

Novell Server Consolidation and Migration Toolkit

1.2

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ADMINISTRATION GUIDE

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Novell[®]

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About This Guide

This guide describes how to use the utilities included in the Novell[®] Server Consolidation and Migration Toolkit to copy data from one location to another on your network or to migrate file system and NDS[®]/eDirectory[™] data from an old NetWare[®] server to a new one. The guide is divided into the following sections:

- ♦ Part I, “Overview,” on page 11
- ♦ Part II, “Getting Started,” on page 25
- ♦ Part III, “Server Consolidations,” on page 33
- ♦ Part IV, “Server Migrations,” on page 91
- ♦ Part V, “Supplemental Information,” on page 119

Audience

This guide is intended for network installers and administrators.

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We want to hear your comments and suggestions about this manual and the other documentation included with this product. To contact us, use the User Comments feature at the bottom of any page in the online documentation.

Documentation Updates

For the most recent version of the *Novell Server Consolidation and Migration Toolkit Administration Guide*, see the [Novell Product Documentation Web site \(http://www.novell.com/documentation\)](http://www.novell.com/documentation).

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

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When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as UNIX* or Linux*, should use forward slashes as required by your software.

Overview



- ◆ Chapter 1, “Server Consolidation and Migration Overview,” on page 13
- ◆ Chapter 2, “What’s New,” on page 21

Server Consolidation and Migration Overview

1

The Novell® Server Consolidation and Migration Toolkit 1.2 combines the Novell Server Consolidation Utility 4.2 and the NetWare® Migration Wizard 8.2 under a single launch interface. This interface asks you what type of consolidation or migration project you want to perform and then launches the appropriate utility automatically.

- ♦ Server Consolidation Utility is a file-and-print consolidation tool to help you copy data between existing servers, including Novell Open Enterprise Server (OES) for NetWare and Linux and Windows* servers, and migrate network printers. The automation provided by the Server Consolidation Utility eliminates the need to choose from various third-party utilities that would help you perform these tasks individually.
- ♦ NetWare Migration Wizard migrates the file system data and eDirectory™ (formerly NDS®) database from an existing NetWare server to a faster, more reliable NetWare server. After the data is copied, the old server is brought down and the new server assumes its identity.

This section provides an overview of server consolidation and migration to help you understand how the utilities in the toolkit work. It also provides some example scenarios of how you can use these utilities to consolidate or migrate your network resources.

- ♦ [Section 1.1, “Consolidation Overview,” on page 13](#)
- ♦ [Section 1.2, “Migration Overview,” on page 16](#)
- ♦ [Section 1.3, “Supported Source and Destination Server Versions,” on page 18](#)

For a list of new features and enhancements to the versions of Server Consolidation Utility and NetWare Migration Wizard included in the toolkit, see [Chapter 2, “What’s New,” on page 21](#).

1.1 Consolidation Overview

The Novell Server Consolidation Utility is a file-and-print consolidation tool that helps you reorganize your network by copying data from any number of existing source servers to any number of destination servers. By consolidating data onto newer, more powerful servers, you can simplify your network administration processes and lower your IT costs.

The Server Consolidation Utility automates key tasks, such as migrating users and their trustee assignments, assigning passwords, and migrating the NetWare or Microsoft* Windows* NT* file system data to Novell Open Enterprise Server (OES) NetWare or Linux servers in an eDirectory™ tree. This automation eliminates the need to choose from various utilities that would help you perform these tasks individually.

With the Server Consolidation Utility, you can also reassign several Novell Distributed Print Services™ (NDPS®) Printer Agents to a single NDPS Print Manager within the same tree and migrate a NetWare 6.5 iPrint configuration to an OES Linux environment.

IMPORTANT: If you want to migrate NetWare data from old hardware that is being replaced, use the NetWare Migration Wizard that is included in the Server Consolidation and Migration Toolkit. For more information, see [Part IV, “Server Migrations,” on page 91](#).

This section describes how the Server Consolidation Utility works and provides some example scenarios of how you can use it to consolidate your data.

1.1.1 Server Consolidation Projects

The Server Consolidation Utility is a versatile tool that lets you perform a variety of consolidation projects.

NetWare-to-NetWare Consolidations

For NetWare to NetWare consolidations, you can reorganize your network by copying data from any number of existing NetWare source servers to any number of NetWare destination servers. The accompanying rights, trustees, ownership, and name space information are copied to the destination server along with the files.

You can copy entire volumes or specific directories between servers in the same eDirectory tree or in different eDirectory trees. The source server can even be the same as the destination server.

NDPS Printer Agent Consolidations

As part of a NetWare-to-NetWare consolidation, you can reassign several Novell Distributed Print Services (NDPS) Printer Agents to a single NDPS Print Manager within the same tree. This simplifies your network printing configuration.

NetWare-to-OES Linux Consolidations

For NetWare-to-OES Linux consolidations, you can copy data from NetWare source servers to OES Linux destination servers. The OES Linux server must have a Novell Storage Services™ (NSS) volume. As with NetWare-to-NetWare consolidations, all NetWare rights, trustees, ownership, and namespace information are copied to the destination server along with the files.

iPrint Migrations

As part of a NetWare-to-OES Linux consolidation, you can migrate iPrint Print Managers and Printer Agents from a NetWare 6.5 environment to an OES Linux environment.

Windows-to-OES Linux or NetWare Consolidations

You can also use the Server Consolidation Utility to copy data from servers in Windows NT or Windows 2000/2003 domains to OES Linux or NetWare servers in Novell eDirectory trees. NTFS permissions and ownership information are converted to Linux or NetWare equivalents and transferred along with the necessary users and groups.

When copying data from Windows to OES Linux servers, the destination can be a Linux traditional file system such as Reiser or ext3. The Novell NetWare Core Protocol™ (NCP™) Server must be loaded on the OES Linux server.

1.1.2 Drag-and-Drop Modeling

With the Server Consolidation Utility, you model your consolidation project using drag-and-drop procedures.

The utility's main project window displays the source tree on the left-hand side and the destination tree on the right-hand side. To model your project, you simply drag folders or entire volumes from the source pane and drop them to the desired location in the destination pane. This gives you a visual representation of how the data will be organized on the destination servers.

No data is actually copied during the modeling phase, so you are free to rearrange the data structure until you are satisfied with it.

When you are ready to proceed with the data copy, the Server Consolidation Utility performs a pre-copy verification of the project. This helps prevent errors from interrupting your server consolidation and allows you to correct mistakes before data is copied to the destination servers.

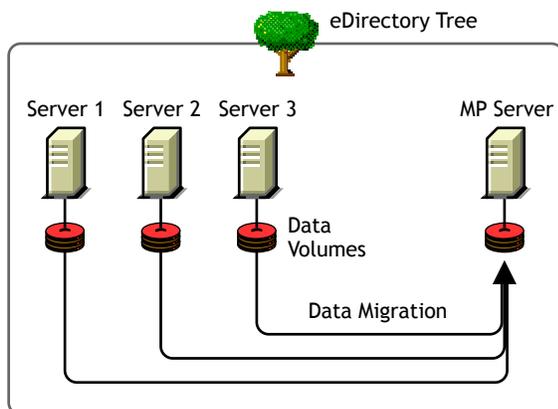
1.1.3 Example Consolidation Scenarios

The benefits the Server Consolidation Utility provides can be better understood through examining some sample consolidation scenarios.

Basic Server Consolidation: Many-to-One

In the first scenario (see [Figure 1-1](#)), suppose you have three existing NetWare servers. You recently purchased a multiprocessor server that you want to install Open Enterprise Server for NetWare on to take advantage of NetWare's multiprocessor-enabled features. You want to copy the data from each of the three servers to the single NetWare server. Rather than manually moving all the data and Printer Agents, or backing up the data on each of the three servers and then restoring it to the NetWare server, you can use the Server Consolidation Utility to automate the process.

Figure 1-1 Many-to-One Server Consolidation



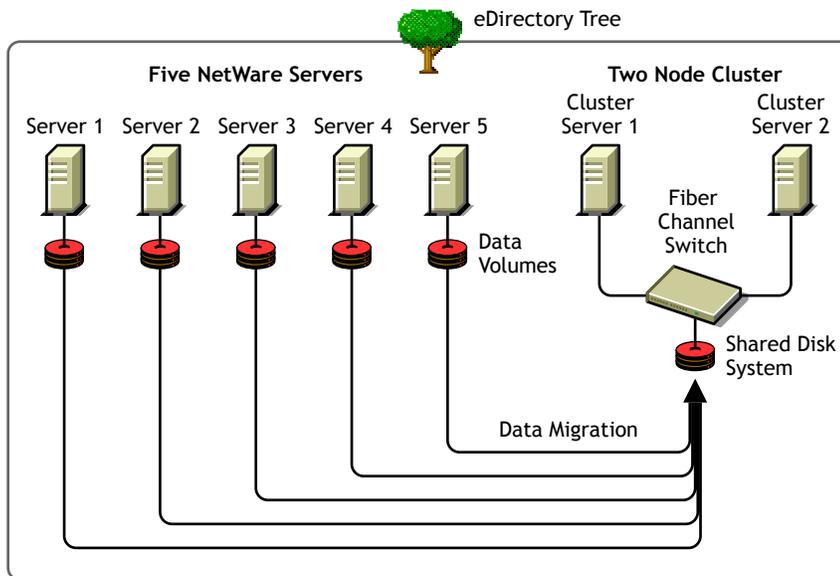
Although [Figure 1-1](#) shows the servers all in the same eDirectory tree, the Server Consolidation Utility lets you do tree-to-tree consolidations as well.

Consolidating Data from Multiple Servers onto a Two-Node Cluster

In the second scenario (see [Figure 1-2](#)), suppose you have five existing NetWare servers. You recently purchased two multiprocessor servers and the necessary hardware to create a two-node cluster complete with an attached Storage Area Network (SAN). You have decided to install OES NetWare on the two-node cluster because OES NetWare comes with Novell Cluster Services™ software and a two-node cluster license. You want to copy the data from each of the five servers to the SAN on the two-node cluster. Rather than manually moving all the data and Printer Agents or

backing up the data and restoring it to the SAN, you can use the Novell Server Consolidation Utility, which automates the data migration process.

Figure 1-2 Cluster Server Consolidation



Cross-Platform Data Consolidations

As mentioned previously, the Server Consolidation Utility lets you copy data from Windows servers in a Windows NT domain or Windows 2000/2003 Mixed Mode domain to servers in a Novell eDirectory tree.

If you have Novell Open Enterprise Server (OES), you can use the Server Consolidation Utility to copy data between the following server platforms:

- ◆ NetWare to NetWare
- ◆ NetWare to OES Linux
- ◆ Windows NT/2000/2003 to NetWare
- ◆ Windows NT/2000/2003 to OES Linux

1.2 Migration Overview

The NetWare Migration Wizard is a server data and identity migration tool to help you transfer file system data and the NDS/eDirectory database from an existing NetWare server to a new NetWare server on your network. When the migration is complete, the new server replaces and assumes the identity of the old server on the network.

NetWare Migration Wizard version 8.x supports migrations from NetWare 4, NetWare 5, or NetWare 6 source servers. Destination servers must be running NetWare 6.5. It also supports Open Enterprise Server (OES) for NetWare as a source and destination server.

You can create a migration project to do the following:

- ◆ Migrate file system data and NDS/eDirectory information from an existing NetWare server to a new NetWare server. Although you can use the Migration Wizard to reorganize the server data

and resize volumes, it is best suited for migrations requiring a minimal amount of volume reorganization.

- ◆ Transfer file system and eDirectory information from an old NetWare server that is scheduled to be decommissioned to a faster, more reliable server running the latest version of NetWare. This is an easy way to upgrade a server's OS and hardware at the same time.

NetWare Migration Wizard handles only NetWare-to-NetWare migrations.

IMPORTANT: If you want to migrate data from servers in Microsoft Windows domains, or consolidate data from one or more NetWare servers to existing OES NetWare servers, OES Linux servers, or Novell Branch Office™ servers, use the Novell Server Consolidation Utility that is included as part of the Server Consolidation and Migration Toolkit.

This section describes what NetWare Migration Wizard is and how you can use it to migrate data from an existing NetWare server to a new NetWare 6.5 or OES NetWare server.

1.2.1 About NetWare Migration Wizard

NetWare Migration Wizard is designed to help you transfer the identity of one server to another server. This is what is referred to as a server hardware upgrade.

NOTE: If you want to add a new server with a new name into your network, you wouldn't use the Migration Wizard; you would use the NetWare server installation program.

NetWare Migration Wizard is an ideal tool for moving existing NetWare data onto faster, more reliable server hardware. It is a Windows-based program that you run on a workstation. With the Migration Wizard, you model your migration project using simple drag-and-drop procedures before you actually perform the migration. This helps prevent errors from interrupting your data migration and allows you to prevent mistakes before they happen.

You can also take advantage of this modeling capability to reorganize the data on your server and even resize volumes, if needed. However, Migration Wizard is best suited for migrations requiring a minimal amount of volume reorganization.

As you work through the modeling phase of NetWare Migration Wizard, all of your decisions are recorded in a migration project file. At any time during the modeling process, you can save the project file, exit the utility, and then restart Migration Wizard and resume from where you left off.

After the modeling phase is completed, you can proceed with the actual migration. This process is divided into four basic steps:

- ◆ Step 1: Copy File System Data.

Using the data contained in the migration project file, Migration Wizard copies the files and folders (or even entire volumes) you selected from the source server to a newly installed destination server. All file system data, including meta-data such as file trustees, ownerships and attributes, is copied from the old machine to the new one.

- ◆ Step 2: Edit Configuration Files.

During this step, Migration Wizard presents configuration files such as `autoexec.ncf` and `startup.ncf` side-by-side so you can easily copy commands and settings from the source server's configuration files to matching files on the destination server.

- ◆ Step 3: Begin NDS/eDirectory Migration.

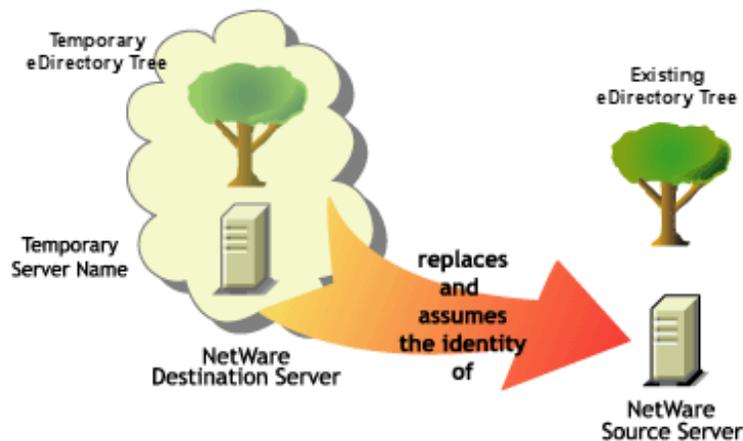
The NDS/eDirectory files are transferred from the old server to the new one without any additional work on your part. After the migration, the eDirectory partitions that existed on the old server will exist on the new server. This is because the Migration Wizard backs up the entire eDirectory database on the source server and then restores it on the destination server.

- ◆ Step 4: Finish NDS/eDirectory Migration.

After the source server's file system and NDS/eDirectory database are migrated to the destination server, the source server is automatically brought down and the destination server reboots and assumes the name and identity of the source server on your existing network.

Before you can migrate your data, you must first install a destination NetWare server in a temporary eDirectory tree (see [Figure 1-3](#)). A temporary eDirectory tree is simply a tree that contains one server with a pre-migration installation of NetWare and no additional products installed (other than SMS and other products installed by default).

Figure 1-3 Server Hardware Upgrade with NetWare Migration Wizard



Migration Wizard automatically modifies the destination server's `autoexec.ncf` file to include the source server's name and internal IPX™ number/server ID. You don't have to modify these manually. Because the server's identity has been transferred from one physical server to another, you don't need to upgrade any client applications that might be doing drive mappings or running applications based on the server name. However, you do have to manually change the IP address of the destination server to match that of the source server.

Migration Wizard does not migrate any products and services that are running on the source server. After the migration is complete, you need to reinstall all applications on the destination server and reconfigure them, if necessary.

1.3 Supported Source and Destination Server Versions

The utilities included in this release of the Server Consolidation and Migration Toolkit support the source and destination server configurations listed below. These minimum server versions, and all newer versions, have been tested and are supported by Novell. Older server versions might work,

but they have not been tested with this release of the toolkit. Novell recommends that all servers be updated to the latest Support Pack before attempting a consolidation or migration.

1.3.1 Server Consolidation Utility

The following NetWare and Windows configurations have been tested as source and destination servers with Server Consolidation Utility 4.2.

Table 1-1 *Supported Source Server Versions for Server Consolidation Utility 4.2*

Minimum Supported (Tested) OS Version	Other Requirements
NetWare 4.11 SP9 NetWare 4.2 Minimum DS: NDS 6.21	To NetWare only; IPX must be loaded on the destination server.
NetWare 5.0 SP6a Minimum DS: NDS 7.62c or 8.85c	To NetWare only; TCP/IP must be loaded on the source server.
NetWare 5.1 SP8 or later Minimum DS: NDS 7.62c or 8.85c	
NetWare 6.0 SP5 or later Minimum DS: eDirectory 8.6.2	
NetWare 6.5 SP2 or later Minimum DS: eDirectory 8.7.x	
Open Enterprise Server for NetWare (NetWare 6.5 SP3 or later) Minimum DS: eDirectory 8.7.x	
Windows NT 4.0 Server SP6a	
Windows 2000 Server SP4	Domain functional level must be Mixed Mode.
Windows 2003 Server SP1	Domain functional level must be Windows 2000 Mixed Mode.

IMPORTANT: Full support for Windows 2000/2003 Server Active Directory migrations is not available in the toolkit. The toolkit uses the Mixed Mode domain levels to access an Active Directory domain as if it were a flat NT domain. You will not be able to access certain aspects of Active Directory, such as trust relationships.

Table 1-2 Supported Destination Server Versions for Server Consolidation Utility 4.2

Minimum Supported (Tested) OS Version	Other Requirements
Open Enterprise Server for NetWare SP1 or later (NetWare 6.5 SP4 or later)	
Open Enterprise Server for Linux SP1 or later	NSS volumes only when coming from NetWare.

1.3.2 NetWare Migration Wizard

The following NetWare configurations have been tested as source and destination servers with NetWare Migration Wizard 8.2.

Table 1-3 Supported Source Server Versions for NetWare Migration Wizard 8.2

Minimum Supported (Tested) OS Version	Other Requirements
NetWare 4.11 SP9	IPX must be loaded on the client workstation
NetWare 4.2	
Minimum DS: NDS 6.21	
NetWare 5.0 SP6a	
Minimum DS: NDS 7.62c or 8.85c	
NetWare 5.1 SP8 or later	
Minimum DS: NDS 7.62c or 8.85c	
NetWare 6.0 SP5 or later	
Minimum DS: eDirectory 8.6.2	
Open Enterprise Server for NetWare (NetWare 6.5 SP3 or later)	
Minimum DS: eDirectory 8.7.x or 8.8 SP2*	

Table 1-4 Supported Destination Server Versions for NetWare Migration Wizard 8.2

Minimum Supported (Tested) OS Version	Other Requirements
Open Enterprise Server for NetWare SP1 or later (NetWare 6.5 SP4 or later)	
Minimum DS: eDirectory 8.7.x or 8.8 SP2*	

NOTE: If you want to migrate NetWare servers running eDirectory 8.8 SP2, you must update both source and destination servers to NetWare 6.5 SP7 or later. Otherwise, the destination server fails to reboot after the third step of the migration.

What's New

2

This chapter lists the new features and enhancements in recent versions of the utilities included in the Novell® Server Consolidation and Migration Toolkit. Novell recommends that you use the latest release.

2.1 What's New in the Toolkit

The Server Consolidation and Migration Toolkit 1.2 combines updated versions of two formerly separate utilities:

- ♦ Novell Server Consolidation Utility 4.2
- ♦ NetWare® Migration Wizard 8.2

The toolkit provides a single launch interface that asks you what type of consolidation or migration project you want to perform and then launches the appropriate utility automatically.

2.2 What's New in the Server Consolidation Utility

This section lists the new features and enhancements in recent versions of the Server Consolidation Utility.

2.2.1 Server Consolidation Utility 4.2

Server Consolidation Utility 4.2 includes minor bug fixes.

2.2.2 Server Consolidation Utility 4.11

Server Consolidation Utility 4.11 includes the following new and enhanced features:

- ♦ Enhanced support for copying double-byte character set data
- ♦ NDPS® printers no longer need to be iPrint-enabled before being migrated to OES Linux
- ♦ iPrint printer migration supports printers in all support pack versions of NetWare 6.5, not just SP3 and SP4

2.2.3 Server Consolidation Utility 4.1

Server Consolidation Utility 4.1 includes the following new and enhanced features:

- ♦ The new unattended server-based processing feature gives you the flexibility of running the file copy process in unattended mode from the server, instead of having the Server Consolidation Utility monitor the process from your workstation.
- ♦ The functionality of Linux enabling users in bulk has been removed from the Server Consolidation Utility. The utility no longer generates lists of users and groups to be used as parameters in the `nambulkadd` command. The ability to Linux enable multiple users at once is available in Novell iManager 2.5 or later.

