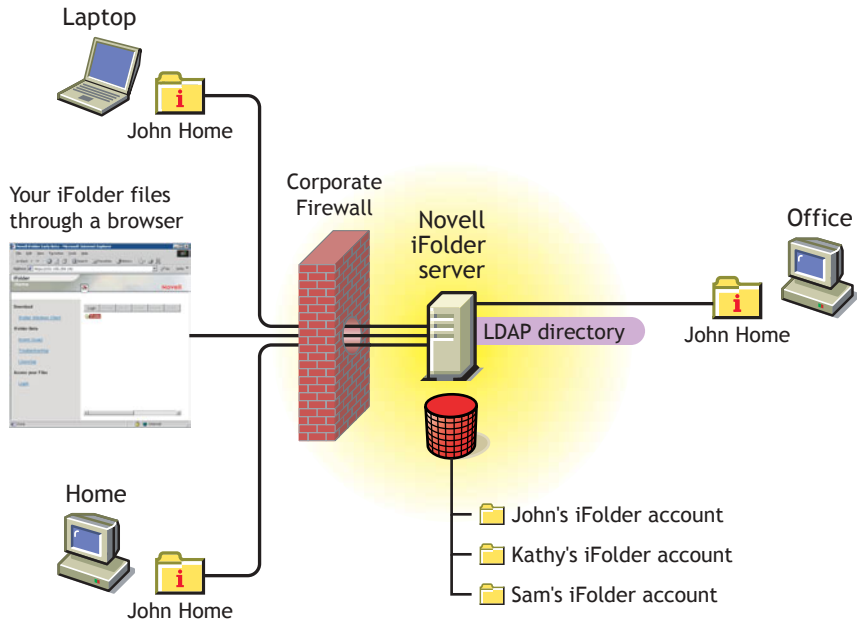
Novell® iFolder™ lets you manage files the easy way: automatically. No matter where you choose to work, iFolder does all the file management for you—which means that even though users are working locally, all of their data is being securely uploaded and saved to the network. This data security is automatic, secure, and transparent to users.

There are three pieces to Novell iFolder: the iFolder server software, the iFolder client software, and the Java\* applet. These pieces work together seamlessly to provide you with instant access to any iFolder files stored on your hard drive from anywhere in the world.

The following figure illustrates how the Novell iFolder server is accessed from different computers or locations. John can access his iFolder data from home, work, or through a browser. When he works on a local computer, John is accessing his data locally. The iFolder server is responsible for making sure that all of John's computers have the latest version of his data. If he accesses his account through a browser, John is actually looking at the data that is stored on the iFolder server.

To learn more about accessing iFolder data through a browser, see the "[Accessing iFolder through a Web Browser](#)" section of the *iFolder Quick Start*.

To learn more about synchronization, see "[Authentication and Synchronization](#)" on page 18.



## The Benefits of Large-Scale Deployment

One of the key features of iFolder Professional Edition is its ability to scale to a large and growing environment. With Novell iFolder Standard Edition, you were limited to only one iFolder server to handle all of your iFolder accounts and data. Now, with Professional Edition, you can install iFolder on multiple servers, allowing your iFolder environment to grow with your business.

There is no limit to the number of iFolder servers that you can have in your iFolder network—a single iFolder server handles up to 10,000 user accounts. In turn, each of these servers together acts as one system.

Because iFolder takes care of redirecting user authentication requests to the correct iFolder server, the login procedure is a seamless experience for the end user. Plus, as your iFolder network grows, your management costs stay the same, because the management of all iFolder servers is centralized through the iFolder Management Console.



## Apache and iFolder

iFolder uses Apache as its default Web server for NetWare, Linux, and Solaris server operating systems. Windows NT 4 and 2000 use the IIS Web server.

When iFolder is active, it runs in the protected address space on the server, with its own instance of Apache. Because iFolder requires some configuration changes to Apache-specific files, we recommend that you install iFolder on a server that does not have other applications that rely on Apache. If you *do* have other applications that use Apache, when you install iFolder, these applications might not work.

## LDAP and iFolder

LDAP (Lightweight Directory Access Protocol) is a directory protocol that enables you to communicate with servers that use a directory service.

iFolder uses a Novell eDirectory™ as a central location for all of its eDirectory objects that are specific to iFolder, and it uses LDAP for user authentication.

You can have iFolder and LDAP running on the same server or on different servers.

## LDAP Directories

iFolder uses two different types of LDAP directories: the Global Settings LDAP directory and the User LDAP directory.

The Global Settings LDAP directory stores information about the iFolder system configuration and has iFolder Settings, iFolder Server, and LDAP Server objects. (For more information on these objects, see [“Logging In to the iFolder Management Console” on page 45.](#))

The User LDAP directory is used for authentication and adds the iFolder Server Name and the Disk Quota attribute to User objects that have been authorized in the iFolder Management Console to use iFolder.

Regardless of how many iFolder servers you have, you will have only one Global Setting LDAP. However, you can have up to eight User LDAP directories. Multiple LDAP directories benefit companies whose User objects are already divided into different LDAP directories. For example, if you have an LDAP directory for all of your vendors, another for your full-time

employees, and another for your temporary hires, you can set up three User LDAP directories in iFolder to handle the iFolder accounts for each directory. This way, you can maintain your current organization and group management.

## Authentication and Synchronization

When a user logs in, the iFolder client authenticates to the iFolder server by sending the encrypted username and password through an Internet connection to the iFolder server. The iFolder server uses this information to verify that the user exists, and then checks to see if the User object has been enabled in the iFolder Management Console to use iFolder. After the User object has been enabled, a user account must be created on the iFolder server before the user can begin using iFolder on his local workstation. An account is created the *first* time a user logs in to the iFolder server with the iFolder client. After the user account is created, the account can then be managed via the iFolder Management Console.

After the first login, a user can begin to add files to his iFolder directory and automatic synchronization begins. The iFolder client is always aware of any local activity and, based on the synchronization preferences chosen by you or the user, the iFolder client regularly asks the iFolder server for a download of any new data. After the iFolder server downloads the data, it uploads any updates from the iFolder local directory. When the user access his account from a different computer, the iFolder server first downloads any updates before uploading the iFolder client changes.

## For More Information

If you need a more technical overview of how iFolder works, see [Appendix A, “In-Depth Look at Authentication, Encryption, and Synchronization,”](#) on page 73.

# 3

## Getting Started in Four Steps

Installing and setting up Novell® iFolder™ Professional Edition is an easy four-step process:

- 1 Install iFolder on your first server.

**HINT:** If you are upgrading from iFolder Standard Edition 1.0 to Professional Edition 2.0, follow the instructions in [Chapter 4, “Upgrading from Novell iFolder Standard Edition to Professional Edition,”](#) on page 21.

To install iFolder on	Refer to
NetWare® 5.1 or 6	<a href="#">Chapter 5, “Installing Novell iFolder on NetWare 5.1 or NetWare 6,”</a> on page 23
Clustered NetWare environment	<a href="#">Chapter 9, “Configuring Novell iFolder on Novell Cluster Services,”</a> on page 65
Windows* NT* 4 or 2000	<a href="#">Chapter 7, “Installing Novell iFolder on Windows NT 4.0 and Windows 2000,”</a> on page 39
Red Hat* Linux* 7.2 Solaris* 8	<a href="#">Chapter 6, “Installing Novell iFolder on Linux 7.2 and Solaris 8,”</a> on page 29

- 2 Complete the steps in [“Configuring Your First iFolder Server”](#) on page 45.
- 3 Complete the steps in [“Installing iFolder on Additional Servers”](#) on page 50.

- 4 Use the iFolder Management Console to manage your iFolder user accounts, iFolder servers, and User LDAP servers.

For more information, see [“Accessing the iFolder Web Sites”](#) on page 51.

# 4

## Upgrading from Novell iFolder Standard Edition to Professional Edition

To upgrade from Novell® iFolder™ Standard Edition to Novell iFolder Professional Edition, follow these steps:

- 1** Stop the iFolder service or the World Wide Publishing service on the server that you are going to upgrade.
- 2** Install iFolder on the server that you want to upgrade.  
**HINT:** It is not necessary to delete iFolder Standard Edition before you install iFolder Professional Edition.
  - ♦ If you are installing iFolder on NetWare® 5.1 or 6, follow the instructions in [Chapter 5, “Installing Novell iFolder on NetWare 5.1 or NetWare 6,”](#) on page 23.
  - ♦ If you are installing iFolder on Windows\* NT\* 4 or 2000, follow the instructions in [Chapter 7, “Installing Novell iFolder on Windows NT 4.0 and Windows 2000,”](#) on page 39.
- 3** If LDAP is running on the same server that holds your User objects, no additional LDAP configuration is required, and you can skip to [Step 4 on page 22](#).

However, if your LDAP server does *not* contain your User objects, do either of the following:

- ♦ In the iFolder Management Console, add your user contexts to your settings for the User LDAP directory.

To do this, log in to the Global Settings section of the iFolder Management Console, click User LDAPs, click the server name you are upgrading, enter the context of your User objects, and then click Update.

- ◆ Add the LDAP directory that contains your User objects in the iFolder Management Console.

To do this, log in to the Global Settings section of the iFolder Management Console and click User LDAPs.

For instructions, see [“LDAP Servers” on page 61](#).

- 4** In the iFolder Management Console, click Global Settings > iFolder Servers.
- 5** Select the server you just upgraded to iFolder Professional Edition.
- 6** Click the Upgrade button.

This will assign the iFolder attribute to the iFolder users on the server that you just upgraded. This attribute authorizes your iFolder users to access the upgraded iFolder server.

### **More Information**

- ◆ Installing iFolder on additional servers: [“Installing iFolder on Additional Servers” on page 50](#)
- ◆ Managing your iFolder user accounts, servers, and LDAP directories: [“Accessing the iFolder Web Sites” on page 51](#)

# 5

## Installing Novell iFolder on NetWare 5.1 or NetWare 6

Before you begin the Novell® iFolder™ installation, make sure that you have met the following server and workstation requirements.

### General Server Requirements

- ❑ Novell eDirectory™ 8.6 or later. (Other LDAP v3 compliant directories will not work with this release of iFolder.)
- ❑ 10 MB of free space on the SYS: volume where you plan to install iFolder.
- ❑ If your LDAP server is not the same server as your iFolder server, and you want LDAP over SSL, copy the trusted root certificate (usually called ROOTCERT.DER) from your LDAP server to the SYS:PUBIC directory of your iFolder server. (Remember where you copied this file because you will be prompted for its location during the iFolder installation.)
- ❑ If you have a DNS name configured for your iFolder server, verify that the DNS name and its corresponding IP address are in the SYS:ETC\HOSTS file of your iFolder server.
- ❑ NetWare 5.1 server with Support Pack 4 or later installed or a NetWare 6 server with Support Pack 1 or later installed.

NetWare Support Packs are available at the [Consolidated Support Pack Home Page \(http://support.novell.com/csp/csplist.html\)](http://support.novell.com/csp/csplist.html).

## Browser Requirements

Use either Netscape\* 4.7 or IE 5 or later to access the iFolder Web site and the iFolder Management Console.

**NOTE:** Netscape 6 is not supported with this release.

For other browser limitations, see the *iFolder Professional Edition Known Issues*.

## Things You Should Know During the Installation

The following table gives you information about different options in the iFolder installation—and will help you understand and prepare for the different kinds of information that you must provide during the installation.

Options	Information
Apache	<p>iFolder uses the Apache Web server. To learn more about how Apache and iFolder work together, see <a href="#">“Apache and iFolder” on page 17</a>.</p> <p><b>IMPORTANT:</b> If you are installing iFolder on a NetWare 6 server and are planning to share an IP address between Apache Web Server and Enterprise Web Server, then change the default iFolder ports during the installation.</p> <p>If you match this criterion, but do not select this option, Apache and iFolder might not load properly. For more information, see the next section <a href="#">“iFolder Ports” on page 24</a>.</p>
iFolder Ports	<p>Because iFolder uses the same ports (HTTP nonsecure port 80 and HTTPS secure port 443) as other Web services on NetWare (specifically NetWare Enterprise Web Server), when you install iFolder you must do one of the following:</p> <ul style="list-style-type: none"><li>◆ During the iFolder installation, assign unique ports for the iFolder server, such as HTTP port 52080 and HTTPS secure port 52443.</li><li>◆ Before the iFolder installation, assign the iFolder server a secondary IP address and then keep the listed default ports of 80 and 443.</li></ul> <p>The nonsecure port is used to send the encrypted username and password and data from the iFolder client to the iFolder server. iFolder uses RSA* encryption to encrypt the username and password, and Blowfish* encryption to encrypt the user data.</p> <p>The secure port is used to access the iFolder Management Console and the Java applet via SSL and HTTPS.</p>



Options	Information
Global LDAP Settings	<p>Global LDAP settings identify the LDAP host that will be used to manage the iFolder servers. For basic information on LDAP and how it works with the iFolder architecture, see <a href="#">“LDAP and iFolder” on page 17</a>.</p> <p><b>IMPORTANT:</b> If you are installing more than one iFolder server, use the same Global LDAP Settings for all iFolder servers, otherwise, iFolder will not function properly.</p>
LDAP Ports	<p><b>Choose port 389</b> if you want to use LDAP without SSL encryption or if your LDAP server does not support SSL. Port 389 is also a good choice if iFolder and LDAP are running on the same server (no communication or data is being transferred across the wire, so no encryption is necessary).</p> <p>If you are using port 389, the LDAP Group object must be marked to Allow Clear Text Passwords. To verify this, launch ConsoleOne® and locate the context where your server resides, right-click the LDAP Group object, click Properties, and check Allow Clear Text Passwords.</p> <p><b>Choose port 636</b> if you want to use SSL, which provides your network with encryption and security when data is transferred across the wire. If you choose port 636, make sure you have copied the ROOTCERT.DER file from your LDAP server’s SYS:PUBLIC directory to your iFolder server SYS:PUBLIC directory prior to the iFolder installation.</p> <p>If you choose port 636, you must enter the path to the LDAP trusted root certificate. This will be the path to the SYS:PUBLIC directory where you copied ROOTCERT.DER prior to the installation. For more information, see <a href="#">“General Server Requirements” on page 23</a>.</p>
LDAP Login DN Context	<p>This is the context of the container where your Admin objects are located. This is also where the iFolder server and LDAP objects will be created. For more information on these objects, see <a href="#">“Logging In to the iFolder Management Console” on page 45</a>.</p> <p>iFolder allows you to enter multiple contexts. After each context, insert a semicolon (;). Do not put any spaces between the contexts.</p> <p><b>HINT:</b> Previously, you needed to specify the LDAP user context during the installation. Now, you specify your user context by modifying your Global Settings after the iFolder installation is complete. For more information, see <a href="#">“Defining Your User Context” on page 48</a>.</p>

---

Options	Information
Admin Names	<p>Enter the names of all administrators who need rights to modify iFolder user account information via the Server Management Console. Administrators must have user accounts in your LDAP directory as well as Supervisor rights to the LDAP directory.</p> <p>If you are entering more than one name, separate the usernames with a semicolon, not spaces. For example, if you wanted John Smith and user Admin to have rights to administer the Server Management Console, you would enter <code>admin;jsmith</code>.</p> <p><b>IMPORTANT:</b> At least one of the Admin users that you list must exist in a container in the “LDAP Login DN Context” on page 25. Usernames whose objects are located outside this context will not be able to access and use the Global Setting section of the iFolder Management Console. Also, Admins will need rights to add attributes to eDirectory objects if they want to use the User Management section of the iFolder Management Console.</p>

---

## Installing iFolder

- 1 Review the information in “Things You Should Know During the Installation” on page 24 before beginning the installation.
- 2 On the workstation that you plan to install iFolder from, map a Novell drive to the root of the SYS: volume of the NetWare server where you want to install iFolder and Apache.

**IMPORTANT:** Apache *must* be installed on the SYS: volume.
- 3 Locate the iFolder software that you downloaded and double-click the iFolder Apache server executable (ApacheiFolderServer.EXE) for NetWare.
- 4 Follow the on-screen instructions.
- 5 After the installation is complete, do one of the following:
  - ♦ If you are using only one IP address, start Novell iFolder by rebooting your server (this will run the edited AUTOEXEC.NCF) or entering the following commands at the server console:

```
search add sys:\Apache
```

```
search add sys:\Apache\iFolder\Server
```

```
STARTIFOLDER
```

- ♦ If you are using two IP addresses, edit the AUTOEXEC.NCF file by entering the following lines after the *search add* *sys:\Apache\iFolder\Server* command line:

```
set command line prompt default choice=on
set command line prompt time out=60
```

Also enter ? in front of the STARTIFOLDER command line.

After you have edited the AUTOEXEC.NCF, start Novell iFolder by rebooting your server (this will run the edited AUTOEXEC.NCF) or entering the following commands at the server console:

```
search add sys:\Apache
search add sys:\Apache\iFolder\Server
STARTIFOLDER
```

## What's Next?

Novell iFolder is now installed on your NetWare 5.1 or NetWare 6 server. Your next step is to configure your first iFolder server. For instructions, see [“Configuring Your First iFolder Server” on page 45](#).

## Locating iFolder Files

On NetWare, Apache is installed on the SYS: volume.

- ♦ Startup files, configuration files, and server files are all located at `SYS:\Apache\iFolder\Server`.

These files include the following:

- ♦ HTTPD\_ADDITIONS\_NW.CONF
- ♦ HTTPD.CONF
- ♦ IFOLDER.NLM
- ♦ ROOTCERT.DER
- ♦ STARTIFOLDER.NCF
- ♦ STOPIFOLDER.NCF
- ♦ HTML files, used to generate the default Web page, are located at `SYS:\Apache\iFolder\DocumentRoot`.



# 6

## Installing Novell iFolder on Linux 7.2 and Solaris 8

Novell® iFolder™ can be installed on Red\* Hat Linux\* 7.2 and Solaris\* 8 servers. Before you begin the iFolder installation, make sure that you have met the following iFolder server and client requirements.

### Prerequisites

#### Server

- Novell eDirectory™ 8.6. (Other LDAP v3 compliant directories will not work with this release of iFolder.)
- 17 MB of free space in the Linux root partition.
- Be logged in as Super User.
- Meet the minimum memory requirements specified by your network operating system.
- (Conditional) If your LDAP server will not be the same server as your iFolder server, and you want LDAP over SSL, copy the trusted root certificate (usually called ROOTCERT.DER) from your LDAP server to this path on your Linux server:

`/usr/local/apache2/ifolder/Server`

Remember where you copied this because you will be prompted for its location during the iFolder installation.

## Browser

- Use either Netscape 4.7 or Internet Explorer 5 or later to access the iFolder Web site. Netscape 6 is not supported with this release.

**IMPORTANT:** Although you can use either Netscape or Internet Explorer (IE) to download the iFolder client, IE 5 or later must be installed on every workstation where you plan to install the iFolder client.

- Do not use the Red Hat 7.2 Mozilla 0.9.2.1 browser to access the iFolder Management Console.

For other browser limitations, see the *iFolder Professional Edition Known Issues*.

## Before You Install iFolder

iFolder requires that you install Linux as a server. You must also install the Apache 2 Web server, Java, and SSL. You must complete all of the procedures in this section in order for these products to be configured correctly for iFolder.

If you are installing Solaris, skip the next two tasks (Installing Linux 7.2 and Installing Java) and complete the rest of the tasks in this section, beginning with *“Creating Keys and Certificates”* on page 31.

## Installing Linux 7.2

Install Linux 7.2 with the following settings:

- Install Options: Select Server System and uncheck Configure Using DHCP check box
- Disk Partitioning: Automatically partition and *remove data*
- Network Configuration: Uncheck the Configure Using DHCP check box and enter the IP address, Netmask, Gateway, and Primary DNS name for your Linux server.
- Firewall Configuration: Select security level "No Firewall"
- Select Package Groups: Select Web Server (scroll down to see the option)

Continue with the next section, *“Installing Java.”*

## Installing Java

**1** If you don't have Java installed on your Linux server, go to the [Java Web site \(http://java.sun.com/j2se/1.3/download.html\)](http://java.sun.com/j2se/1.3/download.html) and download the Red Hat Linux RPM shell script for J2SE version 1.3 or later.

**2** After the shell script is downloaded, self extract the .rpm file from the .bin file by entering

```
sh filenamerpm.bin
```

**HINT:** The X's in this example will be replaced by the version numbers of the actual filename.

**3** Accept the licensing agreement and run the package manager by entering

```
rpm -iv filename.rpm
```

**4** Do one of the following:

- ◆ For a temporary instance of Java, add the following parameter to the shell path:

```
PATH="$PATH:/usr/java/jreX.X.X_xx/bin"
```

**HINT:** Replace the X's with the appropriate version numbers from the Java file you downloaded.

- ◆ For permanent instance of Java, add this parameter to the profile file in the etc directory before the export PATH USER parameter:

```
PATH="$PATH:/usr/java/jreX.X.X_xx/bin"
```

Continue with the next section, [“Creating Keys and Certificates.”](#)

## Creating Keys and Certificates

Installing OpenSSL is not required, but it is recommended in order to make the certificate and keys required for HTTPS access to the iFolder Management Console.

If you have a previous installation of Apache on your server, it is likely that you already have the required server.crt and server.key files. These files are usually located in the /etc/httpd/conf/ssl.crt/ and /etc/httpd/conf/ssl.key/ directories.

If you already have a certificate file (server.crt) and a key file (server.key), skip this procedure and continue with the next section, [“Installing Apache 2” on page 33.](#)

If you do not have these files, follow these instructions to download and install the OpenSSL engine.