- ◆ The Server Consolidation Utility now supports filenames, folder names, and usernames containing double-byte or extended ASCII characters encoded via UTF-8.
- ◆ You can use the Server Consolidation Utility to migrate iPrint Print Managers and Printers from a NetWare 6.5 environment to an Open Enterprise Server for Linux environment.

2.2.4 Server Consolidation Utility 4.0

Server Consolidation Utility 4.0 adds two significant new features:

- ◆ You can consolidate data from NetWare and Windows servers to Open Enterprise Server (OES) servers running on either NetWare 6.5 or SUSE® Linux Enterprise Server 9. Destination Linux servers must have the NCP™ Server component installed, and destination volumes must be Novell Storage Services™ (NSS) volumes.
- ◆ When consolidating file system data from NT servers, the Server Consolidation Utility now copies ownerships for NTFS files and folders in addition to copying the permissions.

2.2.5 Server Consolidation Utility 3.0

Version 3.0 includes two new features.

- ◆ A new command line option is available for scheduling the utility to run at a predetermined date and time. Adding an N after the passwords instructs the utility to skip the Error and Success Log review dialog and simply exit the application after it finishes.
- ◆ Novell ZENworks® 6.5 creates an NT Roaming Profile directory the first time an NT user logs into his or her eDirectory account on NetWare. The time-consuming process of having the Server Consolidation Utility copy the NT Profile directory is no longer needed and has been removed.

2.2.6 Server Consolidation Utility 2.6

New features in version 2.6 let you:

- ◆ Exclude specific file types or filenames from the copy process
For example, copy all of the data from a volume except for any .mp3 files.
- ◆ Automatically compare file information between the source and destination after the copy process completes to validate the integrity of the file copy
This includes the option of doing a detailed binary (byte-by-byte) comparison.
- ◆ Check for sufficient disk space on the destination server before beginning the file copy
- ◆ Disable login on the source server during the copy process
- ◆ Specify a default server and home directory path for any new users you create on the destination server
- ◆ Copy an expanded list of user attributes when creating users

2.2.7 Server Consolidation Utility 2.0

With version 2.0, you could copy volumes and specific directories between *different* eDirectory™ trees, as well as consolidate to NetWare 6.5. Version 2.0 also let you:

- ◆ Copy data from NT 4.0 Domains to NetWare
- ◆ Schedule projects and run them completely unattended
- ◆ Filter the files you want to copy based on date
- ◆ Add users to Novell eDirectory on the destination tree if they don't already exist
- ◆ Copy data to the Novell Branch Office™ server

2.2.8 Server Consolidation Utility 1.0

With NetWare Server Consolidation Utility version 1.0, you could copy entire volumes and specific directories between NetWare 4, NetWare 5, and NetWare 6 servers in the same eDirectory tree.

2.3 What's New in the NetWare Migration Wizard

This section lists the new features and enhancements in recent versions of the NetWare Migration Wizard.

TIP: Each new release of NetWare Migration Wizard includes performance enhancements and bug fixes that increase the speed and reliability of NetWare migrations. If you have had unsatisfactory results with early versions of this utility, we encourage you to give the latest version a try.

2.3.1 NetWare Migration Wizard 8.2

NetWare Migration Wizard 8.2 includes the following new features:

- ◆ This release supports NetWare servers running eDirectory 8.8 SP2.
- ◆ This release includes minor bug fixes.

2.3.2 NetWare Migration Wizard 8.1

NetWare Migration Wizard 8.1 includes the following new and enhanced features:

- ◆ The ability to perform a full backup of all the source server's trustees has been removed from the NetWare Migration Wizard. This confusing and time-consuming step is not necessary as long as you do a full backup of your source server.

You can still choose to back up trustees for the files you are migrating.

- ◆ Migration Wizard 8.1 now supports NetWare 4.x and NetWare 5.0 as source servers. This functionality was previously available only in Migration Wizard 6.5.

2.3.3 NetWare Migration Wizard 8.0

NetWare Migration Wizard 8.0 includes the following new and enhanced features:

- ◆ Added the ability to filter the files you want to copy according to creation, last accessed, or modified dates. Let you exclude specific file types or file names from the copy process. Included an option to synchronize file and folders so that data deleted while you model a migration project is also deleted on the destination server when you run the project. Gave you the option to automatically compare file information between the source and destination after the copy process is complete to validate the integrity of the file copy.

2.3.4 NetWare Migration Wizard 7.1

NetWare Migration Wizard 7.1 includes the following enhanced feature:

- ◆ Allows migration directly from a NetWare 6 source server to a NetWare 6.5 destination server.

2.3.5 NetWare Migration Wizard 7.0

NetWare Migration Wizard 7.0 includes the following new and enhanced features:

- ◆ Speeds up the file copy procedure by implementing multithreading in determining file sizes while the file copy is running.

In previous versions of the Migration Wizard, the file copy procedure did not begin until the file sizes were completely discovered. With Migration Wizard 7.0, the copy procedure and the file size determination occurred simultaneously.

- ◆ Allows NCI keys to be transferred across the wire during the migration.
Previous versions of the Migration Wizard required using a floppy diskette swap to transfer NCI keys. Migration Wizard 7.0 still provided the option of using the floppy diskette swap if wanted, but the transfer could be completed quickly and securely over the wire instead.
- ◆ Displays a listing of created folders, dropped volumes, and dropped folders during the verification stage of the migration.
- ◆ Adds the ability to update ZENworks for Servers information during the migration process.
- ◆ Removes support for migrating data from NetWare 3 and 4 source servers.
- ◆ Moves the NT-to-NetWare migration capability to the Server Consolidation Utility.
- ◆ Moves the printing migration capability to the Server Consolidation Utility.

2.3.6 NetWare Migration Wizard 6.5

NetWare Migration Wizard 6.5 includes the following new and enhanced features:

- ◆ File copy operation no longer requires you to have exactly the same volumes on the source and destination servers.
- ◆ This version introduces the drag-and-drop interface that allows the user to model the migration project before actually performing the migration.
- ◆ The Begin NDS/eDir Migration step is divided into several substeps to allow you to verify that each step completed correctly before continuing.

Getting Started



- ♦ [Chapter 3, “Installing the Server Consolidation and Migration Toolkit,” on page 27](#)
- ♦ [Chapter 4, “Using the Server Consolidation and Migration Toolkit,” on page 31](#)

Installing the Server Consolidation and Migration Toolkit

3

To install the Novell® Server Consolidation and Migration Toolkit, complete the tasks in the following sections:

- ♦ Section 3.1, “Meeting the Workstation Requirements,” on page 27
- ♦ Section 3.2, “Installing the Server Consolidation and Migration Toolkit,” on page 28
- ♦ Section 3.3, “Uninstalling the Server Consolidation and Migration Toolkit,” on page 29
- ♦ Section 3.4, “What’s Next,” on page 29

3.1 Meeting the Workstation Requirements

The Server Consolidation and Migration Toolkit runs on a Windows workstation on the network. This workstation must meet the requirements outlined in this section.

- ❑ Windows XP Professional Edition or Windows 2000 with Service Pack 3 or later

The utilities in the toolkit do not run on Windows Vista, Windows XP Home Edition, Windows NT, or Windows 95/98.

NOTE: If you have Windows XP Professional Service Pack 2, you will see an error stating that the Server Consolidation and Migration Toolkit software has not been digitally signed when you run the installation program. You can safely ignore this message and continue installing the toolkit.

- ❑ 100 MB of available disk space
- ❑ Novell Client™ 4.91 for Windows 2000/XP with the latest Support Pack

To check the Novell Client version, right-click the N icon on the workstation toolbar and then click *Novell Client Properties > Client*. To download the latest client, see the [Novell Downloads page \(http://www.novell.com/download\)](http://www.novell.com/download).

You must also make the following settings in your Novell Client software:

- ♦ Disable file caching
Right-click the N icon, then click *Novell Client Properties > Advanced Settings > File Caching > Setting: Off*.
- ♦ (Conditional) Enable UTF-8 support if you are copying extended ASCII (multinational characters) or double-byte character set (oriental languages) data
Right-click the N icon, then click *Novell Client Properties > Advanced Settings > Use UTF8 encoding and NCPs > Setting: On*.
- ♦ (Conditional) If you are copying data from NetWare® 4 servers, you must configure the Novell Client software to support the IPX™ protocol. See the [Novell Client 4.91 for Windows 2000/XP documentation \(http://www.novell.com/documentation/noclienu/index.html\)](http://www.novell.com/documentation/noclienu/index.html) for more information.

- ❑ (Conditional) If you are migrating iPrint printers from NetWare to OES Linux, you must have the latest iPrint Client for Windows installed. To download the latest iPrint Client, go to the [Novell iPrint product page \(http://www.novell.com/iprint\)](http://www.novell.com/iprint).
- ❑ Microsoft Data Access Components (MDAC) 2.8
If MDAC 2.8 is not installed on your workstation, it can be downloaded from the [Microsoft Download Center \(http://www.microsoft.com/downloads\)](http://www.microsoft.com/downloads).
- ❑ Disable any antivirus programs running on the workstation. You can re-enable virus protection after the consolidation project is completed.
- ❑ For NetWare projects, you must be logged in as a user with the Supervisor right to the source and destination servers.
Use ConsoleOne[®] to verify that you have the necessary rights to access all source and destination servers.
- ❑ For Windows projects, you must be logged in as a user with administrative rights to the domain containing the source server and workstation.
You need the Write/Modify permission to the domain and the Registry of the Primary Domain Controller (PDC). You also need the Read permission to all folders and files you are copying.

TIP: For Windows 2000/2003 consolidation projects, you can run the Server Consolidation Utility on the Windows server itself. This is the preferred method, especially if you have data that uses extended ASCII (multinational characters) or double-byte character sets (Japanese, Korean, and other oriental languages). You cannot run the Server Consolidation Utility on Windows NT servers.

If you have extended ASCII or double-byte character set data on a Windows source server and you plan to run the Server Consolidation Utility on a separate Windows workstation, the workstation must have Windows installed with the same language as the server. For example, if you are migrating a Japanese server, make sure that your workstation is also running Japanese. You must also enable UTF-8 support in the Novell Client.

For more information, see [Chapter 13, “Copying Double-Byte Character Set Data,” on page 121](#).

3.2 Installing the Server Consolidation and Migration Toolkit

The Novell Server Consolidation and Migration Toolkit is located on *NetWare 6.5 CD 1 (Operating System)* or *NetWare 6.5 SP7 DVD* in the `products/Migration_Uutilities` directory. The self-extracting file is named `scmt.exe`.

You can also install the version on the CD/DVD through the *Consolidate or Migrate Servers* option in the Novell Deployment Manager utility. See “[Using Deployment Manager](#)” in the *OES 2: NetWare Installation Guide* for more information.

The latest version of the toolkit can be downloaded from the [Novell Downloads page \(http://www.novell.com/download\)](http://www.novell.com/download). Novell recommends that you use the latest version whenever possible.

To install the Server Consolidation and Migration Toolkit on the workstation, complete the following steps.

TIP: There are some known issues with Java* and certain video cards that cause the Server Consolidation Utility installation to quit after extracting. If you encounter this issue, update your graphic card drivers to the latest version or disable the hardware acceleration for your graphics card.

- 1 Obtain the self-extracting file from one of the sources indicated above and copy it to your workstation.
- 2 Double-click the `scmt.exe` file to launch the installer, then click *Next* to proceed.
- 3 (Conditional) If you see a prompt indicating you don't have the correct version of the Novell Client software installed, use the prompt's link to download and install the Novell Client software and then restart the toolkit installation.
- 4 (Conditional) If you are prompted to remove an earlier version of either NetWare Migration Wizard or Server Consolidation Utility, answer *Yes* or *No* and click *Next*.
- 5 (Conditional) If you answered *Yes* to the previous prompt, click *Uninstall > Done*.
- 6 Accept the license agreement, then click *Next*.
- 7 Read the Readme file, then click *Next*.
- 8 Specify where you want to install the toolkit, then click *Next*.
By default, the toolkit is installed in `c:\program files\novell server consolidation and migration toolkit`.
- 9 Specify whether you want to create desktop and quick launch icons, then click *Next*.
- 10 Verify your installation information, then click *Install*.
- 11 You must reboot the workstation to complete the installation. If you want to reboot when the installer exits, select *Yes*. Otherwise, select *No*. Click *Done* to exit the installer.
If you selected *No*, remember to reboot the workstation manually before you run the toolkit.

3.3 Uninstalling the Server Consolidation and Migration Toolkit

- 1 At the Windows workstation, click *Start > Programs > Novell Server Consolidation and Migration Toolkit > Uninstall Novell Server Consolidation and Migration Toolkit*.
- 2 Click *Uninstall*.
- 3 When the uninstall has completed, click *Done*.

The uninstall program does not delete the project folders that are created for each project you run.

3.4 What's Next

For instructions on how to use the Server Consolidation and Migration Toolkit, go to [Chapter 4, "Using the Server Consolidation and Migration Toolkit,"](#) on page 31.

Using the Server Consolidation and Migration Toolkit

4

The Novell® Server Consolidation and Migration Toolkit is a Windows program that is launched from the Start menu. It has a helpful interface that asks you what type of consolidation or migration project you want to perform and then launches the appropriate utility for you.

This section guides you through the introductory screens in the toolkit and refers you to the separate documentation for the appropriate utility.

4.1 Starting the Server Consolidation and Migration Toolkit

Do one of the following:

- ◆ Click *Start > Programs > Novell Server Consolidation and Migration Toolkit > Novell Server Consolidation and Migration Toolkit*.
- ◆ Double-click the *Novell Server Consolidation and Migration Toolkit* desktop icon.
- ◆ Click the *Novell Server Consolidation and Migration Toolkit* quick start icon.

The welcome screen displays version information, an *About the Toolkit* button to access the help, and a link to view the online documentation. To continue, click *Create or Open Project*.

4.2 Selecting the Source Operating System Platform

The Server Consolidation and Migration Toolkit helps you consolidate and migrate data from servers running either NetWare® or Windows operating systems. In this first dialog box, you select the source operating system platform that you are consolidating or migrating data from.

- ◆ NetWare or Open Enterprise Server (eDirectory)

Select this option if your source servers are running one of the supported versions of NetWare or Open Enterprise Server (OES) for NetWare and are located in a Novell eDirectory™ tree. For a list of supported versions, see [Section 1.3, “Supported Source and Destination Server Versions,” on page 18](#).

If your source servers do not meet the minimum version requirements, obtain and install the latest Support Packs before running the Server Consolidation and Migration Toolkit.

If you select this option, continue with [Section 4.3, “Selecting a Consolidation or Migration,” on page 32](#).

- ◆ Windows NT Server (NT Domain)

Select this option if your source servers are running any of the supported versions of Windows and are located in an NT domain or a 2000/2003 Mixed Mode domain. For a list of supported versions, see [Section 1.3, “Supported Source and Destination Server Versions,” on page 18](#).

If you select this option, the Server Consolidation Utility automatically launches. See [Part III, “Server Consolidations,” on page 33](#) for further instructions.

- ◆ Windows 2000/2003 Server (Active Directory)

Full support for Windows 2000/2003 Server Active Directory migrations is not available in this release of the toolkit. However, the toolkit does support Windows 2000/2003 as source servers in specific configurations. If your Windows 2000 or 2003 servers meet the requirements listed in [Section 1.3, “Supported Source and Destination Server Versions,” on page 18](#), you should select Windows NT Server (NT Domain) as the source platform.

4.3 Selecting a Consolidation or Migration

When starting with NetWare as the source operating system platform, you can either consolidate (copy) data between servers or migrate file system and eDirectory data to a new NetWare server (also known as a hardware upgrade or server identity swap).

- ◆ Consolidate and Copy Data and Printing between Servers

Select this option if you want to do any of the following:

- ◆ Copy data from one or more NetWare source servers to one or more NetWare destination servers
- ◆ Copy data from one or more NetWare source servers to one or more Open Enterprise Server for Linux servers
- ◆ Consolidate one or more NDPS[®] Printer Agents to a single NDPS Print Manager within the same tree
- ◆ Migrate an existing NetWare 6.5 iPrint configuration to run in an OES Linux environment

In all server consolidation scenarios, the source and destination servers continue to exist on the network and retain their original identities.

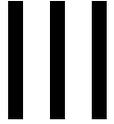
If you select this option, the Server Consolidation Utility automatically launches. See [Part III, “Server Consolidations,” on page 33](#) for further instructions.

- ◆ Migrate Data to New Server (Hardware Upgrade)

Select this option if you want to migrate file system data and the NDS/eDirectory database from an old NetWare server to a new NetWare server. When the migration is complete, the old server is brought down and the new server assumes its name and IP address on the network. You can then surplus the old server hardware.

If you select this option, the NetWare Migration Wizard automatically launches. See [Part IV, “Server Migrations,” on page 91](#) for further instructions.

Server Consolidations



- ◆ Chapter 5, “Preparing for a Server Consolidation,” on page 35
- ◆ Chapter 6, “Consolidating Data from NetWare Servers,” on page 41
- ◆ Chapter 7, “Consolidating Data from Windows Servers,” on page 65
- ◆ Chapter 8, “Consolidating Data to OES Linux,” on page 75
- ◆ Chapter 9, “Troubleshooting Server Consolidations,” on page 83

Preparing for a Server Consolidation

5

To prepare your source and destination servers for a consolidation project with the Server Consolidation Utility, complete the tasks in the following sections:

- ◆ [Section 5.1, “Meet System and Software Requirements,” on page 35](#)
- ◆ [Section 5.2, “Prepare the Source and Destination Servers,” on page 36](#)
- ◆ [Section 5.3, “Tips for Successful Consolidations,” on page 38](#)
- ◆ [Section 5.4, “Scheduling a Consolidation Project to Run at a Later Time,” on page 39](#)
- ◆ [Section 5.5, “What’s Next,” on page 40](#)

In addition, you should review the information in the following sections:

- ◆ [Section 5.3, “Tips for Successful Consolidations,” on page 38](#)
- ◆ [Section 5.4, “Scheduling a Consolidation Project to Run at a Later Time,” on page 39](#)

5.1 Meet System and Software Requirements

The Server Consolidation Utility is launched from the Server Consolidation and Migration Toolkit, which runs on a Windows workstation on the network. This workstation must meet the requirements outlined in this section.

5.1.1 Workstation Requirements

Server Consolidation Utility is installed as part of the Server Consolidation and Migration Toolkit. If you have not already met the workstation requirements and installed the toolkit, see [Section 3.1, “Meeting the Workstation Requirements,” on page 27](#).

The following are additional requirements for consolidation projects:

- For NetWare® projects, you must be logged in as a user with the Supervisor right to the source and destination servers.

Use ConsoleOne® to verify that you have the necessary rights to access all source and destination servers.

- For Windows projects, you must be logged in as a user with administrative rights to the domain containing the source server and workstation.

You need the Write/Modify permission to the domain and the Registry of the Primary Domain Controller (PDC). You also need the Read permission to all folders and files you are copying.

TIP: For Windows 2000/2003 consolidation projects, you can run the Server Consolidation and Migration Toolkit on the Windows server itself. This is the preferred method, especially if you have data that uses extended ASCII (multinational characters) or double-byte character sets (Japanese and other oriental languages). You cannot run the Toolkit on Windows NT servers.

If you have extended ASCII or double-byte character set data on a Windows source server and you plan to run the Toolkit on a separate Windows workstation, the workstation must have Windows installed with the same language as the server. For example, if you are migrating a Japanese server, make sure that your workstation is also running Japanese. You must also enable UTF-8 support in the Novell Client.

For more information, see [Chapter 13, “Copying Double-Byte Character Set Data,”](#) on page 121.

5.2 Prepare the Source and Destination Servers

Before you launch Server Consolidation Utility from the Server Consolidation and Migration Toolkit, you must prepare the source and destination servers by completing these steps.

- 1 Ensure that all source and destination servers are running supported versions of NetWare, Linux, or Windows server software.

See [Section 1.3, “Supported Source and Destination Server Versions,”](#) on page 18 for more information on supported operating system versions.

- 2 If necessary, apply the latest NetWare or Open Enterprise Server (OES) Support Packs on both source and destination NetWare or OES servers.

Updates are available for specific NetWare and OES versions at the [Consolidated Support Pack home page \(http://support.novell.com/tools/csp\)](http://support.novell.com/tools/csp).

- 3 If copying data from and to NetWare servers, set the same code page for both the source and destination servers.

IMPORTANT: If both servers don't have the same code page, data will be lost during the consolidation. For instructions on changing your server's codepage, see [Section 13.3, “Changing the NetWare Server Code Page,”](#) on page 122.

- 4 As a precaution, you should have a current backup of all data on the destination servers.

You should also back up the eDirectory information on the destination servers. For information on creating a backup of eDirectory, see [“Backing Up and Restoring Novell eDirectory”](#) in the *Novell eDirectory 8.8 Administration Guide*.

You should have a current data and trustee backup of the source servers, even though the source data is not modified during a data consolidation project. The only time data is changed on the source server is when you are consolidating printers.

- 5 For NetWare/eDirectory consolidations, load the latest Storage Management Services™ (SMS) Storage Management Data Requestor (`smdr.nlm`) and Target Service Agent (`tsafs.nlm`) modules on your source and destination NetWare servers.

To load the SMS modules provided with the NetWare operating system software, type `load smdr` and `load tsafs` at the server console.

If you are consolidating data to OES Linux servers, load the SMS modules on Linux by entering these commands at a terminal prompt:

```
/etc/init.d/novell-smdrd start
/opt/novell/sms/bin/smsconfig -l tsafs
```

The `tsafs` must be configured in Linux mode (the default), not in NetWare mode or dual mode. You can change the NetWare emulation mode if necessary via the `--tsaMode` option in the `tsafs` configuration command:

```
/opt/novell/sms/bin/smsconfig -l tsafs --tsaMode=linux
```

- 6 Depending on how you have set up service discovery on your network, you might need to add the source server's IP address, DNS name, and localhost name to the `sys:/etc/hosts` file on the destination server, and vice versa.

See [Section 5.2.2, “Modifying the Hosts File,” on page 37](#) for additional information.

5.2.1 Preparing NetWare 4 Source Servers

If you are planning to copy data from NetWare 4 source servers, complete these steps in addition to the ones in the previous section. (Keep in mind that you cannot copy data from NetWare 4 servers to OES Linux servers.)

- 1 The source and destination servers must see each other via IPX.

For information on verifying IPX communication between servers, see [“Errors When Connecting to a NetWare 4 Server” on page 88](#).

- 2 Install long name space support on each volume containing data to be copied.

To add long name space support to a NetWare 4.10 volume, enter

```
load os2.nam
```

and then

```
add name space os2 volume_name
```

at the server console. Replace *volume_name* with the name of the volume.

To add long name space support to a NetWare 4.11 or 4.2 volume, enter

```
load long.nam
```

and then

```
add name space long volume_name
```

at the server console. Replace *volume_name* with the name of the volume.

- 3 If you plan to copy compressed data from a NetWare 4 source server, enter the following command at the server console prompt:

```
set convert compressed to uncompressed option=0
```

Setting this parameter to 0 leaves compressed files compressed when they are accessed. This prevents compressed files from uncompressing and taking up all of your destination server's disk space when they are accessed. (Setting the option to 1 changes compressed files to uncompressed on second access, and setting the option to 2 always changes compressed files to the uncompressed version.)

To view your server's current Convert Compressed to Uncompressed Option SET parameter, execute the SET command at the server console prompt, select the File System category, and then page through the information until you see Convert Compressed to Uncompressed Option.

5.2.2 Modifying the Hosts File

The Server Consolidation Utility connects the servers involved in a consolidation using one of two methods: SLP or the `sys:\etc\hosts` file. If you don't have SLP configured on your network, you must modify the `sys:\etc\hosts` file to include the IP address and server name of every

source server involved in the consolidation project. This information must be manually added to the file before running the consolidation project.

IMPORTANT: Because Novell Branch Office™ does not configure SLP, consolidations to Branch Office servers must use information in the hosts file. However, the Branch Office server reconfigures itself each time it is restarted. This causes the `sys:\etc\hosts` file on the server to be rewritten each time it is restarted. If only one consolidation is being run with a Branch Office server, the hosts file needs to be modified only once to include the source server's IP address and server name. However, if more than one consolidation is going to be run on a Branch Office server and the server has been restarted since the last consolidation, the hosts file must be modified each time the server is restarted.

You can modify the hosts file from the server console or from the client workstation.

From the Server Console

- 1 At the server console, enter

```
edit sys:etc/hosts
```
- 2 Add to the file the IP address and DNS server name of every source server involved in the consolidation project.
Type each IP address and server name as `xxx.xxx.xxx.xxx Server_Name`.
- 3 Save the file.

From the Client Workstation

- 1 Launch Windows Explorer.
- 2 Browse to the NetWare server or Nterprise Branch Office appliance.
- 3 Double-click the server name.
- 4 Double-click the `sys:` volume.
- 5 Double-click the `etc` directory.
- 6 Open the hosts file with a text editor.
- 7 Add to the file the IP address and server name of every source server involved in the consolidation project.
Type the IP addresses and server names as `xxx.xxx.xxx.xxx Server_Name`.
- 8 Save the file.

5.3 Tips for Successful Consolidations

- ♦ When you run the Server Consolidation Utility, you must be logged in to the network as a user with Supervisor rights to the source and destination servers. If you are not logged in when you start the utility, you can log in as you select the source and destination trees.
- ♦ For better performance, Novell recommends that the source servers, destination servers, and client workstation all be located on a common LAN segment.
- ♦ For Windows NT server consolidations, you should use the fastest workstation available to run the Server Consolidation Utility. If possible, assign the workstation a static IP address. Turn off screen savers and power management to avoid interruptions during the consolidation.

- ◆ When using the Server Consolidation Utility to copy data from a compressed volume to an uncompressed volume, ensure the destination server has enough space left in the volume to accommodate the uncompressed data.

Decompression requires some disk space to decompress the file on the source and copy it. Having a small amount of space left on the source system might result in a server abend or unwanted behavior in the file system.

5.4 Scheduling a Consolidation Project to Run at a Later Time

The Server Consolidation Utility lets you schedule projects to run at the most convenient time. This means that you can create a consolidation project during the day and schedule it to run during the night when there is a smaller chance that files that are to be moved will be open and being worked on.

The Server Consolidation Utility uses the Scheduled Tasks capability built into Windows to schedule a consolidation project to run at a time that is most convenient to you.

TIP: Before scheduling a consolidation project, Novell recommends that you complete the verification process and resolve all errors. When you have verified the project, resolved any errors, and reached the Start Novell Server Consolidation Utility dialog box, then the project can be scheduled.

To schedule a project to run at a later time:

- 1 Ensure that a Server Consolidation Project has been created.
Write down the project name and path of its location for later reference.
- 2 Click *Start > Settings > Control Panel*.
- 3 Double-click the *Scheduled Tasks* icon.
- 4 Double-click the *Add Scheduled Task* icon.
- 5 When the Scheduled Task Wizard launches, click *Next*.
- 6 Select the Novell NetWare Server Consolidation Utility from the list of programs provided, then click *Next*.
- 7 Assign the scheduled task a name, select its frequency, then click *Next*. You can run a project as often as you want.
- 8 Select the start time and date for the project to run, then click *Next*.
- 9 Enter the Windows username and password of the user that will perform the task, then click *Next*.
- 10 Verify that the time displayed for running the project is correct. If it is, check the *Open Advanced Properties for This Task When I Click Finish* check box, then click *Finish*.
- 11 After the Advanced Properties dialog box opens, click *Task*.
- 12 In the dialog box that opens, complete the *Run* field.

The dialog box is populated with a pathname that ends in `\fc.exe`. Add the following parameters, separated by a single space, to this pathname for the scheduled consolidation project to run:

- ♦ (Required) The pathname, in quotation marks, to the consolidation project that you are scheduling to run. For example:
 “c:\my projects\scl.mdb” (where scl.mdb is the saved project)
- ♦ (Required) The letter Y, to automatically run the selected Server Consolidation project.
- ♦ (Required) The password for the admin on the source server.
- ♦ (Required) The password for the admin on the destination server.
- ♦ (Optional) The letter N, to skip the Error and Success Log review dialog box and simply exit the utility after it finishes.

When completed, the *Run* field of the Advanced Properties dialog box should look similar to this:

```
c:\program files\novell\netware server consolidation  
utility\fc.exe "c:\my projects\scl.mdb" y test1 test2
```

In the previous example, `c:\program files\novell\netware server consolidation utility\fc.exe` is the pathname that was already in the *Run* field of the dialog box, `"c:\my projects\scl.mdb"` is the saved project that is scheduled to run, `y` is the Yes parameter to automatically run the project, `test1` is the admin password on the source server, and `test2` is the admin password on the destination server.

- 13** After entering the parameters, click *OK*.
- 14** In the dialog box that appears, enter the Windows username and password of the admin running the project, then click *OK*.

The Server Consolidation project will run at the scheduled time.

5.5 What's Next

If you are consolidating data within a NetWare or Nterprise Branch Office environment, go to [Chapter 6, “Consolidating Data from NetWare Servers,” on page 41](#).

If you are consolidating data from a Windows server to NetWare, go to [Chapter 7, “Consolidating Data from Windows Servers,” on page 65](#).

If you are consolidating data from either NetWare or Windows to an OES Linux server, go to [Chapter 8, “Consolidating Data to OES Linux,” on page 75](#).

Consolidating Data from NetWare Servers

6

After you have completed the prerequisite procedures and reviewed the pertinent information in [Chapter 3, “Installing the Server Consolidation and Migration Toolkit,” on page 27](#), you are ready to proceed with your NetWare® consolidation project.

To perform a NetWare consolidation project, complete the following tasks covered in this section:

1. [Understand NetWare Server Consolidation Issues \(page 41\)](#)
2. [Launch Server Consolidation Utility and Create a Project File \(page 42\)](#)
3. [Select a Source and Destination Tree \(page 43\)](#)
4. [Model Your Consolidation Project \(page 43\)](#)
5. [Perform Pre-Copy Verifications \(page 45\)](#)
6. [Additional Steps for Tree-to-Tree Consolidations \(page 51\)](#)
7. [Run the Consolidation \(page 54\)](#)

In addition, this section contains information on the following optional tasks:

1. [Consolidating NDPS Printer Agents \(page 54\)](#)
2. [Consolidating Data to or from a NetWare 5.1 Cluster \(page 57\)](#)
3. [Consolidating Data to Novell Branch Office \(page 57\)](#)
4. [Consolidating Data from NetWare 4 Servers \(page 59\)](#)
5. [Server-Based Processing \(page 61\)](#)

If you are copying data from NetWare to Open Enterprise Server (OES) for Linux, review the information in [Chapter 8, “Consolidating Data to OES Linux,” on page 75](#).

6.1 Understand NetWare Server Consolidation Issues

Before running a consolidation project in a NetWare/eDirectory™ environment, be sure you have prepared your server as described in [Section 5.2, “Prepare the Source and Destination Servers,” on page 36](#).

You should also be aware of the issues discussed in this section.

6.1.1 Open Files Cannot Be Copied

The Novell® Server Consolidation Utility cannot copy files that are open and currently in use.

There is one exception to this rule. NSS has a feature called File Copy on Write. This permits a file that is being changed to be accessed in the same state as it was in when it was last closed by all processes.

This feature is enabled on an NSS volume either by using ConsoleOne® or by entering `nss /filecopyonwrite=volname`

at the source server console to change the volume attributes.

For example, `nss /filecopyonwrite=vol1` would enable File Copy on Write for the `vol1:` volume. The effect is immediate, but it affects only files that are currently closed and then opened later.

6.1.2 Cluster Failover Stops File Copy

If you run a server consolidation project involving a NetWare cluster and the cluster fails over during the consolidation, the file copy will stop. The consolidation project must be run again.

6.1.3 User Space Restrictions Only Migrated in Full Volume Copies

In consolidation projects where individual folders are dragged and dropped, or where a volume is copied to a folder on the destination server, user space restrictions on the source volume are not migrated to the destination volume.

If your consolidation project is set up to copy an entire volume, with the contents of the source volume being copied to the root of the destination volume, user space restrictions are migrated to the destination volume. If user space restrictions already exist on the destination volume, they are overwritten with the restrictions migrated from the source volume.

6.2 Launch Server Consolidation Utility and Create a Project File

The Server Consolidation Utility is a Windows program that is launched from the Server Consolidation and Migration Toolkit.

- 1 If you have not already done so, start the Server Consolidation and Migration Toolkit.

By default, the toolkit is installed in `c:\program files\novell server consolidation and migration toolkit`. You can access it by clicking *Start > Programs > Novell Server Consolidation and Migration Toolkit > Novell Server Consolidation and Migration Toolkit*.

- 2 Read the Welcome page, then click *Create or Open Project*.
- 3 Select *NetWare or Open Enterprise Server (eDirectory)*, then click *Next*.
- 4 Select *Consolidate and Copy Data and Printing Between Servers*, then click *Next*.
- 5 Read the About screen, then click *OK*.
- 6 Do one of the following:
 - ♦ To start a new consolidation project, click *Create a New Project > OK*. Then continue with [Step 7 on page 43](#).
 - ♦ To open an existing project, click *Open an Existing Project > OK*, select the project you want to work on, and then click *Open*. Then skip to [Section 6.4, “Model Your Consolidation Project,” on page 43](#).

- ♦ To open the last project you worked on, click *Open Last Project* > *OK*. Then skip to [Section 6.4, “Model Your Consolidation Project,” on page 43](#).

The Server Consolidation Utility uses a project (.mdb) file to record your intended actions. The actions are recorded so you can execute them now or save the project file and execute the actions later.

- 7 Type a project filename in the field provided.

The filename can be up to 64 characters long and can include any character except \ * ? < > | " /. The project name also serves as the project's folder name, so you might want to keep it short. The project folder stores the log files and other files associated with the project.

- 8 (Conditional) If you want to store the project file in a location other than the default location provided, click *Browse* and navigate to the desired location, and then click *OK*.
- 9 Click *Next* to continue to the next screen.

6.3 Select a Source and Destination Tree

After you create a project file, you need to select your source and destination trees. To do this, you must be logged in to the trees that you will be working in.

- 1 Select the source and destination eDirectory™ (NDS®) tree from the drop-down list provided or click *Login* to browse to a tree that is not in the drop-down list.

Only trees that you are currently logged in to are available on the drop-down list.

- 1a (Conditional) In the Novell Login dialog box, click *Trees*.

- 1b Browse to each desired tree and log in with the correct username and password.

If you do not know the tree name, in the *Server* field of the Login dialog box, type the IP address or DNS name of the server that you will be consolidating to or from.

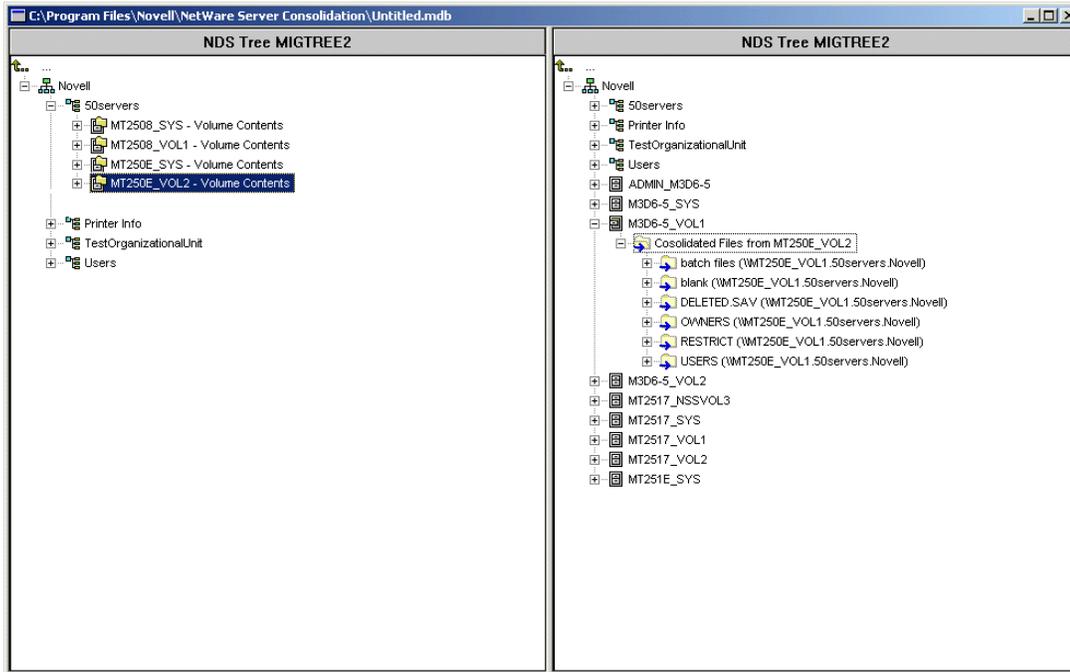
IMPORTANT: If you are performing a consolidation to an Nenterprise™ Branch Office™ appliance, the Admin user's context is always appusers.

- 1c Click *OK*.
- 2 Click *Next*.
- 3 Click *Create* to finish creating the project file.

6.4 Model Your Consolidation Project

The Project Window (see [Figure 6-1](#)) is where you select which volumes and directories to copy and which Printer objects to move. The Project Window is divided into two panes that each show the trees that you are working in.

Figure 6-1 Server Consolidation Utility Project Window



You drag objects from the left pane and drop them into the right pane. You select volumes and directories to copy to different servers, and Printer Agents to move to different Print Managers. You can also create new eDirectory containers or file system folders by right-clicking on an existing container or folder and selecting *New Container* or *New Folder* from the pop-up menu.

Creating containers and folders and dragging-and-dropping objects in the Project Window does not immediately perform the action. It only creates a preview of where the files and objects will reside. The actions are completed only after the verification process is complete and the copy process begins.

Volume Drop Options

When you drag-and-drop volumes into the right pane of the Project Window, a Volume Drop Options dialog box displays. You must choose to *either* migrate the volume contents into the directory or volume that you selected *or* create a new directory with the name of the volume that is being moved.

- 1 Click the radio button next to the option you want.
- 2 Click *OK*.

Duplicate Folder Options

If you drag-and-drop a folder onto a destination folder of the same name, a Duplicate Folder Options dialog box displays. You have several options:

- ◆ Don't Copy the Directory: The directory on the source server is not copied and the directory on the destination server is not replaced.
- ◆ Merge Directory Contents: The contents of the source directory are merged into the destination directory with the same name.

- ◆ Rename: The directory on the source server is copied to the destination server with a new name assigned to it. You must enter a new name in the field provided if you select this option.
- ◆ Merge All: If you are dragging-and-dropping multiple directories at once, select this option if you want to merge the contents for all duplicate directories.

1 Click the radio button next to the option you want.

2 Click *OK*.

Other Project Window Options

In addition to dragging-and-dropping objects, you can perform several other tasks from the Project Window menu:

- ◆ Save project settings: Click *File > Save As*.
- ◆ Move created and dropped objects around by dragging them to the desired location.
- ◆ Create a new container or folder: Select the parent container or existing folder in the right pane, then click *Edit > New Folder*.
- ◆ Cancel a “dropped” action: Select the volume or directory in the right pane, then click *Edit > Back Out*.
- ◆ Rename a newly created container or folder: Select the parent container or existing folder in the right pane, then click *Edit > Rename*.
- ◆ Show where a folder or object went: Select the object in the left pane, then click *Edit > Where Did It Go*. The directory or volume that was moved is highlighted in its new location in the right pane.
- ◆ Show where a folder or object came from: Select the object in the right pane, then click *Edit > Where Did It Come From*. The directory or volume that it came from is highlighted in the left pane.
- ◆ Show all folders or objects selected for copying: Select a container in the left pane, then click *Edit > Show Dropped Folders (or Show Dropped Printers)*.

TIP: The previous six tasks can also be performed by right-clicking the object to see the same menu option.

- ◆ View the available disk space before performing the verification by right-clicking the destination volume in the right pane of the Project Window and then selecting *Properties*. Right-clicking the source folder or volume in the left pane of the Project Window and then selecting *Properties* displays the size of the source object.

6.5 Perform Pre-Copy Verifications

After you have dragged-and-dropped the selected directories or volumes and have performed any other modeling tasks, proceed by clicking *Project > Verify and Copy Data* or by clicking *Do the Consolidation* on the button bar.

NOTE: These instructions assume you have not enabled server-based processing. If you have, refer to the additional information in [Section 6.12, “Server-Based Processing,” on page 61](#).

Begin the Verification

- 1 When the Verification Wizard dialog box displays, click *Next* to begin the verification process.
- 2 The Dropped Folders dialog box displays, showing the source path and destination path for the dropped folders. Do one of the following:
 - ♦ If the source and destination paths are correct, click *Next*.
 - ♦ If the source or destination path is incorrect, click *Cancel* and make the appropriate changes in the Project window.
- 3 (Conditional) If you created new folders in the right pane of the Project window as part of your consolidation project, the Created Folders dialog box now displays. Do one of the following:
 - ♦ If the destination path of the created folders is correct, click *Next*.
 - ♦ If the destination path is not correct, click *Cancel* and make the appropriate changes in the Project window.
- 4 (Conditional) If you are moving NDPS® printers as part of your consolidation project, the Dropped Printers dialog box now displays. Do one of the following:
 - ♦ If the destination locations of the printers are correct, click *Next*.
 - ♦ If the destination locations are not correct, click *Cancel* and make the appropriate changes in the Project window.

Duplicate File Resolution

If a file is found on the destination volume or directory that has the same name as a file being copied from the source, you must decide what to do. You have three options to choose from on the Duplicate File Resolution dialog box:

- ♦ Don't copy over existing files
The file on the source server is not copied and the file on the destination server is not replaced.
 - ♦ Copy the source file if it is newer (Default)
If the file on the source server is newer than the one on the destination server, the file on the destination server is replaced.
 - ♦ Always copy the source file
The file on the source server always replaces the file with the same name on the destination server.
- 1 Click the radio button next to the option you want.
 - 2 Click *Next*.