**1** Go to the [OpenSSL Web site \(http://www.openssl.org/source\)](http://www.openssl.org/source).

**2** Download the openssl-engine-0.9.xx.tar.gz file and then extract the following files:

```
gzip -d openssl-engine-0.9.xx.tar.gz
```

```
tar xvf openssl-engine-0.9.xx.tar
```

**HINT:** The XX should be replaced with the appropriate file version.

**3** Configure OpenSSL by entering the following at the server console:

```
cd openssl-engine-0.9.xx
```

```
sh config \
```

```
no-idea \
```

```
no-threads \
```

```
-fPIC
```

**4** Compile OpenSSL by entering the following at the server console:

```
make
```

**5** Make sure that OpenSSL is configured and compiled by entering the following at the server console:

```
make test
```

**6** Install OpenSSL by entering the following at the server console:

```
make install
```

**7** Run the OpenSSL engine to create the server.key and server.crt files.

For more information on creating the server.key and obtaining the server.crt file certificate for your key by creating and using your own Certificate Authority, see the instructions at the [Apache Web site \(http://httpd.apache.org/docs-2.0/ssl/ssl\\_faq.html\)](http://httpd.apache.org/docs-2.0/ssl/ssl_faq.html).

Continue with the next section, “[Installing Apache 2.](#)”



## Installing Apache 2

- 1 If it does not already exist, create a directory named /export
- 2 Download the `httpd-2.0.39-i686-pc-linux-gnu.tar.gz` or the `httpd-2.0.39-sparc-sun-solaris2.8.tar.gz` file that shipped with the iFolder software into the /export directory.
- 3 Extract the .gz and .tar files to the /export directory.

**NOTE:** This version of Apache is a UNIX Binary Distribution that has been built with the following two switches: `--with-mpm=worker` and `--enable-ssl`.

- ♦ For Linux, extract the following files:

```
gzip -d httpd-2.0.39-i686-pc-linux-gnu.tar.gz
tar xvf httpd-2.0.39-i686-pc-linux-gnu.tar
```

- ♦ For Solaris, extract the following files:

```
gzip -d httpd-2.0.39-sparc-sun-solaris2.8.tar.gz
tar xvf httpd-2.0.39-sparc-sun-solaris2.8.tar
```

- 4 Run the installation script by entering the following at the server console:

```
cd httpd-2.0.39
sh ./install-bindist.sh
```

Continue with the next section, "[Copying SSL Keys and Certificates.](#)"

## Copying SSL Keys and Certificates

In order for iFolder to use the `server.key` and `server.crt` files, you must copy them to the appropriate directory on your server.

- 1 On your server, copy your `server.crt` file into this directory:

```
/export/httpd-2.0.39/bindist/conf/ssl.crt/
```

- 2 On your server, copy your `server.key` into this directory:

```
/export/httpd-2.0.39/bindist/conf/ssl.key/
```

You are now finished with the iFolder preconfiguration. Continue with the next section, "[Things You Should Know during the Installation.](#)"

# Things You Should Know during the Installation

Decisions	Information
Global LDAP Settings	<p>Global LDAP settings identify the LDAP host that will be used to manage the iFolder servers. For basic information on LDAP and how it works with the iFolder architecture, see <a href="#">“LDAP and iFolder” on page 17</a>.</p> <p><b>IMPORTANT:</b> If you are installing more than one iFolder server, use the same Global LDAP Settings for all iFolder servers.</p>
LDAP Ports	<p><b>Choose port 389</b> if you want to use LDAP without SSL encryption or if your LDAP server does not support SSL. Port 389 is also a good choice if iFolder and LDAP are running on the same server (no communication or data is being transferred across the wire, so no encryption is necessary).</p> <p>If you are using port 389, the LDAP Group object must be marked to Allow Clear Text Passwords. To verify this, launch ConsoleOne® and locate the context where your server resides, right-click the LDAP Group object, click Properties, and check Allow Clear Text Passwords.</p> <p><b>Choose port 636</b> if you want to use SSL, which provides your network with encryption and security when data is transferred across the wire. If you choose port 636, make sure you have copied the ROOTCERT.DER file from your LDAP server’s SYS:PUBLIC directory to your iFolder server SYS:PUBLIC directory prior to the iFolder installation.</p> <p>If you have chose port 636, you must enter the path to the LDAP trusted root certificate. This will be the path to the SYS:PUBLIC directory where you copied ROOTCERT.DER prior to the installation. For more information, see <a href="#">“General Server Requirements” on page 23</a>.</p>
LDAP Login DN Context	<p>This is the context of the container where your Admin objects are located. This is also where the iFolder server and LDAP objects will be created. For more information on these objects, see <a href="#">“Logging In to the iFolder Management Console” on page 45</a>.</p> <p>iFolder allows you to enter multiple contexts. After each context, insert a semicolon (;). Do not put any spaces between the contexts.</p> <p><b>HINT:</b> Configuring LDAP user contexts is now done when you modify your Global Settings after the iFolder installation is complete. For more information, see <a href="#">“Defining Your User Context” on page 48</a>.</p>

---

Decisions	Information
Admin Names	<p>Enter the names of all administrators who need rights to modify iFolder user account information via the Server Management Console. Administrators must have user accounts in your LDAP directory as well as Admin rights to the LDAP directory.</p> <p>If you are entering more than one name, separate the usernames with a semicolon, not spaces. For example, if you wanted John Smith and user Admin to have rights to administer the Server Management Console, you would enter <code>admin;jsmith</code>.</p> <p><b>IMPORTANT:</b> At least one of the Admin users that you list must exist in a container in the LDAP Login DN Context. Usernames whose objects are located outside this context will not be able to access and use the Global Setting section of the iFolder Management Console. Also, Admins will need rights to add attributes to eDirectory objects if they want to use the User Management section of the iFolder Management Console.</p>

---

## Installing iFolder

**IMPORTANT:** Apache 2, Java, SSL, and the server version of Linux must already be installed and configured before you install iFolder. For Solaris, you must install Apache 2 and SSL. If you have not already done so, complete the tasks in “[Before You Install iFolder](#)” on page 30 before beginning the installation.

**1** Review the information in “[Things You Should Know during the Installation](#)” on page 34 before beginning the installation.

**2** Copy `install.bin` to a directory on your server.

**NOTE:** You must have Read and Execute permissions to run this file.

**3** Go to the directory that contains `install.bin` and enter

```
sh ./install.bin
```

**4** Follow the on-screen instructions.

**5** Do one of the following:

- ◆ For Linux, add this command to the end of `/etc/profile`

```
ulimit -n 2048
```

**NOTE:** Adding this command to the end of `/etc/profile` permanently sets the hard limit for file descriptors to 2048. This number (2048) depends on your server load. You must adjust this accordingly.

- ◆ For Solaris, add these commands to the end of /etc/system

```
set rlim_fd_max = 4096
```

```
set rlim_fd_cur = 1024
```

**NOTE:** These commands set the hard limit on file descriptors to 4096 and the soft limit on file descriptors to 1024. These numbers (4096, 1024) depend on your server load. You must adjust this accordingly.

- 6 Start iFolder by entering

```
/usr/local/apache2/bin/apachectl startssl
```

To stop iFolder, enter

```
/usr/local/apache2/bin/apachectl stop
```

## What's Next?

iFolder is now installed on your server. Your next step is to configure this server in the iFolder Management Console. For instructions, see [“Configuring Your First iFolder Server” on page 45](#).

## Uninstalling iFolder on Linux

- 1 Stop the iFolder.
- 2 Launch the Linux Web browser (Konqueror).
- 3 Open the ifolderserver folder.
- 4 Open UninstallerData.
- 5 Click Uninstall\_iFolder\_server.

Alternatively, you can uninstall the iFolder from the command line by entering

```
sh /root/ifolderserver/UninstallerData/  
Uninstall_iFolder_server
```

## Uninstalling iFolder on Solaris

- 1 Stop the iFolder.
- 2 Uninstall the iFolder from the command line by entering the following:

```
sh /ifolderserver/UninstallerData/  
Uninstall_iFolder_server
```

## Locating iFolder Files

On Linux and Solaris, iFolder uses the Apache Web service. The iFolder files are located in the following areas:

- ♦ The Apache `httpd_additions_linux.conf` or `httpd_additions_solaris.conf` file is located at `/usr/local/apache2/ifolder/Server`.
- ♦ The iFolder Apache Server Modules, `iFolderServer.so`, and `iFolderUser.so` are located at `/usr/local/apache2/modules`.
- ♦ The HTML files, used to generate the default iFolder Web site, are located at `/usr/local/apache2/ifolder/DocumentRoot`.



# 7

## Installing Novell iFolder on Windows NT 4.0 and Windows 2000

Before you begin the Novell® iFolder™ installation, make sure that you have met the following iFolder server and workstation requirements.

### Server Requirements

- ❑ A Windows NT 4.0 server with Service Pack 6A or later installed or a Windows 2000 server with Service Pack 2 or later installed.

Microsoft Service Packs are available at the [Microsoft Web site \(http://updates.zdnet.com/products/pr\\_13616.htm\)](http://updates.zdnet.com/products/pr_13616.htm).

- ❑ IIS 4 or later installed.

**IMPORTANT:** Do not install other products, other than iFolder, on your IIS server.

- ❑ Novell eDirectory™ 8.6 installed. (Other LDAP v3 compliant directories will not work with this release of iFolder.)
- ❑ Meet the minimum memory requirements specified by your network operating system. (In general, a minimum of 256 MB of RAM is suggested.)
- ❑ (Conditional) To have LDAP over SSL encryption when the iFolder server communicates with the LDAP server, export the LDAP server's root certificate and then copy it to your iFolder server:
- ❑ Get an SSL certificate and install it onto your iFolder server.

You can do this in either of two ways: 1) If you have your own certificate server, such as Novell Certificate Server, then you can get a certificate from your server or 2) You can go to a certificate vendor, such as Entrust\* or VeriSign\*, and purchase a certificate.

For more information on installing and creating SSL certificates for IIS 4, go to the [Microsoft Product Support Services Web site \(http://support.microsoft.com/support/kb/articles/Q228/9/91.ASP\)](http://support.microsoft.com/support/kb/articles/Q228/9/91.ASP).

For information on SSL certificates for IIS 5, go to the [Microsoft Product Support Services Web site \(http://support.microsoft.com/support/kb/articles/Q228/8/36.ASP\)](http://support.microsoft.com/support/kb/articles/Q228/8/36.ASP).

## Browser Requirements

Use either Netscape\* 4.7 or IE 5 or later to access the iFolder Web site and the iFolder Management Console.

**NOTE:** Netscape 6 is not supported with this release.

For other browser limitations, see the *iFolder Professional Edition Known Issues*.