Synchronize Files and Folders

In the Synchronize Files and Folders dialog box, you have the option to delete files and folders on the destination server that do not exist on the source server. Selecting *Yes* deletes all files and folders on the destination server that are not on the source server. *No* is the default selection.

- 1 Click the radio button next to the option you want.
- 2 Click *Next*.

WARNING: Do not use this option in projects that involve consolidating data from two separate volumes or folders on the source server into a single volume or folder on the destination server. When the synchronization check compares the copied data to what exists in the first volume or folder, it will delete everything that was copied from the second. The same process occurs when comparing the copied data for the second volume or folder, and you end up with no copied data remaining in the destination volume or folder.

File Comparison

In the File Comparison dialog box, you have the option to compare files and folders between the source and destination servers after the copy process completes. Selecting *Yes* compares the following information between the source and destination files and folders:

- ◆ Names
- ◆ Dates
- ◆ Sizes
- ◆ Attributes
- ◆ Trustees
- ◆ Owners

1 (Conditional) If you do not want to compare source and destination files after the copy process, select *No* and then click *Next*. Skip to “[File Date Filters](#)” on page 48.

2 (Conditional) If you selected *Yes*, you have the option to do a binary (byte-by-byte) comparison of the files after the copy process completes. This option gives the greatest assurance that two files are identical, but it takes longer to complete.

If you want to perform a binary comparison of the files that were copied, select *Binary (byte-by-byte) comparison*.

3 (Conditional) If you are seeing errors about files having different Rename inhibit (Di) and Delete inhibit (Ri) attributes after the comparison, you can disable the comparison of these attributes by deselecting *Compare Ri/Di attributes on read-only files*.

The reason for these errors is that the Novell Client version 4.9x does not automatically set the Di or Ri attributes when copying Read-only files, whereas the Server Consolidation Utility does. So if you have copied Read-only files to the source server using the Novell Client, they are marked Read-only but the Di and Ri attributes are not set by the Client. If you subsequently use the Server Consolidation Utility to copy these files to another server, the utility sets the Di and Ri attributes of all Read-only files on the destination server, as it should.

4 Click *Next*.

IMPORTANT: Novell recommends that you do not enable file comparison when copying files from NetWare to OES Linux servers. Many differences exist between the file and folder attributes supported on NetWare and those supported on Linux. Because of these differences, you would expect to see a large number of errors reported in a file comparison.

File Date Filters

In the File Date Filters dialog box, you have the option to copy files based on dates and three separate attributes:

- ◆ Accessed
- ◆ Modified
- ◆ Created

If you select *No*, all files are copied. If you select *Yes*, you can enter date ranges for the file copy. You can select as many criteria as you would like, and only those files that meet all of the selected criteria are copied.

Two dates can be set for each attribute. The first date is an *On or After* date and the second is an *On or Before* date. For example, if you select only *On or Before* and set the date for November 10, 2000, for the Accessed attribute, only those files accessed on or before November 10, 2000, are copied. In the same example, if you also select *On or After* and set the date to October 1, 2000, only those files accessed on or after October 1, 2000, and on or before November 10, 2000, are copied.

- 1 (Conditional) If you do not want to filter files based on dates, select *No*.
- 2 (Conditional) If you want to filter based on dates, select *Yes* and then select the desired combination of file types and dates to be copied.

To change the date from the default provided, check the box next to the desired date. Next, highlight with your mouse the portion of the date you want to change. Either type a new value using the keyboard number pad, or use the mouse to click the up- and down-arrows provided to the immediate right of the date field.

- 3 Click *Next*.

NOTE: On a Windows 2000/XP workstation, the Last Accessed date might not be reported correctly for files on NetWare volumes. The workstation might report a Last Accessed date that is one day off from the actual date on the file. Because the Server Consolidation Utility reads this date for the date filter settings, the date filters for the Last Accessed time might seem to be off by one day. However, the Server Consolidation Utility is working as designed based on the dates being reported to it.

Excluded File Extensions

In the Excluded File Extensions dialog box, you have the option to exclude specific file types or file names from the copy process. Wildcards are permitted.

A wildcard is a character that can be used to represent one or more characters in a search. The two most commonly used wildcards are the question mark (?) and the asterisk (*).

- ◆ The question mark (?) is used to represent a single alphanumeric character in a search expression.

For example, typing `te?t.txt` would exclude `tent.txt`, `test.txt`, and `text.txt` from the copy process.

- ◆ The asterisk (*) is used to specify zero or more alphanumeric characters in a search expression.

For example, typing `h*s.txt` would exclude `house.txt`, `his.txt`, `horses.txt`, and `happiness.txt` from the copy process.

- 1 Type the file extension types or filenames in the field provided. For multiple filenames or types, press Enter between each entry.

For example, if you want to exclude a specific file named `test.txt` from being copied, type `test.txt` in the field provided. If you want to exclude all `.mp3` files from being copied, type `*.mp3` in the field provided.

Type as many filenames or file extension types as you want. Separate the filenames or file extensions by pressing Enter between each entry. Do not use spaces or commas to separate the entries. See the following examples:

Correct:

```
*.mp3
test.txt
*.wav
```

Incorrect:

```
*.mp3 test.txt *.wav

or

*.mp3, test.txt, *.wav
```

- 2 Click *Next*.

If you are performing a consolidation between servers in a single tree, the Check for Trustees and Ownerships dialog box is not displayed. Proceed to “[Verify Password](#)” on page 23.

Check for Trustees and Ownership

When you copy data from one tree to another, the Server Consolidation Utility searches the destination tree for objects whose names match the source tree object names. Objects that are potential matches are displayed and can be matched up during “[Tree-to-Tree Object Match Up](#)” on page 51.

If this option is enabled, the Server Consolidation Utility scans the dropped folders and their subordinates for trustees and owners. This check must be performed the first time a consolidation is run. If a consolidation is run a second time, this scan does not need to be repeated, as long as trustees have not been added to the source server and new directories or folders have not been dropped onto the destination server. If either has happened, another scan is necessary. This trustee and ownership check slows down the verification process.

NOTE: If a file has already been copied to the destination server or tree, that file’s trustees are not updated during the consolidation unless the source file data is recopied. See “[Duplicate File Resolution](#)” on page 46 for information about when a source file might overwrite the destination file.

- 1 Click *Browse* to select the destination container you want to search.
- 2 Select *Search All Subordinate Containers* to search all containers in the destination tree below, and including, the one you selected.

If you don't select this option, the utility searches only the selected destination container. For better performance, limit the search to the container that you believe the object resides in. Searching from Root takes significantly longer depending on the size of the destination tree.

3 Click *Next*.

If consolidating data to an Nterprise Branch Office appliance, there is not an option to specify the container you want to search. Select *Yes* or *No*, then click *Next*.

Password Verification

1 In the Password Verification dialog box, enter the passwords for the source and destination trees in the fields provided.

NOTE: SMS is the backup and copy engine used by the Server Consolidation Utility. You enter your password here because SMS requires that the servers involved in the consolidation be authenticated to each other.

2 Click *Next*.

Check for Sufficient Disk Space and Disable Login

Before beginning to consolidate your data, you can verify that your destination volumes have enough space to accommodate the data that will be moved. Verifying disk space can be a long process if you have many files to copy.

You can also disable login on the source server before copying file data. Users already logged in to the source server are not logged out, but no new logins are allowed until the consolidation completes. If you disable login and the workstation running the consolidation project crashes for any reason during the consolidation, you might have to manually re-enable login on the source server console.

1 To verify the available space on the destination volumes, select *Check for Sufficient Disk Space*.

2 To have the utility disable login on the source server prior to copying data, select *Disable Login*.

3 Click *Next*.

Verification Wizard

When the Verification Wizard screen displays, click *Next* to begin the pre-copy verification.

During the verification process, you might see a message informing you that an updated `tsafs.nlm` or `smdr.nlm` must be copied for the consolidation to work. Click *Yes* to continue the project verification. Clicking *No* stops the verification.

6.5.1 Resolve Pre-Copy Verification Errors

If errors are discovered in the verification attempt, they are shown in the Error Resolution dialog box. Errors could include name conflicts, insufficient rights, required name spaces not loaded, and insufficient disk space. Errors found during the verification process are classified as follows:



Errors must be resolved before files can be copied.

 Warnings should be resolved but might not affect the copy process.

In addition, the Error Resolution dialog box might display informational text classified as follows:

 Information about the decisions you made in the Project Window.

A description of the error and a possible resolution appears in the Information text box. If no resolution is provided, you can find more information in the [Novell Error Code online documentation](http://www.novell.com/documentation/lg/nwec/index.html) (<http://www.novell.com/documentation/lg/nwec/index.html>). (Search the system by error code number.)

After resolving any errors that exist, click *Next*.

6.6 Additional Steps for Tree-to-Tree Consolidations

If you are moving objects from one tree to another, the Tree-to-Tree Object Match Up dialog box now displays. If you are not moving objects between trees, proceed to [Section 6.7, “Run the Consolidation,” on page 54](#).

6.6.1 Tree-to-Tree Object Match Up

All trustees of copied data that appear in both the source and destination trees are displayed in the Tree-to-Tree Object Match Up dialog box based on their category. These trustees are discovered during the [Check for Trustees and Ownership](#) step and are saved in the project database.

This screen allows you to match the trustee names found on the source server with trustees from the destination server. If an appropriate match does not exist, you can create an object on the destination server that matches the object name from the source server. You can also browse to an existing object in the destination tree and match it up with the source server object name.

IMPORTANT: If you are consolidating to an Nterprise Branch Office Appliance, see [Section 6.10, “Consolidating Data to Novell Branch Office,” on page 57](#) now.

- 1 Select the type of objects to display from the drop-down list provided in the Tree-to-Tree Object Match Up dialog box.
- 2 Check the box to the left of the object you want to match up.

To select more than one object, press and hold the Ctrl key while checking the box to the left of the objects that you want to select. You can also check the box to the left of one object, press and hold the Shift key, then check the box to the left of a second object to select those two objects and all other objects located between them in the list.

The following attributes are copied for each selected user:

- ♦ Common Name
- ♦ Description
- ♦ E-mail Address
- ♦ Fax Number
- ♦ Full Name
- ♦ Generational Qualifier

- ◆ Given Name
- ◆ Initials
- ◆ Internet E-mail Address
- ◆ Language
- ◆ Locality Name
- ◆ Lockout After Detection
- ◆ Login Allowed Time
- ◆ Login Disabled
- ◆ Login Expiration Time
- ◆ Login Grace Limit
- ◆ Login Grace Remaining
- ◆ Login Intruder Limit
- ◆ Login Maximum Simultaneous
- ◆ Login Script
- ◆ Mailbox Location
- ◆ Network Address Restriction
- ◆ Organizational Name
- ◆ Organizational Unit Name
- ◆ Password Allow Change
- ◆ Password Expiration Interval
- ◆ Password Expiration Time
- ◆ Password Minimum Length
- ◆ Password Required
- ◆ Password Unique Required
- ◆ Physical Delivery Office name
- ◆ Post Office Box
- ◆ Postal Address
- ◆ Postal Code
- ◆ State or Province Name
- ◆ Street Address
- ◆ Surname
- ◆ Telephone Number
- ◆ Title

2a (Conditional) If you selected more than one object, right-click on the selected objects and then select *Create All Selected Objects*.

2b (Optional) If you want to create objects for all of the selected objects, select *Yes*.

2c To select the container that the objects will be created in, click *Browse*.

2d Click *OK*.

- 2e** To unmatch more than one object, select the desired objects, right-click the objects, and then select *Unmatch All Selected Objects*.
- 3** From the drop-down menu under the Destination Object heading, select the option you want:
- ♦ The object in the destination tree that has the same name as the object in the source tree
 - ♦ Don't match (object doesn't exist in the destination tree)
 - ♦ Browse
 - ♦ Create
- 4** (Conditional) If you selected Browse in **Step 3**, do the following in the Context Browser dialog box:
- 4a** Select a matching object.
- 4b** Click *OK*.
- 5** (Conditional) If you selected Create in **Step 3**, do the following in the Object Creation dialog box:
- 5a** To browse to the container that the new object will be created in, click *Browse*.
- 5b** Select the container.
- 5c** Click *OK*.
- 5d** Type the new object's name in the field provided, then click *OK*.
- 5e** Repeat **Step 5d** for each object you want to create.

NOTE: When the Server Consolidation Utility creates a new user, it assigns a random password to that user. The username and the randomly assigned password are written to the success log. This log file can be viewed after the consolidation completes.

The Server Consolidation Utility allows you to create groups if they don't already exist in the destination tree and it adds the users that are members of the source group to the new destination group. However, it does not modify an existing group. If you use the utility to create a group in the destination tree and then add additional members to the source tree's group, those added members are not added to the destination group. Also, if you choose to create the groups manually (on the destination) rather than using the Server Consolidation Utility, and then you attempt to match up the groups during the consolidation, the group members are not transferred.

- 6** When you have finished matching all the objects, click *Next*.
- 7** (Conditional) If you have unmatched objects, do one of the following in the Unmatched Objects dialog box that displays:
- ♦ To proceed without matching the objects, select *Yes*.
 - ♦ To go back and match up the objects before continuing, select *No*.

6.6.2 Default Server and Home Directory for Created Users

In the Default Server and Home Directory for Created Users dialog box, you have the option to assign a default server for all created users. The default server is the server the user gets a connection to during login if the user doesn't request a connection to a specific server. It's also the server used if the user makes a network request without naming the server, and it's the server the user still has an attachment to after logging out.

You can also assign a parent directory for any created user's home directory. A home directory is an optional, single-valued property that specifies the location (volume and path) and name for the user's working area on the server.

- 1 (Conditional) If you want to assign a default server for all created users, click the first *Browse* button.
- 2 Select a server from the tree.
- 3 Click *OK*.
- 4 (Conditional) If you want to assign a parent directory for any created user's home directory, click the second *Browse* button.
- 5 Select a directory from the tree.
- 6 Click *OK > Next*.

6.7 Run the Consolidation

After resolving pre-copy verification errors, you can now copy your files by clicking *Proceed* in the Start Novell Server Consolidation Utility dialog box.

During the copy process, new folders and objects are created, files are copied, and Printer Agents are moved to their destination (as specified in the right pane of the Project Window).

When the copy process is complete, a Process Finished screen displays that lets you

- ♦ View the error log.
- ♦ View the success log.
- ♦ Close the Process Finished screen.

TIP: You can also view the error and success logs of any completed project from the Project Window by opening the project file and clicking *View > Error Log* or *View > Success Log*, or by clicking the corresponding button on the button bar.

If you interrupt the copy process before it completes, all objects, directories, and files already copied to the destination server will remain there unless you manually delete them.

6.8 Consolidating NDPS Printer Agents

This section explains how to consolidate NDPS Printer Agents from one NDPS Print Manager (PSM) to another as part of a NetWare-to-NetWare consolidation. If you want to migrate iPrint Printer Agents and Print Managers from NetWare to OES Linux, see [Section 8.4, "Migrating iPrint Printers and Print Managers from NetWare to Linux,"](#) on page 79.

6.8.1 Understanding NDPS Printer Agent Consolidation

When consolidating NDPS Printer Agents, be aware of the following points:

- ♦ Because the Server Consolidation Utility actually moves the NDPS Printer Agents, you should back up your source server before launching this operation. If you make a mistake in moving a Printer Agent, wait until it is fully functional in its new location before you move it back.

- ◆ The Server Consolidation Utility does not move Print Brokers or Print Managers. It moves NDPS Printer Agents to an existing NDPS Print Manager on another server within the same tree. After the move, the original Printer Agents are deleted from the source Print Manager.
If you want to consolidate your NDPS Printer Agents to a new NDPS Print Manager in the same tree, you must first create the new Print Manager on the destination server, and then use the Server Consolidation Utility to drag-and-drop the Printer Agents to the new Print Manager.
- ◆ You cannot migrate NDPS Printer Agents to iPrint Print Managers. This utility supports moving NDPS Printer Agents to NDPS Print Managers, and only in NetWare-to-NetWare consolidation projects.
- ◆ Printer Agents can be moved; print queues cannot.
- ◆ Printer Agents that are moved still use the same Print Broker.
- ◆ Printer Agents can be moved only within the same tree. They cannot be moved between different trees.
- ◆ Print Managers must be operational during the consolidation.
- ◆ If necessary, after moving Printer Agents from the source to the destination server, unload the source Print Manager so the installed printers on the workstations can establish a connection to the destination Print Manager.

TIP: After unloading the source Print Manager, send a test print job to the printer that was moved. This ensures that communication with the destination Print Manager is established. After that communication has been established, the source Print Manager can be brought back up.

- ◆ Printer defaults such as copies and media that are set in iManager through the *iPrint > Manage Printer > Configuration > Defaults (legacy)* page are migrated with Printer Agents.
- ◆ If you made changes to the `iprint.ini` (located in `sys:\apache2\htdocs\ippdocs\`), you should copy the file to the destination server.
- ◆ iPrint maps and custom images are not migrated. If you are hosting these on your iPrint server, you need to copy them to the destination server.
- ◆ Driver Profiles and Custom banners are migrated. If a Printer Agent uses a custom banner, the Server Consolidation Utility copies the custom banner to the new Print Manager. If a banner with the exact same content already exists on the destination Print Manager, the banner is not migrated and the Printer Agent is assigned the custom banner that already exists on the destination server.

If there is no match for the custom banner, then the banner is copied from the source Print Manager using its same name. In the event that a banner with the same name but different options already exists on the destination Print Manager, the banner is copied from the source Print Manager and renamed as `banner_name_0x`.

For example, if a custom banner with the name of Banner1 already exists on the destination Print Manager with different options, then the banner is copied to the destination and renamed `Banner1_01`.

The same is true for driver profiles.

6.8.2 Using the Utility to Consolidate NDPS Printer Agents

Follow these steps to consolidate NDPS Printer Agents to an NDPS Print Manager within the same eDirectory tree.

- 1 If necessary, start the Server Consolidation and Migration Toolkit and select the following options to launch the Server Consolidation Utility:
 - ♦ *NetWare or Open Enterprise Server (eDirectory)*
 - ♦ *Consolidate and Copy Data and Printing Between Servers*
- 2 Create a new consolidation project by following the steps in [Section 6.2, “Launch Server Consolidation Utility and Create a Project File,”](#) on page 42.
- 3 Select the same tree for both the source and the destination tree.

Migrating NDPS printers is supported only within the same eDirectory tree. See [Section 6.3, “Select a Source and Destination Tree,”](#) on page 43 for more information.
- 4 In the Project Window’s source pane, locate the PSM that has the Printer Agents (printers) you want to move.
- 5 In the destination pane, locate the PSM that is to receive the Printer Agents.
- 6 Drag-and-drop the individual Printer Agents from the source PSM to the destination PSM.

Make sure the PSMs are running on both the source and destination servers before you attempt to drag-and-drop the associated Printer Agents. If you don’t do this, you will get unpredictable results.
- 7 Click *Project > Verify and Copy Data* to verify the project and start the migration.

The utility checks to ensure that it can communicate with the source Resource Management Service (RMS) and the destination Print Broker. It also verifies that the moves you want to make are valid.

During the verification, the Dropped Printers dialog displays the source and destination locations for the printers you are moving in this consolidation project.

 - ♦ If the source and destination locations are correct, click *Next*.
 - ♦ If the source or destination location is incorrect, click *Cancel* and make the appropriate changes in the Project Window.

At the end of the verification, the results dialog is displayed. To ensure a smooth migration, you should resolve all errors before proceeding.
- 8 When you are ready to commit the changes, run the consolidation.

See [Section 6.7, “Run the Consolidation,”](#) on page 54 for more information.
- 9 Upon completion, review both the success and error log files.

The log file uses three possible states to identify the success of the migration of each Printer Agent:

 - ♦ Success indicates that the Printer Agent was created on the destination server with all of its attributes and drivers.
 - ♦ Partial Success indicates the Printer Agent was created on the destination server but not all of its attributes and drivers were included, so you should review its configuration.
 - ♦ Failure indicates that the Printer Agent was not created on the destination server.

6.9 Consolidating Data to or from a NetWare 5.1 Cluster

When a volume is cluster enabled, an object is created in eDirectory with the name of the cluster followed by an underscore followed by the volume name (for example, cluster1_vol1). For the Server Consolidation Utility to function properly with a NetWare 5.1 cluster-enabled volume, the server name followed by an underscore followed by the Volume Name object must be used in the Project Window instead (for example, server1_vol1).

This substitution can be accomplished by completing the following steps:

- 1 Start ConsoleOne, and browse to the context where the NCP™ Server object resides.
- 2 Right-click the right pane, select *New > Volume*, then type the name of the new object in the first field.

This should be the server name followed by an underscore followed by the volume name.

- 3 In the second field, browse and select the appropriate server.
- 4 In the third field, select the volume from the drop-down menu, then click *OK*.
- 5 In the Server Consolidation Utility Project Window, refresh the container where the Volume object is located to make the new object appear.
- 6 When dragging-and-dropping in the project window, use the newly created Volume object.

If you use the *clustername_volumename* object instead of creating and using the new Volume object, a critical SMDR error will occur and you won't be able to complete the consolidation process.

- 7 After the consolidation is complete, you can delete the newly created Volume object.

6.10 Consolidating Data to Novell Branch Office

Novell Branch Office (formerly Nterprise Branch Office) server is a business office management solution that reduces the costs and challenges of managing and using offices in remote locations. Novell Branch Office is server software that you can deploy on hardware at remote offices and still have the flexibility to manage from one central location at your corporate offices. Administrators and users access the features they need through the Internet from a Web browser.

Moving directories, volumes, or users and their associated trustees and rights to a new Branch Office server is a daunting task made easier by the Server Consolidation Utility. Moving information with the Server Consolidation Utility is faster and easier than manually entering individual users, copying files, and manually assigning their rights and trustees on a new Branch Office server.

NOTE: Anytime that a Branch Office server is rebooted, the sys: volume is recreated on the server. Because of this, the Server Consolidation Utility will not display the sys: volume on Branch Office servers.

The Server Consolidation Utility works with Novell Branch Office servers in much the same way it works with NetWare servers. However, there are a few differences in the way the Server Consolidation Utility runs in relation to Branch Office servers. This section describes the following:

- ♦ [Unlocking the Branch Office Server \(page 58\)](#)
- ♦ [Performing a Server Consolidation to a Novell Branch Office Server \(page 58\)](#)

6.10.1 Unlocking the Branch Office Server

In order to perform a consolidation to a Branch Office server, you must be logged in as Supervisor to the server. The Branch Office server does not allow supervisor rights unless the server is unlocked. When the server is unlocked, Supervisor is granted supervisor rights and the consolidation can be run.

WARNING: Do not use the Admin username and password to unlock the server. Doing so can corrupt the encrypted password and require a re-installation of the Branch Office server.

- 1 At the server console, log in by entering the Supervisor username and password.
- 2 Enter
`unlock`
- 3 When prompted, enter `y` for Yes.
- 4 To relock the server, enter
`lock`
at the server console.

6.10.2 Performing a Server Consolidation to a Novell Branch Office Server

When performing a consolidation to a Branch Office server using the Server Consolidation Utility, you will see several screens that are different from the ones displayed during a consolidation on a regular NetWare server. The different screens that require navigation are described below.

Match Up Tree Objects

The Tree-to-Tree Object Match Up screen displays. Any objects that appear in both the source and destination trees are displayed based on their class. To match up objects in a consolidation involving a Branch Office server, complete the following steps:

- 1 Select the type of objects to display from the drop-down list provided.
- 2 Check the box to the left of the object you want to match up.

To select more than one object, press and hold the Ctrl key while checking the box to the left of the objects that you want to select. You can also check the box to the left of one object, press and hold the Shift key, then check the box to the left of a second object to select those two objects and all other objects located between them in the list.

The following attributes are copied for each selected user:

- ◆ Department
- ◆ Description
- ◆ E-mail Address
- ◆ Fax Number
- ◆ Full Name
- ◆ Given Name
- ◆ Internet E-mail Address

- ◆ Location
 - ◆ Postal Address
 - ◆ Surname
 - ◆ Telephone Number
 - ◆ Title
 - ◆ Unique IDs
- 2a** (Conditional) If you selected more than one object, right-click the objects and then select *Create All Selected Objects*.
- 2b** (Optional) If you want to create users for all of the selected users, select *Yes*.
- 2c** From the drop-down list, select whether these will be Local Users or Remote Users.
- 2d** Click *OK*.
- 3** From the drop-down menu under the Destination Object heading, select the option you want:
- ◆ The object in the destination tree that has the same name as the object in the source tree
 - ◆ Don't match (object doesn't exist in the destination tree)
 - ◆ Browse
 - ◆ Create (if you are matching users)
- 4** (Conditional) If you selected Browse in **Step 3**, do the following in the Context Browser dialog box:
- 4a** Select a matching object.
- 4b** Click *OK*.
- 5** (Conditional) If you selected Create in **Step 3**, do the following in the Object Creation dialog box:
- 5a** From the drop-down list, select whether you want to create a Local User or Remote User.
- 5b** Type the new user's name in the field provided, then click *OK*
- 5c** Repeat **Step 5a** for each user you want to create.
- 6** When you have finished matching all the objects, click *Next*.
- 7** (Conditional) If you have unmatched objects, do one of the following in the Unmatched Objects dialog box that displays:
- ◆ To proceed without matching the objects, select *Yes*.
 - ◆ To go back and match up the objects before continuing, select *No*.

Refer to [“Default Server and Home Directory for Created Users” on page 53](#) to complete the consolidation.

6.11 Consolidating Data from NetWare 4 Servers

NetWare 4 servers use the IPX™ protocol exclusively and do not support TCP/IP communication. Therefore, before running a consolidation project from a NetWare 4 server to a NetWare 5, NetWare 6, or Nterprise Branch Office appliance, you must first bind IPX on the destination server and on the workstation running the Server Consolidation Utility. Otherwise, the consolidation will fail.

NOTE: Because OES Linux does not support IPX, this section does not apply if you are consolidating data to an OES Linux destination server.

6.11.1 Binding IPX on the Server

- 1 At the server console, enter

```
inetcfg
```
- 2 Select Boards, then press Enter.
- 3 Press Insert.
- 4 Select the appropriate network interface, then press Enter.
- 5 Specify a board name and slot number, then press Esc.
- 6 Select Yes to save changes, then press Enter.
- 7 To return to the main Internetworking Configuration screen, press Esc.
- 8 Select Protocols, then press Enter.
- 9 Select IPX, then press Enter.
- 10 Enable and configure IPX, then exit the INETCFG utility.

TIP: If you prefer, IPX can also be enabled on the server by adding the appropriate LOAD and BIND commands to the server's `autoexec.ncf` file.

6.11.2 Binding IPX on the Client

- 1 Access the Novell Client software and start the installation procedure.
- 2 Select the client version you want, then click *Next*.
- 3 Select the appropriate language, then click *Next*.
- 4 Select Custom, then click *Next*.
- 5 Select IP and IPX.
- 6 Click *Next > Next > Finish*.

6.11.3 Verifying IPX Is Bound on the Client

- 1 Right-click the red N on the status bar (system tray) on your workstation.
- 2 Select *Novell Client Properties*.
- 3 Click the *Protocol Preferences* tab.
If the Protocol window displays both IP and IPX, the client has IPX bound.
If the Protocol window displays only IP, then IPX needs to be bound on the workstation.

You can now proceed with your consolidation project.

6.12 Server-Based Processing

The server-based processing feature gives you the flexibility of running the file copy portion of the utility as a scripted process on the server, instead of having the workstation monitor the process. When this feature is enabled, the Server Consolidation Utility does not control or monitor the actual data copying or do any error handling. You must load an agent on each server to process the project.

This feature is primarily designed to be used in remote consolidation scenarios where the servers are located across a WAN link from the workstation. In such a scenario, there is a higher likelihood of losing the connection with the servers, which causes normal workstation-based consolidation projects to fail.

NOTE: Server-based processing does not support projects that include printer migrations. Use this feature only for data copy projects.

Because this feature is meant to be used only in specific situations, you must enable the feature in order to use it.

6.12.1 Enabling Server-Based Processing

Server-based processing is enabled from the Project Window by clicking *Project > Enable Server-Based Processing* and answering *Yes* to the prompt.

After the feature is enabled, continue to model your project as you normally would.

6.12.2 Verifying a Project for Server-Based Processing

After modeling your project, proceed with the precopy verification. With server-based processing enabled, you see an additional server-based processing dialog box that explains more about this feature. The dialog box asks you whether or not you want this project to run as a server-based process.

To have your project run as a server-based process, click *Yes*.

Two of the usual verification screens do not appear in a server-based processing project. One is the Synchronize Files and Folders dialog box, and the other is the Compare Files and Folders dialog box. If you want to perform the synchronization or comparison, you can do so after the process has run on the server. See [Section 6.12.5, “Performing Synchronization or Comparison after a Server-Based Process Project,” on page 63](#) for more information.

After the verification completes successfully, click *Proceed* in the Start Novell Server Consolidation Utility dialog box. Instead of copying data, the utility creates the files necessary for server-based processing on all appropriate servers.

When the files are ready, a dialog box displays that allows you to view the log files and close the project.

View the success log for a list of the commands you need to run on which servers. The syntax for the command is:

```
nuwagent -a "ProjectName"
```

When consolidating to a NetWare server, you run the command on the destination server. When copying data from a NetWare server to an OES Linux server, you run the command on the source server.

Click *Close* to exit the Server Consolidation Utility.

6.12.3 Launching a Server-Based Process

Consult the project's success log file for a list of which commands you need to run on which servers. The success log is located in the project folder (by default, project folders are created as subdirectories under My Documents).

The information you need is found in the "End Project Options and Warnings" section of the file. An example is shown below:

```
*****
End Project Options and Warnings.
*****
Server-based process files created on server TEST2. Launch this
process at the server console with the command: NUWAgent -a "Project01"
```

At the console of the specified server, enter the command as shown. Be sure to include the quotation marks around the project name. The command is not case sensitive.

Upon completion of the processing, you can check the status in the `sys:scu/migerror.log` file on the destination server.

IMPORTANT: Allow each server-based process to run to completion before starting another server-based process.

For security, after the processing is completed you should delete the XML script that is stored in the same folder as the project file. The script contains the administrator passwords in obfuscated form. Although the passwords are not written to the file in clear text, a knowledgeable hacker could derive the passwords from the obfuscated versions.

6.12.4 Aborting a Server-Based Process

If you need to halt a server-based process after it has started, enter these commands at the server console:

```
nuwagent kill
unload nuwagent
```

If you stop a server-based process that was copying data from NetWare to OES Linux, you must manually delete the `matchup.txt` file from the Linux server before you can rerun the server-based process.

6.12.5 Performing Synchronization or Comparison after a Server-Based Process Project

If you want to perform a post-copy file and folder synchronization, reopen the project and click *Project > Synchronized Dropped Folders*. This deletes files and folders on the destination server that do not now exist on the source server.

If you want to perform a post-copy file comparison, reopen the project and click *Project > Compare Copied Data*. This compares files and folders between the source and destination servers to ensure an accurate copy.

Consolidating Data from Windows Servers

7

When migrating data from Windows servers, the Novell® Server Consolidation Utility automates key tasks, such as copying Windows NTFS file system data to Open Enterprise Server (OES) Linux or NetWare® servers in a Novell eDirectory™ tree, migrating users, groups, and their file permissions, and assigning new user passwords.

Before beginning your Windows data migration, you should plan your consolidation project and make the necessary preparations. Perform the following tasks in the order listed.

1. [Understand Windows Consolidation Issues \(page 65\)](#)
2. [Meet System and Software Requirements \(page 66\)](#)
3. [Perform Prerequisite Tasks \(page 67\)](#)
4. [Launch Server Consolidation Utility and Create a Project File \(page 68\)](#)
5. [Model Your Consolidation Project \(page 69\)](#)
6. [Perform Precopy Verifications \(page 70\)](#)
7. [Run the Consolidation \(page 72\)](#)
8. [Perform Post-Consolidation Tasks \(page 73\)](#)

7.1 Understand Windows Consolidation Issues

Although many tasks are automated in the Server Consolidation Utility, you should consider the following issues before you get started.

- Which Windows users are accessing which files and directories, and where are those files and directories located?

This information will help you decide which Windows servers to migrate first and how many servers you will need to migrate at one time. When you migrate your users and groups, you will want to migrate all files and directories that they have access to at the same time that you migrate their User objects.

NOTE: The Server Consolidation Utility migrates only global user accounts in the selected domain. It does not migrate local accounts provided in the domain for users whose regular accounts are in another domain

- Which Open Enterprise Server (OES) Linux or NetWare servers and volumes are you going to migrate your Windows server folders to?

You should plan which servers and volumes in your destination eDirectory tree will receive each of your Windows server folders. You can select a separate location for each folder, if desired. In order to plan effectively, you will need to become familiar with the file structure on the NetWare servers in your destination eDirectory tree.

- Which Windows users and groups am I going to migrate? Which eDirectory containers on the destination eDirectory tree am I going to migrate them into?

Decide which Windows users and groups you are going to migrate, then determine whether you will need to create separate containers for your Windows users and groups in the destination eDirectory tree. When you model your migration in the Project Window, you can create any additional eDirectory containers you might need by right-clicking an eDirectory Organizational Unit.

- Will I need to modify any user trustee rights after the migration?

There are many inherent differences in the way Windows, NetWare, and Linux handle user trustee assignments. You should take these into account when migrating data between these server platforms.

For example, there is no inheritance in the Windows file system like there is in NetWare. When you copy a folder and its subfolders for which a user has rights in Windows to NetWare, that user is assigned as a trustee for every file and subfolder and the Inherited Rights Filter is turned on for every file and subfolder. This effectively prevents rights from flowing down the directory structure like they normally do in NetWare. If you want to modify that user's trustee rights after the migration, you would have to do so for each file and folder individually.

- Do any existing eDirectory User objects represent the same person in my Windows domain?

Determine whether any of your Windows users already have an eDirectory account. During the migration you will be asked if you want to search the eDirectory tree for duplicate usernames. When the Server Consolidation Utility finds identical usernames, it displays them in a table where you can choose to merge each listed Windows user with an eDirectory User object.

- How do I want to migrate information about my users and groups? Do I want to use a Template object?

For information, see [“Create a Template Object” on page 67](#).

- What if I have NTFS encrypted files that I want to copy?

The Server Consolidation Utility does not support the copying of NTFS encrypted files from Windows 2000/2003 servers. You must unencrypt the files before copying them to NetWare or Linux destination servers.

- Do I have any trusted domains?

If so, you must reassign any trusted domain permissions to the appropriate Windows users and groups after the migration is complete. Use ConsoleOne[®] to reassign all lost trusted domain permissions.

- What will I do with applications that do not run on Open Enterprise Server?

The Server Consolidation Utility does not migrate applications. After the migration, you will have to reinstall your applications on the destination server. If you have some applications that do not run on OES Linux or NetWare, you can keep a Windows server intact and use it as an application server.

If you are migrating data to from Windows to an OES Linux server, review the additional requirements and considerations in [Chapter 8, “Consolidating Data to OES Linux,” on page 75](#).

7.2 Meet System and Software Requirements

The Server Consolidation Utility is launched from the Server Consolidation and Migration Toolkit, which runs on a Windows 2000 or Windows XP Professional Edition workstation or on a Windows 2000/2003 server.

NOTE: Although the Server Consolidation Utility lets you consolidate data from Windows NT servers, you cannot run the utility on Windows NT because the Novell Client™ software no longer supports Windows NT.

See “[Workstation Requirements](#)” on page 35 for more information about system and software requirements for running the Server Consolidation Utility.

7.3 Perform Prerequisite Tasks

Perform the tasks in this section before you run the Server Consolidation and Migration Toolkit.

7.3.1 Create a Template Object

The first prerequisite task is to determine whether you want to use a Template object to migrate your NT users to the destination eDirectory tree.

A Template object defines additional eDirectory User attributes for NT users during the migration. We recommend that you use a Template object because it is an organized way to migrate your NT users to the eDirectory tree and manage them after they are there.

IMPORTANT: In order to migrate home directories, you must use a Template object.

If there is a conflict between the properties of a Template object and an NT policy, the properties of the Template object will, in most cases, take priority. For example, if a minimum password length of seven characters is specified for user Jeff in an NT policy and a minimum password length of nine characters is specified in the Template object, then when Jeff's object is migrated, the object will be created in eDirectory with a password length of nine characters.

If you want to know what additional eDirectory attributes can be defined in a Template object, run ConsoleOne and double-click a Template object to view all of the existing properties.

The last name, full name, and description of every Windows user object is always migrated and these corresponding properties from the Template object are overwritten.

If you decide to use a Template object, you can create one in ConsoleOne by clicking *File > New > Object > Template*.

7.3.2 Register the Workstation

Make sure that the workstation running the Server Consolidation and Migration Toolkit is registered within the domain that you want to migrate. If it is registered properly, continue with [Section 7.4, “Launch Server Consolidation Utility and Create a Project File,”](#) on page 68.

If you want to change the domain that your workstation is registered in, do the following.

- 1 At the workstation, right-click *My Network Places* and then select *Properties*.
- 2 Select the *Network Identification* link.
- 3 Select *Properties*, specify the computer name and appropriate domain, then click *OK*.
- 4 Reboot the workstation and launch the Server Consolidation Utility from the toolkit again; then continue with the next section, [Launch Server Consolidation Utility and Create a Project File](#).

7.4 Launch Server Consolidation Utility and Create a Project File

The Server Consolidation Utility is a Windows program that is launched from the Server Consolidation and Migration Toolkit.

- 1 If you have not already done so, start the Server Consolidation and Migration Toolkit.

By default, the toolkit is installed in `c:\program files\novell server consolidation and migration toolkit`. You can access it by clicking *Start > Programs > Novell Server Consolidation and Migration Toolkit > Novell Server Consolidation and Migration Toolkit*.

- 2 Read the Welcome page, then click *Create or Open Project*.
- 3 Select Windows NT Server (NT Domain), then click *Next*.
- 4 Read the About page, then click *OK*.
- 5 Do one of the following:
 - ♦ To start a new consolidation project, click *Create a New Project > OK*. Then continue with [Step 6](#).
 - ♦ To open an existing project, click *Open an Existing Project > OK*, select the project you want to work on, and then click *Open*. Then skip to [Step 8](#).
 - ♦ To open the last project you worked on, click *Open Last Project > OK*. Then skip to [Section 7.5, “Model Your Consolidation Project,” on page 69](#).

The Server Consolidation Utility uses a project (.mdb) file to record your intended actions. The actions are recorded so you can execute them upon completing the project or save the project file and execute the actions later.

- 6 Type a project filename in the field provided.

The filename can be up to 64 characters long and can include any character except \ * ? < > | “ / . The project name also serves as the project’s folder name, so you might want to keep it short. The project folder stores the log files and other files associated with the project.
- 7 (Conditional) If you want to store the project files in a location other than the default location shown, click *Browse* and navigate to the desired location. Then click *OK*.

By default, the Server Consolidation Utility saves your project in a subdirectory of My Documents.

- 8 Verify that the Windows domain that appears in the grayed-out text field is the domain that you want to migrate.

The Server Consolidation Utility automatically displays the domain that your workstation or server is a member of.

You can change the domain that the workstation running the utility is registered in. To do this, exit the utility and follow the instructions in [“Register the Workstation” on page 67](#).

- 9 Select your destination eDirectory tree from the drop-down list, then click *Next*.

The destination eDirectory tree is the eDirectory tree that you want to migrate your Windows server data to.

If you are not logged in to your eDirectory tree, the eDirectory tree name will not appear in the drop-down list. If this is the case, click the *Login* button to log in to your eDirectory tree. After you are logged in, the eDirectory tree name automatically appears in the drop-down list.

- 10** Decide whether you want Server Consolidation to find any User objects in your Windows domain and in the destination eDirectory tree that have the same name, select *Yes* or *No*, then click *Next*.
- 11** To create and save your consolidation project, click *Create*.
- When a project is created and saved, the Server Consolidation Utility creates a file that contains the success and error logs of your project; these logs contain the details of what took place during the consolidation.
- 12** (Conditional) If you selected *Yes* to find User objects with identical names in **Step 10**, continue with **Step 12a** to resolve name conflicts. If you selected *No*, skip the rest of the steps in this section and go to **Section 7.5, “Model Your Consolidation Project,” on page 69**.
- 12a** To select an eDirectory container on the destination eDirectory tree, click the *Browse* button.
- 12b** Browse the tree and select an eDirectory container, then click *OK*.
- 12c** To begin searching for duplicate usernames, click *Next*.
- 12d** Decide what you want to do with Windows users that have the same name as eDirectory users.
- You have the following options for each listed Windows user:
- ◆ Merge the Windows user with the displayed eDirectory user. Simply leave that user as it is displayed in the table and continue with the next listed Windows user.
 - ◆ Merge a Windows user with a different eDirectory user. Click the arrow by the eDirectory username to view a drop-down list containing all the eDirectory users that have the same username (including contexts) as this Windows user. Select one of the eDirectory names and continue with the next listed Windows user.
 - ◆ Do not merge the Windows user with any of the matching eDirectory users. Click the arrow by the eDirectory username to view a drop-down list, then select *Don't Merge*. Select this option only if you know that none of the listed eDirectory users represents the same person as the adjacent Windows user.
- 12e** After you have made a decision for each listed Windows user, click *Finish*.
- The Project Window will now appear and the Windows users that you chose to merge with eDirectory User objects appear automatically as dropped objects in the destination eDirectory tree.

7.5 Model Your Consolidation Project

Most of your work will be done in the Project Window, where you can drag-and-drop Windows User and Group objects into eDirectory containers, and Windows server folders into any volume or folder in the destination eDirectory tree.

The Project Window is a place to model different migration scenarios before you begin the actual migration without affecting your Windows domain or your destination eDirectory tree. All of the planning in the Project Window is done offline, meaning that items moved and created in the Project Window are not actually moved or created until you begin the migration.