## Things You Should Know During the Installation

Decisions	Information
Apache	Do not overwrite the currently installed version of Apache if you are installing iFolder on a NetWare 6, and are planning to share an IP address between Apache Web Server and Enterprise Web Server, but change the ports. If you match this criterion, but do not select this option, Apache and iFolder might not load properly.
iFolder ports	<p>Because iFolder uses the same ports (HTTP port 80 and HTTPS secure port 443) as other Web services on NetWare (specifically NetWare Enterprise Web Server), when you install iFolder you must do one of the following:</p> <ul style="list-style-type: none"><li>◆ During the iFolder installation, assign unique ports for the iFolder server, such as HTTP port 52080 and HTTPS secure port 52443.</li><li>◆ Before the iFolder installation, assign the iFolder server a secondary IP address and then keep the listed default ports of 80 and 443.</li></ul> <p>Port 80 is used to send the encrypted username and password and data from the iFolder client to the iFolder server. iFolder uses RSA* encryption to encrypt the username and password, and Blowfish* encryption to encrypt the user data. Port 443 is used to access the iFolder Management Console and the Java applet via SSL and HTTPS.</p>



Decisions	Information
Global LDAP Settings	<p>Global LDAP settings identify the LDAP host that will be used to manage the iFolder servers. For basic information on LDAP and how it works with the iFolder architecture, see <a href="#">“LDAP and iFolder” on page 17</a>.</p> <p><b>IMPORTANT:</b> If you are installing more than one iFolder server, use the same Global LDAP Settings for all iFolder servers.</p>
LDAP Ports	<p><b>Choose port 389</b> if you want to use LDAP without SSL encryption or if your LDAP server does not support SSL. Port 389 is also a good choice if iFolder and LDAP are running on the same server (no communication or data is being transferred across the wire, so no encryption is necessary).</p> <p>If you are using port 389, the LDAP Group object must be marked to Allow Clear Text Passwords. To verify this, launch ConsoleOne® and locate the context where your server resides, right-click the LDAP Group object, click Properties, and check Allow Clear Text Passwords.</p> <p><b>Choose port 636</b> if you want to use SSL, which provides your network with encryption and security when data is transferred across the wire. If you choose port 636, make sure you have copied the ROOTCERT.DER file from your LDAP server’s SYS:PUBLIC directory to your iFolder server SYS:PUBLIC directory prior to the iFolder installation.</p> <p>If you have chose port 636, you must enter the path to the LDAP trusted root certificate. This will be the path to the SYS:PUBLIC directory where you copied ROOTCERT.DER prior to the installation. For more information, see <a href="#">“Server Requirements” on page 39</a>.</p>
LDAP Login DN Context	<p>This is the context of the container where your Admin objects are located. This is also where the iFolder server and LDAP objects will be created. For more information on these objects, see <a href="#">“Logging In to the iFolder Management Console” on page 45</a>.</p> <p>iFolder allows you to enter multiple contexts. After each context, insert a semicolon (;). Do not put any spaces between the contexts.</p> <p><b>HINT:</b> Configuring LDAP user contexts is now done when you modify your Global Settings after the iFolder installation is complete. For more information, see <a href="#">“Defining Your User Context” on page 48</a>.</p>

---

Decisions	Information
Admin Names	<p data-bbox="395 166 1201 274">Enter the names of all administrators who need rights to modify iFolder user account information via the Server Management Console. Administrators must have user accounts in your LDAP directory as well as Admin rights to the LDAP directory.</p> <p data-bbox="395 305 1201 416">If you are entering more than one name, separate the usernames with a semicolon, not spaces. For example, if you wanted John Smith and user Admin to have rights to administer the Server Management Console, you would enter <code>admin;jsmith</code>.</p> <p data-bbox="395 447 1201 614"><b>IMPORTANT:</b> At least one of the Admin users that you list must exist in a container in the LDAP Login DN Context. Usernames whose objects are located outside this context will not be able to access and use the Global Setting section of the iFolder Management Console. Also, Admins will need rights to add attributes to eDirectory objects if they want to use the User Management section of the iFolder Management Console.</p>

---

## Installing iFolder

- 1 Review the information in “[Things You Should Know During the Installation](#)” on page 40 before beginning the installation.
- 2 Stop the Internet Information Server (IIS).
  - ◆ For Windows NT 4, go to Control Panel > Services > IIS Admin Services > Stop.
  - ◆ For Windows 2000, go to Control Panel > Administrative Tools > Services > IIS Admin Service > Stop.
- 3 Locate the iFolder software that you downloaded and double-click the iFolder IIS server executable (IISiFolderServer.EXE).
- 4 Follow the on-screen instructions.
- 5 After the installation is complete, restart the IIS server.

After Novell iFolder is installed, you need to complete a few additional tasks through the Internet Services Manager in order for the iFolder Web site and the Java applet to work correctly.

Continue with the next section, “[Post Installation Tasks](#).”

## Post Installation Tasks

Do one of the following:

- ♦ If your iFolder server is running Windows NT 4.0 server, follow the instructions in [“Configuring the iFolder Web Site on Windows NT 4.0” on page 43](#).
- ♦ If your iFolder server is running Windows 2000, follow the instructions in [“Configuring the iFolder Web Site on Windows 2000” on page 43](#).

### Configuring the iFolder Web Site on Windows NT 4.0

- 1** Launch the Internet Services Manager by clicking Start > Windows NT 4.0 Option Pack > Microsoft Internet Information Server > Internet Service Manager.
- 2** Right-click the Default Web Site icon and then click Properties > Home Directory.
- 3** Set the local path.

For example, if you installed iFolder on your C: drive, then you would enter

```
C:\inetpub\wwwroot\iFolder\DocumentRoot
```

**HINT:** Enter this path in exactly as you see it, except for the drive letter. The drive letter you enter depends on where you installed iFolder.

- 4** From the Permissions drop-down box, select Script.
- 5** Click Documents.
- 6** Check the Enable Default Documents check box and then click Add.
- 7** Enter **index.html** into the text field and click OK.

Novell iFolder is now installed on your Windows NT 4.0 server. Your next step is to configure this server in the iFolder Management Console. For instructions, see [“Configuring Your First iFolder Server” on page 45](#).

### Configuring the iFolder Web Site on Windows 2000

- 1** Launch the Internet Services Manager by clicking Start > Settings > Control Panel > Administrative Tools > Internet Services Manager.
- 2** Right-click the Default Web Site icon and then click Properties > Home Directory.

**3** Set the local path.

For example, if you installed iFolder on your C: drive, then you would enter

**C:\inetpub\wwwroot\iFolder\DocumentRoot**

**HINT:** Enter this path in exactly as you see it, except for the drive letter. The drive letter you enter depends on where you installed iFolder.

**4** Check the Script Source Access check box.

**5** From the Execute Permissions drop-down box, select Scripts Only.

**6** Click the Documents tab.

**7** Check the Enable Default Documents check box and then click Add.

**8** Enter **index.html** into the text field and click OK.

## What's Next?

Novell iFolder is now installed on your Windows 2000 server. Your next step is to configure this server in the iFolder Management Console. For instructions, see [“Configuring Your First iFolder Server” on page 45](#).

## Locating iFolder Files

On Windows NT/2000, iFolder integrates with the IIS Web service. The default location for IIS is C:\inetpub\wwwroot.

- ◆ iFolder server files (IISiFolderServer.DLL and IISiFolderUser.DLL) are located at C:\inetpub\wwwroot\iFolder\Server.
- ◆ iFolder configuration settings are located in the registry at HKLM | System | CurrentControlSet | W3SVC | iFolderServer.
- ◆ HTML files, used for the default iFolder Web site, are located at C:\inetpub\wwwroot\iFolder\.

# 8

## Using the Novell iFolder Management Console

This section covers the following topics:

- ♦ “Configuring Your First iFolder Server” on page 45
- ♦ “Installing iFolder on Additional Servers” on page 50
- ♦ “Accessing the iFolder Web Sites” on page 51
- ♦ “Managing iFolder User Accounts” on page 53
- ♦ “Managing iFolder and LDAP Servers” on page 58
- ♦ “Monitoring Your iFolder System” on page 62
- ♦ “Running Reports” on page 62

### Configuring Your First iFolder Server

This section describes how to configure your first Novell® iFolder™ server. This process includes the following:

1. [Logging In to the iFolder Management Console](#)
2. [Defining Your User Context](#)
3. [Enabling Users to Access iFolder](#)

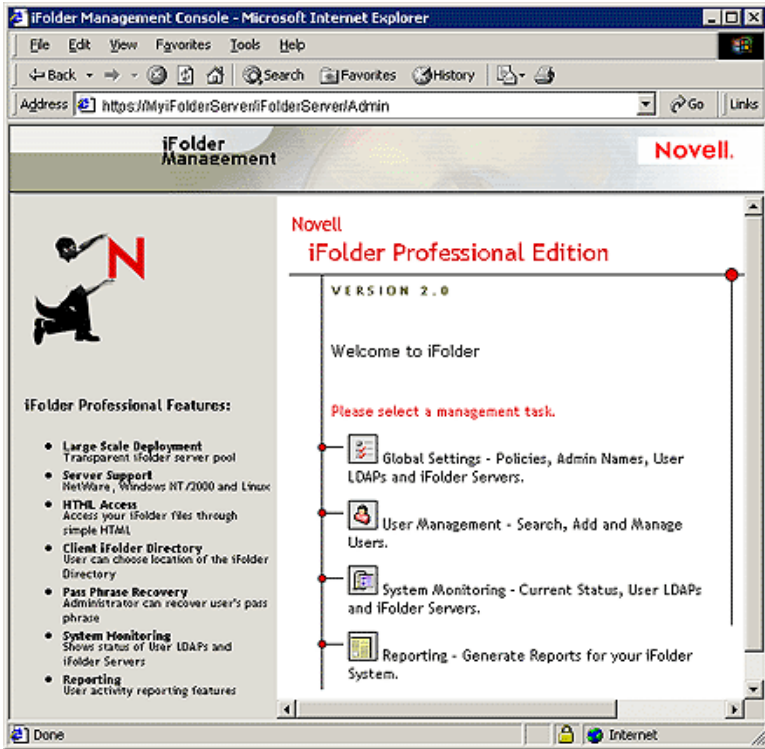
### Logging In to the iFolder Management Console

- 1 Go to the iFolder Management Console by opening a browser and entering

`https://ifolderserverip/iFolderServer/Admin`

**IMPORTANT:** The iFolder Management Console URL is case sensitive. If you specified different ports during the installation, append the IP address of the server with a colon followed by the port number (`https://ifolderserverip:port/iFolderServer/Admin`).

Figure 1 iFolder Management Console



**2** Click Global Settings and then log in with your Admin username and password.

**HINT:** The initial login might take several minutes as the schema is extended, objects are created, and attributes are written. Server objects are created in the Admin context that you specified during the iFolder installation.

When you first log in to the iFolder Management Console, the Novell® eDirectory™ schema is extended to include the following objects:

- ◆ An iFolder Settings object (iFolder\_Settings) with the following attributes:
  - ◆ iFolderAdminNames
  - ◆ iFolderDefaultServerName
  - ◆ iFolderClientXML
  - ◆ iFolderkey1
  - ◆ iFolderkey2
  - ◆ iFolderServerXML
- ◆ An iFolder User LDAP object (iFolder\_ldap01) with the following attributes:
  - ◆ iFolderLDAPCertificate
  - ◆ iFolderLDAPContexts
  - ◆ iFolderLDAPDNSorIP
  - ◆ iFolderLDAPPort
- ◆ An iFolder Server object (iFolder\_server01) with the following attributes:
  - ◆ iFolderServerDNSorIP
  - ◆ iFolderServerSecureDNSorIP

The schema extension and the newly created objects enable your iFolder server to run with the LDAP settings you specified during the installation. The LDAP settings you specified during the installation are used as your Global Settings LDAP. For more information, see [“LDAP Directories” on page 17](#).