TIP: For information on shared Windows folders that end with a dollar sign (\$), click anywhere on your Windows desktop, press F1, click the Index tab, then type `$shares` in the keyword text field.

The Project Window and the Using the Project Window dialog box appear after you have created the consolidation project. The three basic steps outlined in this dialog box should be performed for each consolidation project. When you are familiar with the tasks that you will be performing, click *Close* to access the Project Window and begin modeling your migration project.

Dragging-and-Dropping the Domain Info Object

To perform a consolidation from a Windows domain, you must drag-and-drop the Domain Info object from the left pane of the Project Window to an eDirectory container in the right pane of the Project Window.

Other Project Window Options

Review the following tips to help you organize your migration project and use the Project Window more effectively.

- ◆ **Creating a New eDirectory Organizational Unit or Folder:** To create a new eDirectory Organizational Unit (OU), right-click the parent eDirectory Organizational Unit or folder and then select *New Organizational Unit* or *New Folder*.
- ◆ **Viewing a Description of the Objects in the Project Window:** To see a short description of what an icon represents in the Project Window, right-click an eDirectory object and then select *What's This?*
- ◆ **Backing Out a Dropped Object:** To return a dropped object to its original position, right-click a dropped Windows object in the domain or the destination eDirectory tree and then select *Back Out Dropped Object*.
- ◆ **Finding Out Where a Dropped NT Object Came From:** To find out where a dropped object was located in the Windows domain, right-click a Windows object and then select *Where Did It Come From?* When dragging-and-dropping objects, this will help you remember where a dropped object was previously located in the domain.

When you are satisfied with where you have dropped your Windows server folders, users, and groups in the eDirectory tree, you can proceed to verify your consolidation project to resolve any potential problems before migrating your Windows data.

7.6 Perform Precopy Verifications

After you have modeled your consolidation in the Project Window, you should verify that the proposed locations for these new objects do not conflict with existing names, rights, name spaces, etc., in the eDirectory tree.

Remember, you have simply created a model of how you want to copy the Windows data to the destination servers and volumes; no data has yet been migrated. Dragged-and-dropped items appearing in the eDirectory tree are merely assigned to be copied to that area in the eDirectory tree. Objects are not actually copied until you begin the consolidation process. When migrated, Windows User objects are converted to eDirectory objects and placed in the destination eDirectory tree.

Because a similar verification process is run when you begin the actual consolidation, running the precopy verification process prior to consolidation is not mandatory. However, catching any critical errors or warnings now will speed up the verification process during the consolidation.

- 1 From the Server Consolidation Utility menu, select *Project > Verify and Copy Data* or click the *Do the Consolidation* button on the toolbar, then click *Next*.

- 2 Read the Welcome page, then click *Next*.
- 3 If you want to apply a Template object to newly created eDirectory users, browse the tree, select the Template object from the tree view, and then click *Next*.

If you do not want to use a Template object, uncheck the box, then click *Next*.

To migrate home directories, you must use a Template object when migrating your Windows users to the destination eDirectory tree. Make sure a Home Directory property is defined for the Template object you are using.

TIP: If you have not created a Template object but you want to use one now, save the project, go to ConsoleOne[®], and create the Template object. Next, launch the Server Consolidation Utility again and click Open Last Project. Then restart this migration procedure again starting with **Step 1**.

- 4 Decide how you want to handle any duplicate filenames between the Windows domain and the destination eDirectory tree, select one of the following, then click *Next*:
 - ♦ **Don't Copy Over Existing Files:** The file on the source server is not copied and the file on the destination server is not replaced.
 - ♦ **Copy the Source File If It Is Newer:** If the file on the source server is newer than the one on the destination server, the file on the destination server is replaced.
 - ♦ **Always Copy the Source File:** The file on the source server always replaces the file with the same name on the destination server.
- 5 Decide how you want to handle passwords for your Windows users, select one of the following, then click *Next*:
 - ♦ **Assign the Same Password to All Users:** The utility will assign the same password to all migrated users.
 - ♦ **Assign a Randomly Generated Password to All Users:** The utility will randomly generate passwords, assign them, and then store the passwords it assigns in a file that it creates, named *project_name_out.txt*. This file is saved in the same directory where your consolidation project is located.
 - ♦ **Read Passwords from a File:** The utility will migrate the current Windows passwords to the destination eDirectory tree by reading them from a text file. You must create the text file containing the Windows passwords before you begin the migration.

For more information on how to create this file, click the *Help* button.
- 6 Set Windows consolidation options by checking or unchecking the check boxes next to the following options and then click *Next*:
 - ♦ **Copy File Permissions:** Normally, the utility migrates file and directory permissions. If, for some reason, you want to reassign file and directory permissions, you can choose to not copy the file and directory permissions here and then assign them later with ConsoleOne.
 - ♦ **Copy Everyone Permissions:** The eDirectory container that you drop the Windows Domain Info object into will be assigned the permissions that were associated with group Everyone. If you are migrating the Everyone permissions, be sure to drop the Domain Info object high enough in the eDirectory tree so that all Windows users will inherit those permissions.

TIP: Every new folder that is created in the Windows domain automatically receives the Everyone permissions by default.

- ♦ **Restart Option:** Normally, this information is not erased; however, if you have previously run a consolidation program and deleted the eDirectory objects from the destination tree, and you are planning to start over and migrate the same domain again, check this check box.

When you migrate users and groups from Windows, the Server Consolidation Utility stores a table of Windows names and associated eDirectory usernames in the registry of the Primary Domain Controller (PDC). The utility then uses this information when migrating the file system so that it can remember where each user and group has been migrated to in the destination eDirectory tree. By storing this information, the utility can assign the correct file permissions to the appropriate users.

- 7 To begin the verification, click *Next* in the Verify NT to NetWare Project window.
- 8 (Conditional) If prompted, resolve any naming conflicts between different-type objects, then click *Next*.
You can choose to merge different-type objects or to keep them as they are.
- 9 (Conditional) If prompted, resolve any naming conflicts between same-type objects, then click *Next*.
You can choose to merge same-type objects or to keep them as they are.
- 10 (Conditional) If prompted, verify that you do not want to migrate the listed Windows users and groups, then click *Next*.

If you migrated all of your users and groups, you will not see this dialog box.

Otherwise, this step must be done three times—once each for your Windows local groups, global groups, and users that were not dragged and dropped into the destination eDirectory tree.

If you have made a mistake, click *Cancel* to return to the Project Window. Then drag-and-drop the objects, go to the toolbar, click *Project > Verify and Copy Data*, then restart this procedure with [Step 1 on page 70](#).

- 11 Resolve any critical errors.

Warnings or noncritical errors can be resolved after the consolidation. To resolve a critical error or warning, read the description in the text field located beneath it. This description should give you a good idea of what could be the possible cause and a suggestion for fixing it.

If you are copying data from a Windows 2000/2003 server, you might see several “Group membership from another domain” errors stating that a particular group or user will not be migrated. These errors are informational; the specified group or user accounts have no purpose or function in OES.

7.7 Run the Consolidation

- 1 Do one of the following:
 - ♦ To start the actual consolidation, click *Proceed*.
 - ♦ If you are only running the verification process at this point and want to do the consolidation later, click *Cancel > Yes* to save the changes you have made to the project file.

When you are ready to proceed with the consolidation project, relaunch the Server Consolidation Utility from the Server Consolidation and Migration Toolkit, select *Open an Existing Project*, and click *OK*. Select the project file you want to open, click *Open*,

and then follow the instructions found in [Section 7.6, “Perform Precopy Verifications,”](#) on [page 70](#), starting with Step 1.

- 2 View the error and success logs.

Continue with the next section, [Section 7.8, “Perform Post-Consolidation Tasks,”](#) on [page 73](#).

7.8 Perform Post-Consolidation Tasks

After you’ve migrated your Windows data to the destination eDirectory tree, complete the following tasks:

- ❑ Use ConsoleOne or Novell iManager to make sure that your Windows users and groups have been migrated to the correct place in the destination eDirectory tree and have the correct file and share permissions.

Keep in mind that some of the advanced NTFS permissions do not correspond to any of the NetWare or Linux rights and are therefore not migrated.

TIP: If you end up with more or fewer permissions than you planned for, enter `CACLS/?` at the DOS prompt and follow the on-screen instructions. Permissions are sometimes hidden in Microsoft utilities; therefore, running this command at the DOS prompt lets you see all of the permissions associated with your Windows objects, even the hidden ones.

- ❑ At the destination server, use iManager to view the volume that you migrated your data to and verify that it was done correctly.
- ❑ Set up iPrint. For instructions, go to the [online documentation \(http://www.novell.com/documentation\)](http://www.novell.com/documentation) for the destination server’s operating system and select iPrint.
- ❑ Check the migrated users’ home directories to make sure that they were migrated the way you expected them to be.
- ❑ Distribute the new eDirectory passwords to all of your users. The passwords are located in a password file that the Server Consolidation Utility created for you named `project_name_out.txt`. This file is located in the same directory where you saved your consolidation project.

7.8.1 Novell ZENworks and Roaming Profiles

If you are using Novell ZENworks to support Roaming Profiles, ZENworks version 6.5 and later creates an NT Roaming Profile directory the first time a migrated Windows user logs into his or her eDirectory account on NetWare. The directory is either the eDirectory User Home Directory or an explicit UNC path, as specified in the ZENworks User Package assigned to that user. The time-consuming process of having the Server Consolidation Utility copy the NT Profile directory is no longer needed and has been removed.

Consolidating Data to OES Linux

8

The Novell® Server Consolidation Utility supports Novell Open Enterprise Server (OES) on the SUSE® Linux Enterprise Server (SLES) platform as a destination server. This chapter discusses special considerations and steps that must be taken when consolidating data from NetWare® or Windows to OES Linux.

Novell recommends that you read through this information carefully and plan how to proceed before you start your OES Linux consolidation project.

- ♦ [Section 8.1, “Meet System and Software Requirements,” on page 75](#)
- ♦ [Section 8.2, “Understand NetWare-to-Linux Data Migration Issues,” on page 75](#)
- ♦ [Section 8.3, “Understand Windows-to-Linux Migration Issues,” on page 77](#)
- ♦ [Section 8.4, “Migrating iPrint Printers and Print Managers from NetWare to Linux,” on page 79](#)

8.1 Meet System and Software Requirements

Linux destination servers must be installed and running Open Enterprise Server with the following components enabled:

- ♦ Novell eDirectory™
- ♦ Novell NCP™ Server for Linux
- ♦ Novell Storage Services™ (NSS), if copying data from NetWare source servers
- ♦ Novell Storage Management Services™ (SMS)
- ♦ Novell Linux User Management (LUM)

For more information on installing and configuring OES on Linux, see the *OES 2: Linux Installation Guide*.

If you are copying data from NetWare source servers, one or more NSS volumes must be created and configured on the Linux destination server. These are the only volumes where you can drop folders in the Server Consolidation Utility project window. For more information on creating NSS volumes, see the *OES 2: NSS File System Administration Guide*.

If you are copying data from Windows source servers, you can drop folders onto NCP volumes. For more information on NCP volumes, see the *OES 2: NCP Server for Linux Administration Guide*.

8.2 Understand NetWare-to-Linux Data Migration Issues

Before using the Server Consolidation Utility to copy data from NetWare servers to OES Linux servers, you should be aware of the issues described in this section.

8.2.1 Use of SMS to Copy Data

The Server Consolidation Utility uses Storage Management Services (SMS) as its file copy engine to copy data from NetWare servers to OES Linux servers. Using SMS preserves as many of the NetWare trustee rights and file/directory attributes as possible.

8.2.2 New attrib Command for OES Linux

If you copy files from a NetWare source server that have the Delete Inhibit attribute set, the files cannot be deleted from the destination NSS volume on an OES Linux server using the standard Linux or Windows utilities.

Novell has provided a new `attrib` command for OES Linux that lets you remove the Delete Inhibit attribute, as well as set or modify other supported NetWare attributes on Linux. For more information, enter `attrib -h` to view the online help.

8.2.3 Creation Dates Change from NetWare to Linux

After copying files from a NetWare source server to an OES Linux destination server, the creation dates for those files change to today's date rather than the date the files were originally created. Linux doesn't provide a Creation Date field for file systems, so NCP Server displays the current date.

8.2.4 Migrating Macintosh Files from NetWare to Linux

If the Server Consolidation Utility encounters files with Macintosh* resource forks (supported in early versions of NCP), the resource forks are not copied to the Linux server. However, if you use Macintosh-based backup/restore tools that use AppleTalk* Filing Protocol (AFP) when migrating Macintosh files to a Linux server, you won't lose any of the Macintosh-specific metadata.

8.2.5 NFS Name Space Required when Copying Data from TFS on NetWare to NSS on Linux

If you need to transfer data from a traditional NetWare file system (non-NSS) volume on NetWare to an NSS volume on OES Linux, you must first install NFS name space support on the traditional NetWare volume.

Without the NFS name space loaded, the Server Consolidation Utility file copy fails with an error message indicating there is not enough disk space.

8.2.6 Disable Server Consolidation Utility File and Folder Comparison

Novell recommends that you do not enable the Compare Files and Folders verification when copying data from NetWare to Linux. If you do enable this check, you should expect to see many errors reported in the log file, because of the inherent differences in how Linux stores file system data.

8.2.7 Enable UTF-8 Encoding on NCP Client for SCU

When using the Server Consolidation Utility to copy data from servers storing double-byte character set data (Japanese, Korean, and other non-ASCII characters) or extended ASCII character data (multinational characters), you must enable UTF-8 support in the Novell Client™ 4.91 for Windows 2000/XP. (UTF-8 support is turned off by default.) This prevents trustees and ownerships from being lost.

8.2.8 Understanding the Need for Linux Enabling Users

When you use the Server Consolidation Utility to copy data from NetWare servers to NSS volumes on an OES Linux server, it transfers the NetWare trustee rights and supported file and directory attributes along with the files. If you are using the Novell Client (NCP) to access NSS data, it is no longer necessary to Linux enable the users to preserve file ownership. All ownership information is now tracked correctly during a migration, except for the deleter ID information in connection with the Salvage feature in NSS.

For other types of access, in order to preserve file ownerships the users must be Linux enabled (also known as LUM enabled because the process involves the Linux User Management service in OES). To become Linux or LUM enabled, an eDirectory User object must be associated with an eDirectory Group object, which is in turn associated with an eDirectory Linux Workstation object that represents the physical Linux workstation/server. The Group object is necessary because NSS on Linux uses Virtual File Services (VFS), which requires both a User ID and a Group ID to authorize access. For a more thorough discussion of the issues involved with Linux enabling users for OES Linux, see the *OES 2: Novell Linux User Management Technology Guide*.

To maintain file ownership information when copying data from NetWare volumes to NSS volumes on OES Linux for non-NCP access, Novell recommends that you Linux enable your users before copying their data.

IMPORTANT: If you Linux enable users after their data has been copied to an OES Linux server, the file ownerships might not be re-established immediately on the destination NSS volume. If you use the `nambulkadd` command to Linux enable your users, the user IDs are updated immediately upon completion of the command. However, if you Linux enable users individually with iManager, ConsoleOne, or the `namuseradd` command, it could take up to four hours before the user IDs are updated. You can have the update ID process occur immediately by running the `refreshids` command after Linux enabling the user.

You can Linux enable users either one user at a time using ConsoleOne® or iManager, or in bulk using the `nambulkadd` command. For more information, see the *OES 2: Novell Linux User Management Technology Guide*.

8.3 Understand Windows-to-Linux Migration Issues

You can use the Server Consolidation Utility to copy data from Windows servers to either NSS or Linux traditional file system volumes such as Reiser or ext3 on an OES Linux server. The Windows users and groups are transferred into eDirectory and their permissions are converted to NSS or Linux equivalents.

If NCP Server for Linux is installed on the server, NCP clients such as the Novell Client for Windows and the Novell Client for Linux can access the data on the Linux volumes.

8.3.1 Setting Up an NCP Volume on a Linux Traditional File System

If you want to copy data to a Linux traditional file system such as Reiser or ext3, you must first set it up as an NCP volume using either the NCPCON utility or Novell Remote Manager.

To do this using NCPCON:

1 Create a mount point on the Linux Reiser or ext3 partition.

2 At the shell prompt, enter

```
ncpcon create volume volume_name mount_point
```

For *volume_name*, substitute the name you want for the volume. For *mount_point*, specify the mount point you created in **Step 1**.

The NCP volume is now displayed in the Project Window when you run the Server Consolidation Utility.

8.3.2 File/Directory Rights and Attributes Supported on Linux

NCP Server for Linux provides the same trustee rights for both NSS and traditional Linux file systems. These are the same rights that exist for the NSS file system on NetWare:

- ◆ Read
- ◆ Write
- ◆ Create
- ◆ Erase
- ◆ Modify
- ◆ File Scan
- ◆ Access Control
- ◆ Supervisor

NCP Server for Linux supports the following NetWare file and directory attributes on both NSS and traditional Linux file systems on Linux:

- ◆ Read Only
- ◆ Hidden

Other NSS file and directory attributes are supported on NSS volumes on Linux. You can use the `attrib` command to view and modify these attributes. However, they are not viewable through any NCP clients.

The NCP Extended Attributes (supported in early versions of NCP) are not supported on Linux.

8.3.3 Reassigning Trustee Rights after the Migration

Because of the inherent differences between the Windows, NetWare, and Linux file systems, you might have to reassign trustee rights after copying Windows data to an OES Linux or NetWare server.

If you have a Windows or Linux workstation running the Novell Client software, you can use the Novell RIGHTS utility to change trustee rights assignments and Inherited Rights Filters. The RIGHTS utility lets you make changes recursively within the directory structure. See “RIGHTS” in the *OES 2: Utilities Reference* for more information.

To change trustee assignments on an OES Linux NCP volume, use the NCPCON utility. This utility does not change Inherited Rights Filters and does not do recursion, but you can script it with bash to perform the recursion if needed. See “Managing File System Trustees, Trustee Rights, and Attributes on NCP Volumes” in the *OES 2: NCP Server for Linux Administration Guide* for more information.

8.4 Migrating iPrint Printers and Print Managers from NetWare to Linux

This section explains how to copy existing iPrint Printer Agents or Print Managers (PSMs) running on NetWare 6.5 to iPrint Print Managers running on OES Linux.

If you want to consolidate NDPS Printer Agents from one NDPS Print Manager to another in a single-tree NetWare-to-NetWare consolidation, see [Section 6.8, “Consolidating NDPS Printer Agents,” on page 54](#).

If you want to migrate a print system running on Windows NT or Windows 2000/2003, use the iPrint Migration Utility for Windows Printing. This utility is available separately and can be downloaded from the [Novell Support Web site \(http://support.novell.com/tools/csp\)](http://support.novell.com/tools/csp).

When moving an iPrint print system from NetWare to OES Linux, be aware of the following points:

- ◆ The Server Consolidation Utility lets you copy existing iPrint printers running on NetWare to iPrint Managers running on OES Linux. NDPS printers can also be copied to a Print Manager on an OES Linux server, provided they are iPrint enabled first.
- ◆ Using the Server Consolidation Utility interface, you can merge the Printer Agents associated with an existing Print Manager on NetWare with the printers associated with an existing Print Manager on Linux. You can also create new Print Managers on Linux. With careful planning, you can easily migrate printers with no interruption to your users.
- ◆ The utility does not move nonreferenced objects such as driver profiles and custom banners.
- ◆ Print Managers and Printer Agents are not removed from the source server when you copy them. The print configuration is copied to the destination, not moved. When you are finished migrating your print system, you must manually delete the source Print Managers and Printer Agents.
- ◆ When you move the Print Manager or Printer Agents to an OES Linux server, the printer objects are copied to the same eDirectory container as the Print Manager, even if the printer objects are distributed throughout the tree. This helps the Print Manager run more efficiently and avoids unnecessary calls to eDirectory for printer information.

- ◆ If you made changes to the `iprint.ini` file (located in `sys:\apache2\htdocs\ippdocs\`), you should copy the file to `/var/opt/novell/iprint/htdocs/` on the destination server.
- ◆ iPrint maps and custom images are not migrated. If you are hosting these on your iPrint server, you need to copy them to the destination server.

8.4.1 Requirements

During the migration, printer drivers are copied from the Resource Management Service (RMS) to the iPrint Driver Store (IDS).

- ❑ The Resource Management Service used by the Print Manager on a NetWare server must be up and running
- ❑ The iPrint Driver Store on an OES Linux server must be up and running
- ❑ You must use an eDirectory user with sufficient rights to access the source and destination print system and eDirectory access permissions
- ❑ DNS must be properly configured for the existing print system

8.4.2 Using the Utility to Migrate iPrint Print Managers and Printer Agents

To migrate your iPrint print system, complete the following tasks using the Server Consolidation Utility, which is launched from the Server Consolidation and Migration Toolkit.

1. If you have not already done so, deploy the iPrint Client on the workstation.

The Server Consolidation Utility checks for the correct iPrint Client version and warns you if you need to install a newer version.

For more information, see “[Windows: Distributing the iPrint Client](#)” in the *OES 2: iPrint Administration Guide for NetWare*.