The iFolder\_Settings object is created only once and it holds all the Global LDAP settings. However, for every additional LDAP server and iFolder server that you add through the iFolder Management Console, a new iFolder\_ldap and iFolder\_server object are created which correspond to the new LDAP or iFolder server.

**IMPORTANT:** These objects cannot be managed through ConsoleOne®. All iFolder management must be done through the iFolder Management Console.

Continue with the next section, ["Defining Your User Context."](#)

## Defining Your User Context

During the iFolder installation, you specified the context of your Admin objects. For authentication purposes, you must now define the context where your users reside. When you define your user context, all the User objects that reside in the specified context will appear in the iFolder Management Console.

**HINT:** If you need to add a User object to your context, you can do so through ConsoleOne or through the User Management section of the iFolder Management Console.

To define your user context, do the following:

- 1** In the iFolder Management Console, click the Global Settings icon on the top of your screen.
- 2** Click User LDAPs and then your server name.
- 3** From the Context drop-down box, select the context where your users are located.
- 4** (Optional) If you want LDAP to search subcontainers below the specified context during user authentication, check the check box.
- 5** Click Update.

Continue with the next section, "[Enabling Users to Access iFolder](#)."

## Enabling Users to Access iFolder

Before users can use iFolder on their local workstations, you must first enable their User objects in the iFolder Management Console.

After a User object is enabled, instruct your users to log in to the iFolder server to create an iFolder account. The iFolder account is created the *first* time a user logs in to the iFolder server via the iFolder client.

**NOTE:** The first login must be done through the iFolder client and not the Java applet.

To enable User objects to access iFolder, do the following:

- 1** Log in to the User Management section of the iFolder Management Console.

The first time you log in to the User Management portion of the iFolder Management Console, the User LDAP directory's schema is extended to include the LDAP User Object. An Aux Class of iFolderUser and the following attributes are also assigned to each User object: iFolderServerName and iFolderQuota.



- 2 Do an Advanced Search for all users on the server that you just installed iFolder on. Make sure you also specify the appropriate User LDAP context.

**IMPORTANT:** If an Admin object resides on multiple LDAP servers, do not enable this object as an iFolder user. If you only have one LDAP server and one corresponding Admin user, you can enable this object; however, it's not recommended.

- 3 Check the check boxes next to all users that you want to have iFolder accounts and then click the Enable button next to Checked Users as iFolder Users. Or, if you want everyone to have iFolder accounts, just click the Enable button next to All Listed Users as iFolder Users.

**Figure 2** Advanced Search Dialog Box

Advanced Search for User

Users: All

Users beginning with:

iFolder Server: iFolder\_server01

In User LDAP: Context: iFolder\_ldap01: (All Contexts)

Search

Enable checked users as iFolder users    Disable checked iFolder users

Enable all listed users as iFolder users    Disable all listed iFolder users

on iFolder Server: Default

Users: 5

admin     ikap     nisuser

stuft     mfrench

If your first iFolder server is also running LDAP, you are finished with the iFolder configuration. Once users have logged in, you can start managing their accounts. For instructions on specific iFolder management tasks, see [“Accessing the iFolder Web Sites” on page 51](#).

If your first iFolder server is not running LDAP, continue with the next section, [“Configuring Your LDAP Server.”](#)

## Configuring Your LDAP Server

If LDAP and iFolder are not running on the same server, follow these steps:

- 1 Click the Global Settings icon at the top of the screen.
- 2 Click User LDAPs > Add.
- 3 Enter your LDAP server’s configuration information and then click OK.

Once you have added your LDAP server to the iFolder Management Console, you are finished with the iFolder configuration. Users can now log in to the iFolder server via the Java applet or the iFolder client.

### For More Information

- ♦ Installing and configuring iFolder on additional servers: [“Installing iFolder on Additional Servers” on page 50](#)
- ♦ Managing your iFolder users: [“Managing iFolder User Accounts” on page 53](#)
- ♦ Managing your iFolder and LDAP servers: [“Managing iFolder and LDAP Servers” on page 58](#)

## Installing iFolder on Additional Servers

You can install iFolder on an unlimited number of servers.

### 1 Install iFolder on a server.

For links to specific installation instructions for your operating system, see the table in [Step 1 on page 19](#).

### 2 Log in to the Global Settings section of the iFolder Management Console.

### 3 Add your iFolder server to the iFolder Management Console.

**3a** Click iFolder Servers > Add.

**3b** Enter the appropriate information and click Add.

### 4 Add your LDAP server settings to the iFolder Management Console.

**4a** Click the User Management icon at the top of the screen and then click User LDAPs.

**4b** Click the Add button to add an User LDAP server.

You can add up to eight LDAP directories. The Global User LDAP that you specified during the first installation of iFolder appears as iFolder\_ldap01.

The LDAP directories are accessed in alphabetical order when iFolder users are authenticated. Be careful when naming your LDAP directories. iFolder searches the directories in alphabetical order. Thus, if your company uses more than one LDAP directory, make sure you name the LDAP directories alphabetically, so that the first LDAP directories that are listed are the directories that have the majority of your iFolder users.

**IMPORTANT:** If you have users with the same username located in multiple contexts, iFolder will authenticate the first user it finds during LDAP authentication. All subsequent users that are located later in the LDAP authentication process will need to enter their username and full eDirectory context in the User ID field of the iFolder client login box in order to properly authenticate and log in to the iFolder server.

For more information on iFolder and LDAP, see [“LDAP Directories” on page 17](#).

- 4c** (Optional) If you want LDAP to search subcontainers below the user context during user authentication, select the name of your LDAP server from the list, select your context from the drop-down list, check the check box, and then click Update.

## Accessing the iFolder Web Sites

Once Novell iFolder is installed and configured on your server, your users can download and install the iFolder client and then log in to the iFolder server. The first time the user logs in with the iFolder client, he activates his iFolder account, providing that his account has already been enabled in the iFolder Management Console.

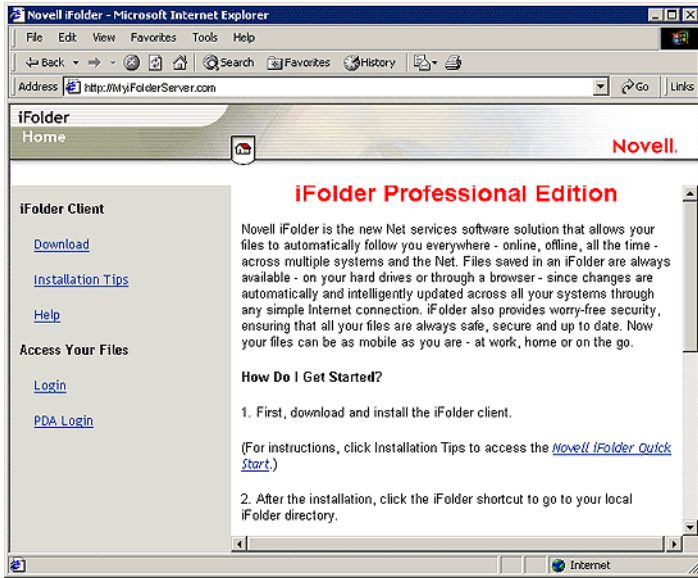
For more information on how the iFolder server and client software work together, see [Chapter 2, “Understanding the Novell iFolder Architecture,” on page 15](#).

After iFolder has been installed on your server, you have access to the following two Web sites:

- ◆ The iFolder Web site

To access the default iFolder Web site, enter the IP address or the DNS name of your server into a browser.

Figure 3 Default iFolder Web Site



This site contains the *iFolder Quick Start* and other important information about Novell iFolder. It is also where users will download the iFolder client and access their iFolder files via a browser (using the Java applet or the HTML access for pocket PC devices, such as iPAQ\*).

You can modify this page to fit your company's internal needs. For more information about where these files are located, see the following:

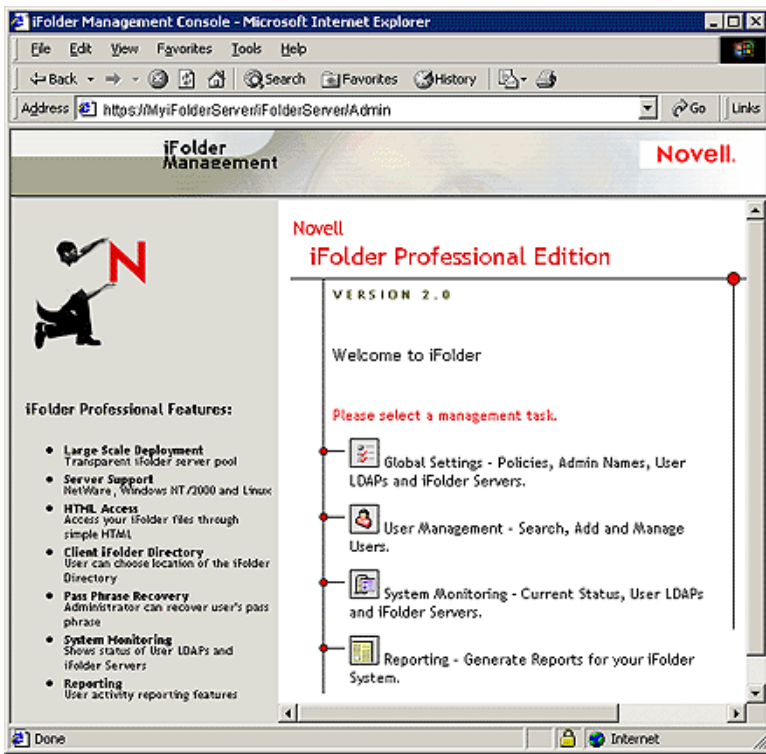
- ◆ “Locating iFolder Files” on page 27 for NetWare servers
- ◆ “Locating iFolder Files” on page 44 for Windows NT/2000 servers
- ◆ “Locating iFolder Files” on page 37 for Linux and Solaris servers
- ◆ The iFolder Management Console

The iFolder Management Console lets you manage your users' iFolder accounts as well as your iFolder and LDAP servers. To access the iFolder Management Console, open a browser and enter

**`https://ifolderserverip/iFolderServer/Admin`**

**IMPORTANT:** The iFolder Management Console URL is case sensitive. If you specified different ports during the installation, append the IP address of the server with a colon followed by the port number (`https://ifolderserverip:port/iFolderServer/Admin`).

Figure 4 iFolder Management Console



## Managing iFolder User Accounts

Before you can manage iFolder user accounts, the following tasks must be completed:

1. **User context must be defined in the iFolder Management Console.**
2. **User objects must be enabled in the iFolder Management Console.**
3. Users must log in to the iFolder server with the iFolder client to create their iFolder accounts on the iFolder server.

After the user context is defined, User objects are enabled, and your users have logged into the iFolder server, you can begin to manage their iFolder accounts. As an administrator, you can perform administrative tasks such as removing iFolder data and changing disk storage quotas on the iFolder server.

## In This Section

- ◆ “Setting Global Client Policies” on page 54
- ◆ “Changing Individual User Policies” on page 55
- ◆ “Recovering Pass Phrases” on page 56
- ◆ “Restoring Deleted or Corrupted Files” on page 57
- ◆ “Deleting User Data on the Server” on page 57
- ◆ “Using the Conflict Bin” on page 58

## Setting Global Client Policies

To set Global Client policies, log in to the Global Settings section of the iFolder Management Console and click Global Settings.

Global policies will be applied to all iFolder clients. However, you also have the option of modifying Global policies for a specific user by going directly to his user account in the User Management section of the iFolder Management Console. If you modify a Global Policy in the User Management section, this updated policy will then take precedence over the global policy.

**Figure 5 Global Client Policies**

Client Policies						
Encryption *	<input checked="" type="checkbox"/> On	<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden			
Save Password	<input type="checkbox"/> On	<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden			
Save Pass Phrase	<input type="checkbox"/> On	<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden			
Recover Pass Phrase *	<input checked="" type="checkbox"/> On	<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden			
Automatic Sync	<input checked="" type="checkbox"/> On	<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden			
Sync To Server Delay (sec.)	<input type="text" value="5"/>	<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden	Min <input type="text" value="3"/>	Max <input type="text" value="86400"/>	
Sync From Server Interval (sec.)	<input type="text" value="20"/>	<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden	Min <input type="text" value="10"/>	Max <input type="text" value="86400"/>	
Conflict Bin Space (MB)	<input type="text" value="25"/>	<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden	Min <input type="text" value="0"/>	Max <input type="text" value="100"/>	
iFolder Location *	<input type="text" value="{My Documents}\iFolder\{User Name}\Home"/>					
		<input type="checkbox"/> Enforced	<input type="checkbox"/> Hidden			

Note: \* indicates that the policy only applies to new accounts

Client Policy

Security Pass Phrase

If a policy is marked On, this means that this policy, by default, is selected or checked in the iFolder client. However, the user still has a choice whether to keep the default or unselect it.

If the policy is marked Enforced, the option will be grayed out in the iFolder client. Thus, users will see it, but they will not be able to change it.

If the policy is marked Hidden, the user will not see the option in the iFolder client.

For example, if you enforce and hide the option to request encryption of the iFolder data, the data will be encrypted and users will be unaware of the transaction.

**HINT:** The encryption option in this interface refers to the opportunity that a user has to encrypt their data as it travels from the workstation to the iFolder server. If encryption is chosen, the user data is also stored on the iFolder server in its encrypted state; however, the user data is never stored encrypted on the local workstation.

For more information on encryption, see [“Authentication and Encryption” on page 74](#).

## Security Pass Phrase

You can also update your security pass phrase from this screen. The security pass phrase is used to recover an iFolder user’s pass phrase if he has forgotten it.

For more information on security pass phrases, see the next section, [“Recovering Pass Phrases.”](#)

## Changing Individual User Policies

To modify Global Policies for an individual user, go to the User Management section of the iFolder Management Console and click a specific username to access that account information.

**Figure 6 Individual User Policies**

The screenshot displays the configuration page for an iFolder user named 'etuft'. The page is organized into several sections:

- User Information:** Fields for Distinguished Name (cn=etuft, o=novell), User LDAP (iFolder\_ldap01 (137.65.71.9)), iFolder Server Name (iFolder\_server01 (137.65.71.9)), and iFolder Account Path (2C12E973EF7144B74009DFDC62EBF42200C).
- Disk Quota:** A field set to 200 MB with an 'Update' button.
- Disable:** A button labeled 'iFolder User'.
- Current Status:** A table showing:

Number of Connections	0
Syncs in Progress	0
Last Sync	Fri May 31 15:43:04 2002
Memory in Use	140 Bytes
- Server Utilization:** A table showing:

Used Space	0 KB
Upload	0 Bytes
Download	0 Bytes
Number of Directories	1
Number of Files	0
- Account Settings:** Encryption Status is set to 'Blowfish'. The Policy is 'Using client policies from Global Settings' with an 'Edit' button.
- Buttons:** 'Remove' (iFolder User Data) and 'Recover' (iFolder User Pass Phrase).

## Recovering Pass Phrases

In order to recover a user's pass phrase, either the policy was set to Enforced or the user enabled pass phrase recovery the first time he logged in with the iFolder client.

- 1** If not already done, set up your security pass phrase.
  - 1a** In the iFolder Management Console, click Global Settings.
  - 1b** (If prompted) Log in with your Admin username and password.
  - 1c** Click Global Policies and then click the Display button next to Client Policies.
  - 1d** Click the Update button next to Security Pass Phrase.
  - 1e** Enter a Security Pass Phrase twice, retype it, and then click Update.
- 2** To recover a user's pass phrase, go to the User Management section of the iFolder Management Console.
- 3** Search for the appropriate user and click the username.
- 4** Scroll down to the bottom of the list and click Recover.



- 5 Enter your security pass phrase and click OK.
- 6 When the pass phrase appears, let the user know what it is.

## Restoring Deleted or Corrupted Files

If a user needs to recover data from a deleted or corrupted file, you can restore the user's folder to a secondary iFolder server. From there, the user can access the iFolder server's copy of his local files via a browser or NetDrive.

- 1 Log in to the User Management section of the iFolder Management Console.
- 2 Search for the user and then click the username to locate the iFolder Account Path.

iFolder User: etuft	
Distinguished Name	cn=etuft,o=novell
User LDAP	iFolder_ldap01 (137.65.71.9)
iFolder Server Name	iFolder_server01 (137.65.71.9)
iFolder Account Path	2C12E973E7144B74009DF0C62EBF42200C
Disk Quota	<input type="text" value="200"/> MB <input type="button" value="Update"/>
<input type="button" value="Disable"/> iFolder User	

- 3 Restore the folder located at the iFolder Account Path from a backup tape to a secondary iFolder server that the user can attach to.
- 4 Have the iFolder user use the Java applet or NetDrive to access the secondary iFolder server.

When the user logs in, the Java applet will show the user's data and he can download the file that was previously deleted. Using the Java applet or NetDrive is a good choice because they don't sync data, they only give access.

## Deleting User Data on the Server

If a user cannot remember his password, you can delete the user data on the iFolder server and then have the user log in again. When he logs in, he will be prompted to enter a new password.

- 1 In the iFolder Management Console, click User Management.
- 2 Log in with your Admin username and password.

- 3** Search for a specific user if you know the unique user ID; if not, find the user by doing an advanced search.
- 4** Click the username, scroll to the bottom of the page, and then click Remove iFolder User Data.
- 5** Click OK to confirm the removal of the user data.

## Using the Conflict Bin

The iFolder client has a feature called the Conflict Bin. A user will rarely need to access this option; however, it is useful to understand this feature. The following scenario illustrates how the Conflict Bin works.

Suppose that John is one of your iFolder users. John has the iFolder client installed on two computers: computer A and computer B. At some point in the day, John disconnects both of these computers from the network and continues to work from both computers offline. While he is working, he makes a change to one of his iFolder files on computer A and then, later in the day, he makes a different change to the same file on computer B. He then reconnects computer A to the network in order to synchronize the changes to the iFolder server. Then, John reconnects computer B to the network to synchronize the new change.

When computer B reconnects to the network and synchronizes the change to the iFolder server, the change that John made on computer A would be overwritten with the change that John made to that same file from computer B. To prevent data loss, iFolder saves the overwritten file to the Conflict Bin. John can access the Conflict Bin by right-clicking the iFolder icon located in the system tray of the computer that originally contained the file that was overwritten.

## Managing iFolder and LDAP Servers

You can have an unlimited number of iFolder servers and up to eight LDAP-enabled servers.

### iFolder Servers

Through the iFolder Management Console, you can change your iFolder server's IP address, DNS name, or assigned ports. Your first iFolder server is automatically added to the iFolder Management Console for you. All

additional iFolder server must be manually add into the iFolder Management Console in order for you to manage them.

The Upgrade button is used to enable iFolder accounts on a server that has been upgraded from iFolder Standard Edition to iFolder Professional Edition.

## Adding iFolder Servers

If the DNS name or IP address of your iFolder server goes directly to the iFolder server without being routed through another device, meaning that your iFolder server is not behind a firewall, you are only required to fill in the information beneath the Public heading. If the DNS name or IP address of your iFolder server goes through another device, like an L4 switch or a firewall which redirects the request to the iFolder server, you need to fill in the information under both the Public and Private headings.

**IMPORTANT:** If you have Network Address Translation (NAT) functionality built into your routers or switches, see your iFolder public and private DNS names and IP addresses as instructed in this document.

If your public DNS name or IP address redirects requests to a private iFolder IP address, specify a DNS name (not an IP address) as the public address of the iFolder server. Then, make sure you are using an internal DNS server to resolve the DNS name to the private address for internal users and use an external DNS server to resolve the DNS name to the public address of external users.

The Private settings allow the iFolder servers to communicate directly to each other within the iFolder system. The Public settings allow you to access the iFolder server from outside the firewall.

## iFolder Ports

The ports that you enter into the iFolder Management Console must match the ports that you specified during the iFolder installation. You can have multiple iFolder servers using the same port numbers if they all have a unique DNS name or IP address.

Port 80 is used to send the encrypted username and password and data from the iFolder client to the iFolder server. iFolder uses RSA\* encryption to encrypt the username and password, and Blowfish\* encryption to encrypt the user data. Port 443 is used to access the iFolder Management Console and the Java applet via SSL and HTTPS.

For more information, see [“Authentication and Encryption” on page 74](#).

## Setting Global Server Policies

You can regulate how much disk space will be allotted to each iFolder user or how much time will pass before a session times out.

- 1 Log in to the Global Settings section of the iFolder Management Console with your Admin username and password.
- 2 Click Global Policies and then click the Display button next to Server Policies.
- 3 Edit the information and then click Update.

## Using Debug Output

### NetWare Servers

For NetWare servers, when you click Debug Output, you can view all of the synchronization activity on each NetWare server. This information is displayed on the Apache screen located on each iFolder server.

### Windows NT 4/2000 Servers

To use Debug Output for Windows NT 4/2000, follow these steps:

- 1 Create a logs directory at `c:\inetpub\wwwroot\iFolder\DocumentRoot`.
- 2 Add the following line to the Windows Registry (located at `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\iFolderServer`):

```
ifolderserverlogging
```

```
c:\inetpub\wwwroot\iFolder\DocumentRoot\logs\index.html
```

- 3 To access this information, in a browser enter the IP or DNS name of your server, followed by the directory and filename.

For example: `http://serveripaddress/logs/index.html`

### Linux Servers

To use Debug Output for Linux servers, follow these steps:

- 1 Edit the `HTTPD_ADDITIONS_LINUX.CONF` file located at `/usr/local/apache2/ifolder/Server`, and add the following parameter to the end of the Virtual Hosts sections for both port 80 and port 443:

```
iFolderServerLogging "/usr/local/apache2/  
ifolder/DocumentRoot/logs/index.html"
```

The debug information will go to the INDEX.HTML file that is created for you in DocumentRoot under the logs directory.