2. Start the Server Consolidation and Migration Toolkit and select the following options:
 - ◆ *NetWare or Open Enterprise Server (eDirectory)*
 - ◆ *Consolidate and Copy Data and Printing between Servers*
3. When the Server Consolidation Utility launches, set up your project and select the desired NetWare source server and OES Linux destination server.
4. In the Project Window, do one of the following to model your iPrint migration.

IMPORTANT: Make sure both Print Managers are running on the source and destination servers before you attempt to drag-and-drop a PSM or its associated Printer Agents. If you don't do this, you will get unpredictable results.

- ◆ Drag-and-drop a Print Manager from the NetWare source tree onto a container in the Linux destination tree.

This action implies that you want to create a new Print Manager in the specified container. You are prompted to enter additional information pertaining to the new Print Manager:

eDirectory Server	The server that all eDirectory (LDAP) calls are sent to. You can use the Browse button to locate this object in the tree.
Driver Store	The iPrint Driver Store on Linux that is to be associated with the new Print Manager. You can use the Browse button to locate this object in the tree.
DNS Name or IP Address	It is recommended that you associate the Print Manager with the DNS name of the OES Linux server that the Print Manager is loaded on. The other option is to specify the IP address of the OES Linux server. You must manually type the address; there is no browser for this information.

- ◆ Drag-and-drop individual Printer Agents from a Print Manager on NetWare onto a Print Manager on Linux.

This action implies that you want to copy the Printer Agents from the source Print Manager to the specified destination Print Manager.

IMPORTANT: Dropping Printer Agents from a single Printer Manager to multiple Print Managers requires users to delete and reinstall the dropped iPrint printers.

- ◆ Drag-and-drop a Print Manager onto an existing Print Manager on Linux.

This action implies that you want to copy all the Printer Agents for the source Print Manager to the specified destination Print Manager. If you have already dropped individual Printer Agents for the Print Manager, you are warned that this is not allowed. You can back out the individually dropped printers and try the operation again.

5. Click *Project > Verify and Copy Data* to start the migration.

The utility checks to ensure that it can communicate with the source Resource Management Service and the destination Driver Store and that the moves you want to make are valid.

To ensure a smooth migration, resolve all errors that are displayed with the results of the verification process before you proceed.

6. When you are ready to make the changes, run the consolidation by following the prompts.

During the migration of secure printers, you might be prompted to enter the password for the secure printer, if you have not selected the Remember Your Password option in the iPrint Client.

7. Upon completion, you should review both the error and success log files.

The log file uses three possible states to identify the success of the migration of each Print Manager and Printer Agent:

- ◆ Success indicates the Print Manager or Printer Agent was created on the destination server with all of its attributes and drivers.
- ◆ Partial Success indicates the Print Manager or Printer Agent was created on the destination server but not all of its attributes and drivers were included, so you should review its configuration.
- ◆ Failure indicates the Print Manager or Printer Agent was not created on the destination server.

Configuring DNS

When you are finished migrating your iPrint system, you need to configure your DNS server to point to the iPrint server on Linux in order for users to be able to print. For more information, see “[Setting Up DNS for the Print Manager](#)” in the *OES 2: iPrint Administration Guide for NetWare*.

Troubleshooting Server Consolidations

9

Refer to the appropriate section if you are having trouble.

9.1 Troubleshooting the Server Consolidation Utility

- ♦ “General Troubleshooting” on page 83
- ♦ “Contents of the eDirectory Container Can’t Be Listed” on page 84
- ♦ ““SMDR Not Communicating” or “Error Opening Connection to SMDR” Errors” on page 84
- ♦ “NDPS Printer Agents Don’t Migrate” on page 90
- ♦ “NUWAGENT Won’t Load (NetWare 4.2 Only)” on page 90
- ♦ “Server Consolidation Performance Problems” on page 85
- ♦ “Volume Contents Do Not Display” on page 84
- ♦ “Server Consolidation Utility Copies Incomplete Data Files” on page 86
- ♦ “Errors When Connecting to a NetWare 4 Server” on page 88

General Troubleshooting

Explanation: In general, when troubleshooting errors in the Server Consolidation Utility, first ensure that the latest `smdr.nlm` and `tsafs.nlm` modules are loaded on the source and destination NetWare servers.

The log files contain detailed information about what was successfully copied (success log) and what was not copied and why (error log). The log files are written to the project folder, which is located by default in My Documents.

Trustees Not Copied in a Tree-to-Tree Migration from NetWare to OES Linux

Problem: During a data copy from a NetWare source server to an OES Linux destination server in a different tree, the user and group trustees of the copied files are not assigned. This can happen when a required library is not automatically copied to the OES Linux server when the Server Consolidation Utility is run.

The `libscuagent.so` library is required when the source and destination servers are in different trees. If this library is not present on the OES Linux server, the Server Consolidation Utility is not able to perform the trustee matching.

Action: After you install SCMT on the workstation, the `libscuagent.so` file is located in `C:\Program Files\Novell Server Consolidation and Migration Toolkit\MigWin32\Products\scuagent`. You must copy this file from the workstation to the following path on the OES Linux destination server:

```
/usr/novell/sys/scu/libscuagent.so
```

The `libscuagent.so` file is automatically deleted from the destination server after the data consolidation process is completed. You must copy the library file to the OES Linux destination server again before starting another Server Consolidation Utility project.

Utility Hangs when Selecting Source and Destination Trees

Problem: When running the Server Consolidation Utility on a Windows 2000 workstation, the application hangs when selecting the source and destination trees for the consolidation project.

Action: Install Windows 2000 SP 2 or later on the workstation to correct this issue.

Contents of the eDirectory Container Can't Be Listed

Possible Cause: Your workstation is not running the latest support pack update of the Novell® Client™ for Windows 2000/XP version 4.91.

Action: Download the latest version of the Novell Client 4.91 software from the [Novell Downloads page \(http://www.novell.com/download\)](http://www.novell.com/download) and install it on your workstation. See “**Workstation Requirements**” on page 35 for other workstation requirements.

Volume Contents Do Not Display

Problem: No data appears in the Volume object after dropping a container into a volume that has not been opened.

Action: Map a drive to the volume from the workstation.

“SMDR Not Communicating” or “Error Opening Connection to SMDR” Errors

Possible Cause: The Storage Management Data Requester (SMDR) and Target Service Agent (TSA) are not loaded on either the source or the destination server, or the `sys:etc/hosts` file does not contain the server IP addresses, or Service Location Protocol (SLP) is not properly configured.

Action: Check to see if `smdr.nlm` is running on a NetWare® server by entering `m smdr` at the server console.

To check if the SMDR module is running on an OES Linux server, enter `pgrep smdr` at the shell prompt.

If SMDR is not loaded on the source or destination server, manually load it. On a NetWare server, enter `load smdr`. On an OES Linux server, enter `/etc/init.d/novell-smdrd start`.

Action: Check to see if `tsafs.nlm` is running on a NetWare server by entering `m tsa*` at the server console.

To check if the TSAFS module is running on an OES Linux server, enter `opt/novell sms/bin/smsconfig -t` at the shell prompt.

If TSAFS is not loaded on the source or destination server, manually load it. On a NetWare server, enter `load tsafs`. On an OES Linux server, enter `/opt/novell/sms/bin/smsconfig -l tsafs`.

Action: On a small network with three or fewer servers, you do not need to configure SLP. Instead, edit the `sys:etc/hosts` file on the source server to contain the IP address and DNS name of the destination server, and vice versa on the destination server.

After editing the `sys:etc/hosts` files, you might need to reload `smdr.nlm` and `tsafs.nlm` on your NetWare servers.

Action: Enter `display slp services smdr.novell// (svcname=ws==source_server_name)` (replace `source_server_name` with the name of your source server) at the destination server console.

If it appears there is a problem with SLP, go to [Novell's Knowledgebase \(http://support.novell.com/search/kb_index.jsp\)](http://support.novell.com/search/kb_index.jsp) and search for SLP-related configuration information.

“Specified TSA Does Not Exist” Errors When Copying Data from NetWare to OES Linux

Possible Cause: The SMDR daemon needs to be restarted on the OES Linux server.

Action: Enter `rcnovell-smdrd restart` at the Linux server's shell prompt.

Trustee Rights Restored to Wrong User in Tree-to-Tree Copy

Problem: In a tree-to-tree consolidation scenario, it is possible to have users with the same Common Name (CN) that exist in multiple contexts in the destination tree (for example, `jdoe.users.novell`, `jdoe.mktg.novell`, and `jdoe.sales.novell`). If you do not match up the user in the source tree with the desired user in the destination tree, SMS automatically copies trustee rights to the first user match it finds.

Action: Before running the consolidation, be sure to match up the users in the source tree with the correct users in the destination tree.

Server Consolidation Performance Problems

Explanation: The performance of a project can be determined by looking at the success log after a project completes. The success log gives the amount of time the project took to complete and the amount of data copied.

There are several factors that determine the performance of the file copy. It is also important that each server be updated to the latest Support Pack to ensure you have the latest performance enhancements for SMS™.

Possible Cause: Heavy traffic on the network.

Action: Speeds can be increased by connecting servers and the workstation to a dedicated switch.

Possible Cause: A mismatch in duplexing among servers, switches, and the workstation.

Action: Make sure all hardware is set to either full duplex or half duplex. Setting all hardware to half duplex might result in greater performance than full duplexing.

Possible Cause: Virus scan software running on the source or destination servers.

Action: Turn off any virus scanning software on the source or destination servers to increase the speed of the consolidation. Turn the virus scanning software back on after the consolidation completes.

Possible Cause: An incorrect version of `smdr.nlm` is loaded on a NetWare server.

Action: At the NetWare server, unload `smdr.nlm`, then load the version of the `smdr.nlm` file that comes with the newest Support Pack.

Possible Cause: Small file sizes.

In general, the larger the file sizes, the better the performance. Copying a single 500 MB file will be significantly faster than copying five thousand 100 KB files.

Possible Cause: Hardware configuration.

The performance of the Server Consolidation Utility varies according to the environment. Using a 100 MB LAN, tests have measured speeds ranging from 3 to 15 GB per hour, with the most common speed being between 5 and 8 GB per hour. You should check the performance of your LAN before copying very large amounts of data.

The Server Consolidation Utility copies data at a faster rate than a Windows file copy.

Server Consolidation Utility Copies Incomplete Data Files

Problem: Files copied to the destination server have any of the following characteristics:

- ◆ Destination is a 0-byte file.
- ◆ Creation time and date are incorrect when compared to the source server.
- ◆ Modification time and date are incorrect when compared to the source server.
- ◆ File was not completely copied. (This would be indicated by the destination file being smaller in size than the source file.)

Action: Use the latest SMDR and TSAFS modules on the source NetWare server.

Path Size Limitations for Data Copy

Problem: Because the Server Consolidation Utility is a Windows-based program, it is subject to the path size limitation of Windows, which is 255 characters. If you have data where the path name is longer than 255 characters, the Server Consolidation Utility cannot copy data that exceeds this maximum.

Action: One workaround is to reorganize the data on your source server so that the path size does not exceed 255 characters.

Action: Another possibility is to use the server-based processing feature to copy the data. Since the workstation does not monitor the file copy process, it is not

subject to the path size limitations of the workstation. However, the server-based processing copy is limited by the supported path size of the server operating system. For example, if the server allows path sizes up to 1024 characters, then data is copied up to the 1024-character path limit.

“Trustee Not Restored” Errors When Copying Double-Byte Character Data Tree-to-Tree

Explanation: In a tree-to-tree consolidation, the Server Consolidation Utility stores the full distinguished names of trustees in a file that is stored on the destination server. This file is stored using the local code page of the destination server. Object names containing double-byte characters (Japanese and other oriental languages) may not match if the local code page versions on the source and destination servers do not match exactly.

Problem: When the object names do not match between the source and destination server, you might see messages such as “Trustee *name* was not restored for *path*, because the trustee IDs are different.”

Action: Because of known limitations with code pages, this issue cannot be resolved in the current version of the Server Consolidation Utility. Novell plans to address this in a future release of the Server Consolidation and Migration Toolkit.

Copying Double-Byte Character Data from NetWare 5.1 to OES Linux

Problem: In NetWare 5.1, SMS uses the double-byte or multi-byte character set (MBCS) format to back up Japanese data. NSS and Linux use Unicode. In order for MBCS data to be copied to an NSS volume on an OES Linux server, conversion must take place from MBCS to Unicode* and certain Japanese characters might not come through intact.

Action: If you have double-byte character data on a NetWare 5.1 server that you want to copy to OES Linux, follow the instructions in [Chapter 13, “Copying Double-Byte Character Set Data,”](#) on page 121.

Errors When Migrating a Cluster Volume

Problem: When using the Server Consolidation Utility and migrating data from or to a cluster volume, an error (0xFFFDAE) might occur if your cluster server nodes are spread throughout different eDirectory contexts. If the server (from the SCU project) that holds the mounted cluster volumes does not have rights to the cluster Virtual Server object and the cluster-enabled Volume object, and does not have a Read/Write replica of the partition these objects reside in, then a failure fffdae is displayed on the verification screen of the Server Consolidation Utility.

Action: To resolve this, add the server as a trustee of the context that contains the Virtual Server and Cluster Volume objects. The default rights assigned when adding the trustee are sufficient.

Problem: When migrating data to or from a NetWare 5.1 cluster volume, the copy fails with a critical error: “Error opening connection to SMDR.”

Action: For the Server Consolidation Utility to function properly with a NetWare 5.1 cluster-enabled volume, you must use the server name followed by an underscore followed by the Volume Name object (for example, server1_vol1).

For details, see [Section 6.9, “Consolidating Data to or from a NetWare 5.1 Cluster,”](#) on page 57.

Unloading NUWAGENT.NLM on an Nterprise Branch Office Appliance

Problem: When running the Server Consolidation Utility in conjunction with an Nterprise Branch Office appliance, if an error state occurs and you are asked to unload `nuwagent.nlm`, the system might not allow you to unload the module.

Action: Perform a reboot of the Nterprise Branch Office appliance.

Errors When Connecting to a NetWare 4 Server

Problem: When attempting to connect to a NetWare 4 server, any of the following types of errors are returned:

- ◆ An error occurred opening the file. *filename* was invalid.
- ◆ Error opening connection to SMDR.
- ◆ The name spaces couldn't be checked.
- ◆ 8998 error. NWGetVolumeNumber.

Action: There are several actions to take if errors are returned when trying to connect to a NetWare 4 server, including the following:

- ◆ If your source server is NetWare 4, make sure that you have IPX™ on your client. For information on verifying IPX on your client, see [Section 6.11.3, “Verifying IPX Is Bound on the Client,”](#) on page 60.
- ◆ Add a mapped drive to the source server.
- ◆ Ensure that SLP is configured properly on the servers involved in the consolidation project.

Problem: NetWare 6.5 won't communicate with NetWare 4 during a consolidation. IPX was not installed during the NetWare 6.5 installation.

Action: Add IPX to the NetWare 6.5 server after the NetWare 6.5 installation is complete.

1 Enter `edit sys:system/autoexec.ncf` at the NetWare 6.5 server console.

2 Add the server ID of the source server and save the `autoexec.ncf` file.

Problem: IPX connection is not communicating.

Action: Ensure that there is an IPX connection to the server.

To verify that the source and destination servers can see each other via IPX:

1 On the server console of the destination server, enter `serverid xxxxx`, where `xxxxx` is the unique server ID number for the server.

2 Enter `load ipxping`.

3 Enter the internal IPX number of the source server.

- 4 Repeat this process on the source server, replacing the internal IPX number of the source server with the destination server's internal IPX number in **Step 3**.

Action: Bind IPX on the destination server.

- 1 At the destination server console, enter `inetcfg`.
- 2 Select Boards and press Enter.
- 3 Press the Insert key.
- 4 Select the appropriate network interface and press Enter.
- 5 Enter a board name and slot number, then press the Esc key.
- 6 Select Yes to save changes and press Enter.
- 7 Press the Esc key to return to the main Internetworking Configuration screen.
- 8 Select Protocols and press Enter.
- 9 Select IPX and press Enter.
- 10 Enable and configure IPX and exit the `inetcfg` utility.

TIP: If you prefer, IPX can also be enabled on the server by adding the appropriate Load and Bind commands to the server's `autoexec.ncf` file.

Action: Verify that IPX is bound on the client running the Server Consolidation Utility:

- 1 Right-click the red N in the system tray on your workstation.
- 2 Select *Novell Client Properties*.
- 3 Select the Protocol Preferences tab.

If the Protocol window displays both IP and IPX, the client has IPX bound.

If the Protocol window displays only IP, then IPX needs to be bound on the workstation.

Action: Bind IPX on the client running the Server Consolidation Utility:

- 1 Obtain the latest Novell Client software and run the installation program.
- 2 Select the appropriate language and click *Next*.
- 3 Select *Custom* and click *Next*.
- 4 Click the radio button next to one of the following two choices:
 - ♦ IP and IPX
 - ♦ IP with IPX compatibility

TIP: You can select this choice if you are running in an `scmd` environment.

- 5 Click *Next > Next > Finish*.

Action: Ensure that the correct `smdr.nlm` and `tsa.nlm` are loaded on the server.

- 1 On the server console, enter `unload smdr`.

- 2 Enter `smdr new`.
- 3 Enter `N` when asked if you want to disable NDS.
- 4 Enter `N` when asked if you want to disable SLP.
- 5 Enter `N` when asked if you want to disable SAP.
- 6 Enter `N` when asked if you want to disable name resolution through `sys:\etc\hosts` file.
- 7 Enter `load smdr` on the server console.
- 8 Enter `load tsafs` on the server console.

NUWAGENT Won't Load (NetWare 4.2 Only)

Possible Cause: `clibaux.nlm` is not loaded.

Action: Go to the server specified in the error message and at the server console, enter `load clibaux.nlm`.

NDPS Printer Agents Don't Migrate

Possible Cause: If after a migration, it appears NDPS[®] Printer Agents have not migrated, it is possible that eDirectory[™] has not had time to properly synchronize.

Action: Wait for a few minutes, then check again to see if eDirectory has been updated to reflect the Printer Agent migration.

Action: If the Printer Agents have still not migrated after allowing eDirectory to synchronize, ensure the Novell Distributed Print Services[™] Manager (`ndpsm.nlm`) is loaded on either the source or destination server.

Server Migrations

IV

- ♦ Chapter 10, “Preparing for a Server Migration,” on page 93
- ♦ Chapter 11, “Migrating Data from NetWare Servers,” on page 97
- ♦ Chapter 12, “Troubleshooting Server Migrations,” on page 111

Preparing for a Server Migration

10

To prepare your network for a server migration with the Novell® NetWare® Migration Wizard, complete the tasks in the following sections:

- ♦ [Section 10.1, “Meeting System and Software Requirements,” on page 93](#)
- ♦ [Section 10.2, “Preparing the Source Server for Migration,” on page 94](#)
- ♦ [Section 10.3, “Installing the Destination Server,” on page 94](#)

10.1 Meeting System and Software Requirements

The Server Consolidation and Migration Toolkit, which includes NetWare Migration Wizard 8.2, runs on a Windows workstation. This section provides information about the system and software requirements for the Windows workstation, the source server, and the destination server.

10.1.1 Workstation Requirements

NetWare Migration Wizard 8.2 is installed as part of the Server Consolidation and Migration Toolkit. If you have not already met the workstation requirements and installed the toolkit, see [Section 3.1, “Meeting the Workstation Requirements,” on page 27](#).

10.1.2 Source Server Requirements

The source server is the NetWare server that contains the files, volumes, and NDS®/eDirectory™ objects to be copied to the NetWare destination server.

- The source server must be running a supported version of NetWare. See [Section 1.3, “Supported Source and Destination Server Versions,” on page 18](#) for more information.
- If you want to migrate NetWare servers running eDirectory 8.8 SP2, you must update both source and destination servers to NetWare 6.5 SP7 or later. Otherwise, the destination server fails to reboot after the third step of the migration.
- If necessary, update the source server with the latest NetWare Support Pack.
Updates are available at the [Consolidated Support Pack home page \(http://support.novell.com/tools/csp\)](http://support.novell.com/tools/csp).
- You must have the Supervisor right to the source server’s file system and the source server itself. Use ConsoleOne® to verify that you have the necessary rights.

IMPORTANT: When migrating a NetWare 6.0 server with eDirectory version 8.6.2 to a new NetWare 6.0 server with eDirectory 8.6.2, you might encounter an NDS error stating you couldn’t copy an NDS object because you do not have the proper rights. This can occur even if you are logged in as Admin.

Installing eDirectory version 8.7 or later on the source server and running the migration again resolves this issue.

10.1.3 Destination Server Requirements

The destination server is the new computer that is to receive the data from the source server. This server must be installed into a temporary tree and it must be the only server in that tree.

- ❑ The destination server must be running a supported version of NetWare. See [Section 1.3, “Supported Source and Destination Server Versions,”](#) on page 18 for more information.

Migration Wizard 8.2 does not migrate to NetWare 4 or NetWare 5 destination servers.