**2** To access this information, do one of the following:

- ◆ In a browser, enter the IP or DNS name of your server, followed by the directory and filename.

For example: `http://serveripaddress/logs/index.html`

- ◆ At the server console by enter

```
# tail -f pathandfilename
```

For example: `# tail -f /usr/local/apache2/ifolder/DocumentRoot/  
logs/index.html`

**NOTE:** Apache must have permissions to be able to create and write to the log file. This can be done by entering this chmod command at the server console: `# chmod 777 /usr/local/apache2/ifolder/DocumentRoot/logs`

## LDAP Servers

Whenever you add an LDAP server through the iFolder Management Console for user authentication, you are required to enter a name for the LDAP server, its DNS or IP address, a port number and, if necessary, the location of the root certificate. You can choose either port 389 or 636.

### Choosing Port 389

Choose port 389 if you want to use LDAP without SSL encryption or if your LDAP server does not support SSL. Port 389 is also a good choice if iFolder and LDAP are running on the same server (no communication or data is being transferred across the wire, so no encryption is necessary).

If you choose port 389, the LDAP Group object must be marked to allow clear text passwords. To verify this, launch ConsoleOne®, locate the context where your server resides, right-click the LDAP Group object, click Properties, and then check Allow Clear Text Passwords.

## Choosing Port 636

Choose port 636 if you want to use SSL, which provides your network with encryption and security when data is transferred across the wire. SSL requires a Root Certificate.

If you choose port 636, make sure you have previously copied the ROOTCERT.DER file from your LDAP server's SYS:PUBLIC directory to an iFolder server's SYS:PUBLIC directory. When you add a secure LDAP server to your iFolder system, the root certificate is copied into an attribute of the iFolderSettings class on the Global Settings LDAP.

## Adding LDAP contexts

In the contexts field, list all of the contexts, separated by a semicolon (;). The order of the contexts is the order in which the contexts will be searched. The first context that is listed should be the context that contains the Admin user.

# Monitoring Your iFolder System

To monitor your iFolder system, go to the iFolder Management Console and click System Monitoring.

This section of the iFolder Management Console lists the following:

- ◆ Each User LDAP server. For each server, iFolder lists the IP address, the status, the number of LDAP users, and the number of iFolder users.
- ◆ Each iFolder Server. For each server, iFolder lists the IP or DNS name, status, number of user accounts, current users, current sessions, available disk space, and the amount of time the server has been up and running.
- ◆ The option to stop synchronization on a selected iFolder server.

## Running Reports

To run reports on your iFolder system, go to the iFolder Management Console and click Reporting.

iFolder lets you run reports on individual user accounts, iFolder and LDAP server usage, and such general information about your system as the total number of users, the total disk quota, and the total disk space that is being used.

To run a report, click either iFolder Servers, User LDAPs, or User Accounts on the left-hand side of the screen. Next, click the Export button and save the displayed data to your hard drive in a HTM format. From there, you can import the data from the HTM file to another application, like Microsoft\* Excel, to create graphs and reports.





# 9

## Configuring Novell iFolder on Novell Cluster Services

Before you configure Novell® iFolder™ on Novell Cluster Services™, you should have a basic understanding of how Novell Cluster Services works. The information in this chapter only outlines the basic steps for setting up Novell Cluster Services.

For an introduction to this technology, see the *Novell Cluster Services Overview and Installation Guide* (<http://www.novell.com/documentation/lg/ncs/index.html>).

**NOTE:** Novell Cluster Services runs only on NetWare® software.

To configure Novell iFolder on Novell Cluster Services, complete the following steps:

- 1** Install iFolder on all NetWare servers in the cluster that you want to run iFolder.

For installation instructions, see **Chapter 5, “Installing Novell iFolder on NetWare 5.1 or NetWare 6,”** on page 23.

- 2** Stop the iFolder service on one of your iFolder servers in the cluster.

This will be your passive iFolder server that iFolder will fail over to.

- 3** Do one of the following:

- ◆ For NetWare® 5.1 servers, create an NSS volume on your shared storage disk system, commonly referred to as a storage area network or SAN.

This is the volume that will contain all your iFolder user data and accounts. The size of this volume will vary according to how many iFolder users you plan to have and the amount of data they will be storing.

For more information, see "[Create Cluster Volumes](http://www.novell.com/documentation/lg/ncs/orionenu/data/h2mdblj1.html)" (<http://www.novell.com/documentation/lg/ncs/orionenu/data/h2mdblj1.html>) in the *NetWare Cluster Services Overview and Installation Guide*.

- ◆ For NetWare 6 servers, create an NSS volume on a pool. If a pool already exists, make sure there is enough space on the pool for the NSS volume that you plan to make.

For more information on creating pools and NSS volumes, see "Create NSS Pools" in the *Novell Cluster Services Overview and Installation Guide*.

**4** Do one of the following:

- ◆ For NetWare 5.1 servers, cluster-enable the NSS volume that you just created.

This involves assigning an IP address to the cluster-enabled volume. Remember this IP address; you'll need it later.

For more information, see "[Create Cluster-Enabled Volumes](http://www.novell.com/documentation/lg/ncs/orionenu/data/h2mdblj1.html)" (<http://www.novell.com/documentation/lg/ncs/orionenu/data/h2mdblj1.html>) in the *NetWare Cluster Services Overview and Installation Guide*.

- ◆ For NetWare 6 servers, cluster-enable the pool you created in **Step 3 on page 65**. (cluster enabling the pool automatically cluster enables the NSS volume that you created on the pool).

This involves assigning an IP address to the cluster-enabled pool. Remember this IP address; you'll need it later.

For more information, see "[Cluster Enable Pools and Volumes](#)" in the *Novell Cluster Services Overview and Installation Guide*.

**5** Create a folder on the cluster-enabled volume.

This volume will be used to store the iFolder user data.

**6** Choose one iFolder server in the cluster and go to the SYS:Apache\iFolder\Server directory and edit the HTTPD\_ADDITIONS\_NW.CONF file.

The following parameters for the LDAP Host, iFolderServerRoot, and the Virtual Host must be modified in *two* places in the HTTPD\_ADDITIONS\_NW.CONF file. One listing is for the unsecured port (usually 80) and the other listing is for the secured port (usually 443). Both parameters must be modified.

Make the following adjustments:

- ◆ Set the LDAP Host to the IP address or DNS name that you assigned to the cluster-enabled volume.
- ◆ Set the iFolderServerRoot to the folder that you created on the cluster-enabled volume.

For example, if your cluster-enabled volume was called SHAREDVOL and you had created a folder on that volume called NIFDIR, you would set the iFolderServerRoot to SHAREDVOL:\NIFDIR.

- ◆ Set the Virtual Host to the IP address or DNS name that you assigned to the cluster-enabled volume.

**7** Save your edits and then copy the edited HTTPD\_ADDITIONS\_NW.CONF file to the passive iFolder server that you set up in [Step 2 on page 65](#).

**8** Choose one iFolder server in the cluster and go to the SYS:Apache\iFolder\Server directory and edit the HTTPD.CONF file.

**9** Modify the following parameters:

- ◆ Set the Listen parameter to the IP address of the cluster-enabled volume by either adding a new Listen parameter or by modifying an existing one.
- ◆ By default, the ServerName parameter displays the IP address of the server. Replace this IP address with the IP address or DNS name of the cluster-enabled volume.
- ◆ Change the IP address in the SecureListen *ipaddress* SSL CertificateIP parameter to the IP address or DNS name of the cluster-enabled volume.

**10** Save your changes to the HTTPD.CONF file and then copy it to the passive iFolder server that you set up in [Step 2 on page 65](#).

**11** Edit the AUTOEXEC.NCF file on the passive iFolder server as well as on the iFolder servers where you modified the HTTPD.CONF and HTTPD\_ADDITIONS\_NW.CONF files by commenting out the line that reads **startifolder**.

The startifolder command allows iFolder to start by default when you reboot your server. However, when you use iFolder in a clustered environment, iFolder is started by NetWare Cluster Services.

- 12** From the workstation, launch ConsoleOne®.
- 13** Browse to your cluster container object.
- 14** Right-click the cluster volume resource and then click Properties > IP Address.
- 15** Verify that the IP address that appears is the one that you have assigned to the cluster-enabled volume.
- 16** In the Properties dialog box, click Scripts > Cluster Resource Load Script.
- 17** Add the following commands to the *end* of the existing load script:  

```
startifolder
```
- 18** Click Apply.
- 19** Click Scripts > Cluster Resource Unload Script.
- 20** Add the following commands to the *beginning* of the existing unload script:  

```
stopifolder  
delay 2
```
- 21** Click Apply > Close.

Novell iFolder is now configured for Novell Cluster Services. For more information on using Novell iFolder, see [Chapter 8, “Using the Novell iFolder Management Console,”](#) on page 45.

# 10

## Tips and Tricks for Optimizing Novell iFolder

You can optimize the performance of your Novell® iFolder™ server in the following ways:

- ♦ Change the amount of disk space allotted to your iFolder users.  
Be careful; allotting large amounts of disk space to users could decrease the iFolder server's performance.
- ♦ Change the default sync delay parameters if you have thousands of users and you need to improve the iFolder server performance.

Current defaults:

- ♦ 5-second delay after file activity
- ♦ 20-second server polling interval

To improve performance, make the following changes:

- ♦ 30-second delay after file activity
- ♦ 1-minute server polling interval

## Increasing Apache Threads

### NetWare Servers

The default number of threads for Apache running on NetWare® is 150. The maximum number of threads is 2,048. Because no persistent connection is maintained, a socket is opened for each 32 KB of data. This means that you don't need a thread per user session; however, the iFolder Web access *does* use one thread per connection.

To increase your threads, do the following:

- 1** Open the HTTPD.CONF file that iFolder uses.
- 2** Search for the ThreadsPerChild parameter and increase the number that is listed.

The threads directly correlate with the bandwidth of your network cards. If you have a 100 MB network card, you can set your threads to 312 and max out the network card. If you have a 1 GB NIC, then you can increase the threads to 2,048 to maximize the network card.

## Linux Servers

Linux can handle up to 20,000 threads. To increase your threads, do the following:

- 1** Open the HTTPD.CONF file that iFolder uses.
- 2** Increase the default number on the following parameters:
  - ◆ ThreadLimit
  - ◆ MaxClients
  - ◆ ThreadsPerChild

## Adding More RAM

iFolder uses 16 KB of memory per iFolder active session (or each thread). The minimum requirement of RAM for iFolder is 256 MB. Adding more RAM will improve your disk caching and server performance.

If you have

- ◆ Fewer than 2,000 users, use 256 MB of RAM.
- ◆ Between 2,000 and 4,000 users, increase your memory to 512 MB of RAM.
- ◆ More than 4,000 users, increase your memory to 1 GB of RAM.

## Synchronizing iFolder Client Data

For instructions on how to synchronize your Internet Explorer bookmarks, Palm Desktop Database, and Lotus\* Notes\*, see the *iFolder Quick Start*.

**WARNING:** Do not try to synchronize your GroupWise archive by setting a GroupWise archive path to a location in your iFolder directory. If you do this, the iFolder client will corrupt the GroupWise archive. This happens because iFolder does not synchronize files as a set (it synchronizes just the changed portions of a file) and GroupWise needs the files in the archive to be maintained as a set of files.

This problem has been identified for GroupWise; however, similar problems might arise with any database that is implemented as a collection of linked files.





# A

## In-Depth Look at Authentication, Encryption, and Synchronization

This appendix gives you an indepth view of how iFolder™ authentication, encryption, and synchronization work. For a simpler overview, see [Chapter 2, “Understanding the Novell iFolder Architecture,”](#) on page 15.

### Overview

To begin with, the iFolder software must be installed and configured on one or more servers. The iFolder installation and configuration is a four-step process. For more specific instructions, see [Chapter 3, “Getting Started in Four Steps,”](#) on page 19.

After the iFolder software is installed and configured, users can download and install the iFolder client. For installation instructions, see the *iFolder Quick Start*. However, before a user can use iFolder on his local workstation, the administrator must enable his User object in the iFolder Management Console. Previously, with iFolder 1.0 Standard Edition, all User objects were automatically authorized to use iFolder. With iFolder 2.0 Professional Edition, you can now control who is authorized to have an iFolder account. This is done by enabling User objects, or in other words, giving those users authority to create iFolder accounts. iFolder accounts are created the *first* time a user logs in to the iFolder server using the iFolder client. After an account is created, it can be managed through the iFolder Management Console.

As users begin to populate their iFolder directories with data, automatic synchronization occurs. Users can then begin to move between computers and locations easily, knowing their data is always secure, backed up on the network, and following them in its electronic footsteps so that the latest copy of their data is available from any location and at any time.

# Authentication and Encryption

The iFolder client talks to the iFolder server over HTTP port 80, which is a clear text, unencrypted port. Thus, the *requests* that are transferred between the iFolder client and iFolder server are *never* encrypted; however, the username and password are always encrypted and the data is encrypted only if the user selects the encryption option or if you enforce the encryption option from the iFolder Management Console.

iFolder uses RSA\* encryption to encrypt the username and password and Blowfish\* encryption to encrypt the user data when it travels between the iFolder client and server. If data encryption is chosen, the data is actually encrypted as it travels across the wire to the iFolder server and is stored in its encrypted state on the iFolder server. However, the data is never stored encrypted on the local workstation.

When a user logs in, the iFolder client authenticates to the iFolder server by sending the encrypted username and password to the iFolder server. The iFolder server uses the user ID and password to perform an LDAP bind to an LDAP server. After the LDAP bind is successful, LDAP verifies that the user is connected to the correct iFolder server. If the user is on a different server, his request is directed to the correct server. iFolder uses eDirectory™ to store its configuration settings and to specify what iFolder server the user is assigned to—this is how iFolder handles redirection. When iFolder is installed and the Admin logs in to the iFolder Management Console, the Global Settings LDAP schema is extended and the following LDAP objects are added:

- ◆ iFolderSettings
- ◆ iFolderServer
- ◆ iFolderLDAP
- ◆ iFolderServerAgentObject

The iFolder Server Agent Object is the only iFolder-specific object that cannot be managed through the iFolder Management Console. In fact, you will see it only in ConsoleOne®. This object is used to facilitate communication between the iFolder and LDAP server. Do *not* delete this object.

For more information on the attributes associated with these objects, see [“Logging In to the iFolder Management Console” on page 45](#).

# Synchronization

After the initial login via the iFolder client, a user can begin to add files to his iFolder directory and automatic synchronization begins. The iFolder client is always aware of any local activity and, based on the synchronization preferences chosen by you or the user, the iFolder client regularly asks the iFolder server for a download of any new data. After the iFolder server downloads the data, it uploads any updates from the iFolder local directory. When the user access his account from a different computer, the iFolder server first downloads any updates before uploading the iFolder client changes.

Every time the iFolder client logs in to the iFolder server, it compares filemaps (metadata that describes information about the actual file in your local iFolder) and dirmaps (metadata information on your local iFolder directory) between itself and the iFolder server. Filemaps and dirmaps are located on the local workstation at `C:\program files\Novell\iFolder\username\home`. If discrepancies are found between the filemaps and dirmaps, the iFolder client first downloads the new files from the server and then uploads any new local files. When files are uploaded or downloaded between the iFolder server or client, only the changes, not the whole file, are sent on a 4 KB block level across the wire. This results in fast download and uploads times, even at slower modem speeds.

**IMPORTANT:** There are some applications that rewrite the complete file regardless of how minor the change. Microsoft Word, for example, behaves like this. Thus, if the application that you are using completely rewrites the file, iFolder will recognize it as 100% new content and synchronize the whole file.

The iFolder server then receives these new files and adds them to its sync index, which lists the current state of the file system. The iFolder sync index is very small, consisting of only four bytes.

Whenever the sync indexes match between the iFolder server and the client, iFolder knows that no changes have been made. When that same user logs in from another workstation, the iFolder client compares its sync index to the iFolder server's sync index and then downloads any changes. All along, the iFolder client is monitoring the file system and caching any changes. If there is a conflict between files, iFolder uses time stamps to resolve it. The newest time stamp wins and the old file is placed in the conflict bin, accessed through the iFolder system tray menu on the local workstation. For more information about the conflict bin, see [“Using the Conflict Bin” on page 58](#).

## For More Information

For App Notes, articles, and other Q & A, see the [iFolder Cool Solutions Web site \(http://www.novell.com/cool solutions/ifmag\)](http://www.novell.com/cool solutions/ifmag).

# B

## Frequently Asked Questions

**What is an iFolder server?** An iFolder™ server is simply a server that is running the iFolder server software and some type of Web services, like the Apache Web service or IIS Web service.

**Can I synchronize my home directory on the network with my local iFolder directory?** No. iFolder hooks into the local file system; therefore, iFolder is unable to track changes from network drives.

**Can I restore files if a user has deleted them from their iFolder directory?** Yes. However, you will need to restore that user's iFolder directory from your tape backup to another iFolder server. For instructions, see [“Restoring Deleted or Corrupted Files” on page 57](#).

**Are my ifolder files stored encrypted on my local workstation?** No, your data is encrypted only when it travels across the wire and when it is stored on the iFolder server.

**When I make changes to a file, what portion of the file is sent across the wire to the iFolder server?** iFolder synchronizes only the changed portions of a file on a 4 KB block level via an active Internet connection. Only the changes, or delta blocks, are sent across the wire and the iFolder server will reconcile the changes.

**What happens to my files if I change the location of my iFolder directory during an iFolder client installation?** You must manually copy your iFolder files to the new location. To do this, complete the following steps:

- 1** Double-click the old iFolder shortcut on your desktop.
- 2** From the Edit menu, click Select All.
- 3** From the Edit menu, click Cut.
- 4** Close the window.

- 5** Double-click the new iFolder shortcut on your desktop.
- 6** From the Edit menu, click Paste.
- 7** Log in and synchrnize your files.

## More Q & A

For an additional listing of questions and answers that have been submitted by Admins and iFolder users, see the Ask the Experts section of the [iFolder Cool Solutions Q&A Collection](http://www.novell.com/coolsolutions/ifmag/ask_the_experts.html) ([http://www.novell.com/coolsolutions/ifmag/ask\\_the\\_experts.html](http://www.novell.com/coolsolutions/ifmag/ask_the_experts.html)).

# C

## Documentation Updates

This section contains information on documentation updates that have been made in the *iFolder Installation and Administration Guide* since the initial release of Novell® iFolder™ 2.0 Professional Edition. The information will help you to keep current on updates to the documentation.

The information is grouped according to the date the documentation updates were published.

The documentation is provided on the Web in two formats: HTML and PDF. The HTML and PDF documentation are both kept up to date with the documentation updates listed in this section. If you need to know whether a copy of the PDF documentation you are using is the most recent, the PDF document contains the date it was published in the Legal Notices section immediately following the title page.

The documentation was updated on the following dates:

- ♦ “September 4, 2002” on page 79

### September 4, 2002

Updates were made to the following sections. The changes are explained below.

- ♦ “Understanding the iFolder Architecture” on page 80
- ♦ “Using the Novell iFolder Management Console” on page 80
- ♦ “In-Depth Look at Authentication, Encryption, and Synchronization” on page 81

## Understanding the iFolder Architecture

The following changes were made in this section:

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Location	Change
Authentication and Synchronization	Clarified the wording on how to enable and create a User account.

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## Using the Novell iFolder Management Console

The following changes were made in this section:

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Location	Change
Defining Your User Context	Clarified the wording in this section.
Enabling Users to Access iFolder	Clarified the wording in this section.
Setting Global Client Policies	<p>Added the following description of what On, Enforced, and Hidden represent:</p> <p>If a policy is marked On, this means that this policy, by default, is selected or checked in the iFolder client. However, the user still has a choice to keep the default or unselect it.</p> <p>If the policy is marked Enforced, the option will be grayed out in the iFolder client. Thus, users will see it, but they will not be able to change it.</p> <p>If the policy is marked Hidden, the user will not see the option in the iFolder client.</p> <p>For example, if you enforce and hide the option to request encryption of the iFolder data, the data will be encrypted and users will be unaware of the transaction.</p>
Setting Global Client Policies	<p>Added the following paragraph on encryption:</p> <p>The encryption option in this interface refers to the opportunity that a user has to encrypt their data as it travels from the workstation to the iFolder server. If encryption is chosen, the user data is also stored on the iFolder server in its encrypted state; however, the user data is never stored encrypted on the local workstation.</p>

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Location	Change
Adding iFolder Servers	<p>Added the following paragraph on encryption:</p> <p>Port 80 is used to send the encrypted username and password and data from the iFolder client to the iFolder server. iFolder uses RSA* encryption to encrypt the username and password, and Blowfish* encryption to encrypt the user data. Port 443 is used to access the iFolder Management Console and the Java applet via SSL and HTTPS.</p>

## In-Depth Look at Authentication, Encryption, and Synchronization

The following changes were made in this section:

Location	Changes
Overview	Added more information about the process associated with enabling and creating a User account.
Authentication and Encryption	<p>Added the following information about encryption:</p> <p>The iFolder client talks to the iFolder server over HTTP port 80, which is a clear text, unencrypted port. Thus, the <i>requests</i> that are transferred between the iFolder client and iFolder server are <i>never</i> encrypted; however, the username and password are always encrypted and the data is encrypted only if the user selects the encryption option or if you enforce the encryption option from the iFolder Management Console.</p> <p>iFolder uses RSA* encryption to encrypt the username and password and Blowfish* encryption to encrypt the user data when it travels between the iFolder client and server. If data encryption is chosen, the data is actually encrypted as it travels across the wire to the iFolder server and is stored in its encrypted state on the iFolder server. However, the data is never stored encrypted on the local workstation.</p>
Synchronization	<p>Added a the following clarification on the iFolder ability to synchronize only the delta block changes of a file:</p> <p>There are some applications that rewrite the complete file regardless of how minor the change. Microsoft Word, for example, behaves like this. Thus, if the application that you are using completely rewrites the file, iFolder will recognize it as 100% new content and synchronize the whole file.</p>