- ❑ If you want to migrate NetWare servers running eDirectory 8.8 SP2, you must update both source and destination servers to NetWare 6.5 SP7 or later. Otherwise, the destination server fails to reboot after the third step of the migration.
- ❑ Select the Pre-Migration Server pattern when you install the destination server, as instructed in [Section 10.3, “Installing the Destination Server,”](#) on page 94.
- ❑ You must have the Supervisor right to the destination server’s file system and the destination server itself. After you install the destination server, use ConsoleOne to verify that you have the necessary rights.
- ❑ The source and destination servers must be using the same time synchronization method: Timesync (`timesync.nlm`) or NTPv3 (`xntpd.nlm`).

See the *OES 2 : Novell TimeSync for NetWare Administration Guide* and the *OES 2: Novell NTP for NetWare Administration Guide* for more information about time synchronization.

10.2 Preparing the Source Server for Migration

Before you launch NetWare Migration Wizard from the Server Consolidation and Migration Toolkit, follow these steps to prepare the source server:

- 1 Shut down any applications, products, or services (virus scan software, backup software, etc.) running on the server to be migrated.
- 2 Verify the health of eDirectory by loading DSRRepair and running the following three options:
 - ♦ Unattended Full Repair
 - ♦ Time Synchronization
 - ♦ Report Synchronization Status

If any errors are reported, resolve them before attempting the migration.

- 3 Back up eDirectory and all data on the server.
- 4 Remove any unnecessary applications, then delete and purge unused files and folders.

10.3 Installing the Destination Server

The next step is to install the destination server with the NetWare operating system that you are migrating to.

- 1 Obtain the NetWare installation software for the version of NetWare you require.
- 2 Prepare the new server hardware as recommended in the NetWare installation documentation.

3 Run the NetWare Install program.

- ♦ For instructions on installing NetWare 6.5 up to and including SP2, see the *NetWare 6.5 Installation and Overview Guide* (<http://www.novell.com/documentation/nw65/install/data/hz8pck9v.html>).
- ♦ For instructions on installing Open Enterprise Server 1 for NetWare (NetWare 6.5 SP3 through SP6), see the *OES NetWare Installation Guide* (<http://www.novell.com/documentation/oes/install-nw/data/hz8pck9v.html#hz8pck9v>).
- ♦ For instructions on installing Open Enterprise Server 2 for NetWare (NetWare 6.5 SP7 and later), see the *OES 2: NetWare Installation Guide*.

4 During the installation, make sure that you do the following:

- ♦ As you create volumes, verify that you have enough room on your destination server to accommodate your source server data.

If you are migrating compressed volumes to uncompressed volumes, Migration Wizard decompresses the volumes during the migration. Make sure you have enough room on the uncompressed volume to accommodate the source volumes after they are decompressed.

- ♦ Select the Pre-Migration Server pattern.
- ♦ Assign a different IP address to the destination server than is assigned to the source server.
After the migration completes and the source server is taken offline, you can change the destination server's IP address to match what had been assigned to the source server.
- ♦ Assign the destination server a temporary name and install it into a new temporary eDirectory tree.

You can name the server and tree anything you want (provided the names do not conflict with any existing server or tree on the network), because they are only temporary and cease to exist after the migration is complete.

IMPORTANT: The temporary server name and temporary tree name must not be the same as the source server's name or tree name; otherwise, the destination server cannot assume the identity of the source server after the migration.

5 (Conditional) If the destination server is running NetWare 6.5 or OES NetWare, you must disable the Universal Password feature until the migration completes.

Universal Password is disabled by default on NetWare 6.5 and OES NetWare.

10.4 Tips for a Successful Migration

- ♦ When you run the NetWare Migration Wizard, you must be logged in to the network as a user with the Supervisor right to both the source and destination servers. If you are not logged in when you start the Migration Wizard, you can log in as you select the source and destination trees.
- ♦ For better performance, we strongly recommend that the source server, destination server, and client workstation run on a common LAN segment.
- ♦ You should use the fastest workstation available to run the Migration Wizard. If possible, assign the workstation a static IP address. Turn off screen savers and power management to avoid interruptions during the migration.

10.5 What's Next

For instructions on using the NetWare Migration Wizard, continue with [Chapter 11, "Migrating Data from NetWare Servers,"](#) on page 97.

Migrating Data from NetWare Servers

11

After you have completed the prerequisite procedures in [Chapter 10, “Preparing for a Server Migration,”](#) on page 93, you are ready to migrate data from your NetWare® source server. To do this, complete the following tasks in the order they are listed:

1. [Launch Migration Wizard and Create a Project File](#) (page 97).
2. [Model Your Migration Project](#) (page 98).
3. [Verify Your Migration Project](#) (page 100).
4. [Migration Step 1: Copy File System Data](#) (page 100).
5. [Migration Step 2: Edit Configuration Files](#) (page 103).
6. [Migration Step 3: Begin NDS/eDirectory Migration](#) (page 104).
7. [Migration Step 4: Finish the NDS/eDirectory Migration](#) (page 107).
8. [Perform Post-Migration Tasks](#) (page 107).

11.1 Understanding NetWare Server Migration Issues

Before running a migration project in a NetWare/eDirectory™ environment, be sure you have prepared your server as described in [Chapter 10, “Preparing for a Server Migration,”](#) on page 93.

You should also be aware of the issues discussed in this section.

11.1.1 User Space Restrictions Only Migrated in Full Volume Copies

In migration projects where individual folders are dragged and dropped, or where a volume is copied to a folder on the destination server, user space restrictions on the source volume are not migrated to the destination volume.

If your migration project is set up to copy an entire volume, with the contents of the source volume being copied to the root of the destination volume, user space restrictions are migrated to the destination volume.

11.2 Launch Migration Wizard and Create a Project File

- 1 If you have not already done so, start the Server Consolidation and Migration Toolkit.

By default, the toolkit is installed in `c:\program files\novell server consolidation and migration toolkit`. You can access it on the desktop by clicking *Start > Programs > Novell Server Consolidation and Migration Toolkit > Novell Server Consolidation and Migration Toolkit*.

- 2 Read the Welcome screen, then click *Create or Open Project*.
- 3 Select *NetWare or Open Enterprise Server (eDirectory)*, then click *Next*.
- 4 Select *Migrate Data to New Server (Hardware Upgrade)*, then click *Next*.
NetWare Migration Wizard is launched.
- 5 Read the About screen, then click *OK*.
- 6 Do one of the following:
 - ♦ To start a new migration project, select *Create a New Project > OK*.
 - ♦ To open an existing project, select *Open an Existing Project > OK*, select the project file you want to work on, and then click *Open*.
 - ♦ To open the last project you worked on, select *Open Last Project > OK*.
- 7 Name the project, select a place to save it, type a descriptive filename, then click *Next*.
By default, Migration Wizard saves all projects to `c:\program files\novell migration wizard`. You can click *Browse* to select a different location.
Migration Wizard uses a project (`.mdb`) file to record your progress throughout the migration. At any point before the migration is complete, you can exit Migration Wizard and restart the utility to pick up where you left off.
The filename can be up to 64 characters long and can include any character except `\ * ? < > | " /`. It is a good idea to use a standard naming convention to clearly identify each project.
- 8 Select the eDirectory tree that contains your source server, then click *Next*.
If necessary, click the *Login* button to attach to the tree.
- 9 Select your source server from the eDirectory tree, then click *Next*.
If necessary, navigate the tree until you find the desired source server.
- 10 Select the eDirectory tree that contains your destination server, then click *Next*.
If necessary, click the *Login* button to attach to the tree.
- 11 Select your destination server from the destination eDirectory tree, then click *Next*.
If necessary, navigate the tree until you find the destination server. It should be the only server in the tree.
- 12 To create the project file with the information you have entered thus far, click *Create*.

Continue with the next section, [Model Your Migration Project](#).

11.3 Model Your Migration Project

The Project Window and the Getting Started Migrating from NetWare 5 or 6 window appear after you have created the migration project file.

If you do not want the Getting Started window to appear the next time you run the Migration Wizard, deselect *Always Show This Window*. Click *Close* to close the Getting Started window and begin modeling your project.

The Project Window is where you can model different migration scenarios before you begin the actual migration. To do this, you drag volumes and folders from the left pane (which displays the source server's volumes) and drop them into volumes and folders in the right pane (which shows the destination server's volumes).

Dragging-and-dropping data in the Project Window does not immediately perform the action. It only creates a preview of where the data will ultimately reside on the destination server. The data is copied only after the project verification is complete and the migration process begins.

11.3.1 Working in the Project Window

To begin modeling your migration project, decide what file system data on the source server will be copied to which volumes and folders on the destination server. You can drag-and-drop entire volumes or just selected folders from the source server to the destination server.

You can also move created and dropped folders around in the destination pane by dragging them to the desired location.

Other Project Window Actions

In addition to dragging-and-dropping volumes and folders, you can perform several other tasks in the Project Window:

- ◆ To view a short description of the icons in the Project Window, right-click an object and then click *What's This?*
- ◆ To set a new eDirectory tree context in either the left or right pane, right-click a container and then select *Set Context*.
- ◆ To create a new folder on the destination server, right-click an existing parent folder or volume and then select *New Folder*.
- ◆ To rename a newly created folder, right-click the folder and then select *Rename*.
- ◆ To show where a folder went, right-click the folder in the left pane and then select *Where Did it Go?*

The folder that was moved is highlighted in its new location in the right pane.

- ◆ To show where a folder came from, right-click the folder in the right pane and then select *Where Did It Come From?*
- ◆ To cancel a dropped action, right-click a folder in the right pane and then select *Back Out Dropped Directory*.
- ◆ To show all folders selected for copying, right-click a container in the left pane and then select *Show Dropped Folders*.
- ◆ To view the available disk space prior to performing the verification, right-click the destination volume in the right pane and then select *Properties*.

Right-clicking on a source volume or folder in the left pane and then selecting *Properties* displays the size of the source object.

Resolving Duplicate Directory Conflicts

If you drag a folder from the source server into a folder with the same name on the destination server, a Duplicate Directory Encountered window appears. Here you can indicate how you want to handle occurrences of duplicate directories:

- ◆ **Don't Copy the Directory:** Ensures that directories already existing on the destination server are not overwritten. The Migration Wizard copies only the source directories that do not exist on the destination server.

- ♦ **Merge Directory Contents:** Merges the contents of the directory on the source server with the contents of the duplicate directory on the destination server.
- ♦ **Merge All:** Merges the contents of all duplicate directories.
- ♦ **Rename:** Renames a directory on the source server. you must enter a new directory name in the field provided. The directory on the destination server retains its original name.

Migrating User Directories and Server Application Directories

Because the destination server takes the place of the source server when the migration is complete, you should model your project to minimize the necessity of changing user login script mappings and application load files.

To preserve login script mappings to user directories, drag-and-drop these directories to the same location on the destination server as on the source server.

Likewise, to preserve application load files, drag-and-drop application directories to the same location on the destination server as on the source server.

When you have finished modeling your migration project, continue with the next section, [Verify Your Migration Project](#).

11.4 Verify Your Migration Project

After you have modeled your migration by dragging-and-dropping data in the Project Window, you must verify your project to check for problems that might hinder a successful migration.

NOTE: Remember, dragged-and-dropped items appearing in the eDirectory tree are merely *assigned* to be copied to that area in the eDirectory tree. Objects are not migrated until you actually begin the migration.

To perform the verification:

- 1 On the Migration Wizard toolbar, click *Project > Verify and Migrate Project*, or click the *Verify and Migrate* button.
- 2 (Conditional) If the Verification Wizard finds any problems (such as insufficient rights, name spaces that are not loaded, disk space limitation, and improper TSAs), you must resolve these problems and rerun the Verification Wizard before proceeding.

Continue with the next section, [Migration Step 1: Copy File System Data](#).

11.5 Migration Step 1: Copy File System Data

During the Copy File System Data step, the dropped directories are copied to the destination server and created directories are added to the destination server.

- 1 In the Project View dialog box, click *Copy File System Data*.
- 2 In the Dropped Folders dialog box, verify the accuracy of the source and destination paths for all of your dropped folders and then click *Next*.
- 3 (Conditional) If you created new folders as part of your migration project, verify the source and destination paths in the Created Folders dialog box and then click *Next*.

4 In the Duplicate Files dialog box, indicate how you want to handle any duplicate filenames between the source and the destination by selecting one of the following and then click *Next*:

- ♦ **Don't Copy Over Existing Files:** The file on the source server is not copied and the file with the same name on the destination server is not replaced.
- ♦ **Copy the Source File If It Is Newer (Default):** If the file on the source server is newer than the one on the destination server, the file on the destination server is replaced.
- ♦ **Always Copy the Source File:** The file on the source server always replaces the file with the same name on the destination server.

5 In the Disable Login dialog box, indicate whether you want users to be logged in during the data migration by selecting one of the following and then click *Next*.

- ♦ **Copy Volumes with Users Logged In (Default):** Migration Wizard does not copy open files. Select this option if you want to copy nonaccessed files while users are logged in.
- ♦ **Disable Login:** If you disable user login, you can be sure that no other users can log in to the network and open files during the file copy.

If you want to delete all user connections prior to performing the migration, click Broadcast Logout Message to warn users to log out. If any user connections remain, you must manually disconnect them from the source server console.

6 In the File Date Filters dialog box, indicate whether you want to filter the files to be copied according to Accessed, Modified, or Created dates and then click *Next*.

If you select *Yes*, specify the desired date ranges. If you select *No*, all files are copied.

Two dates can be set for each attribute. The first date is an *On or After* date and the second is an *On or Before* date. For example, if you select only *On or Before* for the Accessed attribute and set the date for October 10, 2005, only those files accessed on or before October 10, 2005, are copied. In the same example, if you also select *On or After* and set the date to September 1, 2005, only those files accessed on or after September 1, 2005, and on or before October 10, 2005, are copied.

You can specify as many ranges as you want, and only those files that meet all of the selected criteria are copied.

7 In the Wildcard Selection dialog box, indicate whether you want to filter files by name or extension by typing the filenames or extension types in the field provided and then click *Next*.

You can use a wildcard character to represent one or more characters in a search. The two most commonly used wildcards are the question mark (?) and the asterisk (*).

- ♦ The question mark is used to represent a single alphanumeric character in a search expression.

For example, typing `te?t.txt` would exclude `tent.txt`, `test.txt`, and `text.txt` from the copy process.

- ♦ The asterisk is used to specify zero or more alphanumeric characters in a search expression.

For example, typing `h*s.txt` would exclude `hs.txt`, `his.txt`, `house.txt`, and `happiness.txt` from the copy process.

Type as many filenames or file extension types as you want. Separate each entry with a hard return. For example:

*.mp3

*.wav

test.txt

- 8** In the Synchronize Files and Folders dialog box, specify whether you want the Migration Wizard to delete files and folders on the destination server that do not exist on the source server and then click *Next*.

If users are active on the source server while you model your migration project, it is possible that they could delete files and folders that you have already selected for migration.

- ♦ Select *Yes* if you want the Migration Wizard to scan all dropped folders after the copy process completes and delete any files and folders from the destination server that don't exist on the source server.
- ♦ If you don't want to synchronize files and folders, select *No* (the default selection).

- 9** In the File Comparison dialog box, specify whether you want the Migration Wizard to compare files and folders between the source and destination servers after the copy process completes and then click *Next*.

- ♦ If you don't want to enable the comparison option, select *No* (the default selection).
- ♦ Selecting *Yes* causes the Migration Wizard to compare the following information during the post-copy file comparison:
 - ♦ Names
 - ♦ Dates
 - ♦ Sizes
 - ♦ Attributes
 - ♦ Trustees
 - ♦ Owners

If you select *Yes*, you are given the option of doing a binary comparison of the files after the copy process completes. A binary (byte-by-byte) comparison gives the greatest assurance that two files are identical, but it takes longer to complete.

By default, the Migration Wizard compares the Read inhibit (Ri) and Delete inhibit (Di) attributes on Read-only files. If you do not want this check to be performed, deselect *Compare Ri/Di Attributes for Read-only files*.

- 10** Specify where to store the trustee backup files, then click *Next*.

Before Migration Wizard starts copying files, it backs up trustee and ownership information for the source server's standard sys: volume and dropped folders to special trustee backup files for use only by Migration Wizard. When the eDirectory migration is complete, Migration Wizard restores the trustees from the files stored on the destination server.

The trustee backup files are stored on the destination server's sys: volume by default. If your destination server has limited free space on volume sys:, you can select another volume to hold the backup files.

- 11** Type the passwords for the source and destination trees, then click *Next*.

SMS is the backup and copy engine used by the Migration Wizard. You type your passwords here because SMS requires that the servers involved in the migration be authenticated to each other.

- 12** (Conditional) If prompted, resolve any critical errors or warnings discovered during verification and then click *Next*.

If there were errors discovered in the verification attempt, they are shown in the Error Resolution dialog box. Errors could include name conflicts, insufficient rights, required name spaces not loaded, and insufficient disk space.

Errors found during the verification process are classified as follows:

- ♦ Errors that must be resolved before files can be copied
- ♦ Errors that should be resolved but might not affect the copy process
- ♦ Informational messages about the decisions you made in the Project Window

A description of each error and a possible resolution appear in the Information text box. If no resolution is provided, you can find more information in the [Novell Error Codes online documentation \(http://www.novell.com/documentation/nwec/index.html\)](http://www.novell.com/documentation/nwec/index.html). Search the system by error code number.

- 13** (Conditional) If newer NLM™ programs are available and you want to copy them to your system, select *Yes* in the dialog box that appears.
- 14** In the Ready to Copy Files dialog box, read the explanation of the file copy process and then click *Proceed*.

The Migration Wizard proceeds with the trustee backup and file copy.

- 15** When the Copy Volumes Status screen appears, review the error and success logs and then click *Done*.

Continue with the next section, [Migration Step 2: Edit Configuration Files](#).

11.6 Migration Step 2: Edit Configuration Files

The Edit Configuration Files step compares the configuration files between the source and destination servers and lets you make any desired changes to those files.

- 1** In the Project View dialog box, click *Edit Configuration Files*.

Migration Wizard lets you modify any `.ncf` or `.cfg` files on the destination server. These files contain default LOAD statements and parameters.

IMPORTANT: Make sure that all files are closed before you migrate your eDirectory database.

- 2** In the text box, select the configuration file that you want to edit and then click *Edit File*.
- 3** Copy and paste the commands from the configuration file on the source server to the corresponding configuration file on the destination server, then click *Save & Close*.

If you intend to change the IP address on your destination server to be the same as the IP address of your source server, you must edit your configuration files and change the IP address in two places: `autoexec.ncf` and `sys:\etc\hosts`.

Copy the source server's IP address and paste it into the destination server's `autoexec.ncf` file. (This works only if your IP LOAD and BIND statements are located in `autoexec.ncf`.) You also need to go to the server console of the destination server and change the IP address in the `sys:\etc\hosts` file. Look for the original name of the destination server.

If you use INETCFG to assign IP addresses, change the IP addresses after the migration is complete.

- 4 (Conditional) If you are using configured time sources (`timesync.cfg`), copy and paste your Timesync information from the source server's `timesync.cfg` file to the destination server's `timesync.cfg` file.
- 5 Close the Compare Configurations dialog box.

Continue with the next section, [Migration Step 3: Begin NDS/eDirectory Migration](#).

11.7 Migration Step 3: Begin NDS/eDirectory Migration

The Begin NDS/eDirectory Migration step migrates the eDirectory files from the source server to the destination server. The source server is brought down and the destination server is restarted during this step.

- 1 In the Project View dialog box, click *Begin NDS/eDir Migration*.
- 2 Before continuing, back up all volumes that you are not planning to migrate, ensure the following, and then click *Next*:
 - ♦ All volume data migrated successfully
 - ♦ All critical errors from the file copy are resolved
 - ♦ The servers in your source tree are in time synchronization and eDirectory is synchronized

Verify that you have run the DSRepair procedures in [Section 10.2, “Preparing the Source Server for Migration,” on page 94](#) to ensure that the eDirectory tree containing the source server is functioning correctly.

TIP: If you are required to fix any eDirectory errors, wait approximately 30 minutes for the eDirectory tree to synchronize before continuing.

- 3 In the Update Schema dialog box, indicate whether you want the Migration Wizard to update the source server's schema and then click *Next*.
 - ♦ *Yes* is the default selection. This causes the Migration Wizard to compare the source and destination schemas and update the source server's schema to include the eDirectory classes of the default applications that are installed on the destination server. You must be logged in as a user with all rights to the [Root] of the tree to make these changes.
 - ♦ If you do not have the necessary rights to extend the schema, select *No*. The migration continues, but you might experience some problems with your eDirectory tree if you skip this procedure.
- 4 In the Verify Novell Directory Services Tree dialog box, select *Yes* to acknowledge that the source eDirectory tree is healthy (you should have run the DSRepair procedures in [Step 2](#)).

If you select *No*, the Migration Wizard does not prevent you from continuing. However, if your tree is unhealthy before you begin the migration, the migration might not complete successfully.
- 5 To ensure the security certificate works properly on the destination server, indicate how you want to copy the source server's NCI configuration files to the destination server and then click *Next*.

To facilitate the NCI file copy, `nwnnci.nlm` is first copied to both the source and destination servers. You can choose to copy the NCI files Automatically (over the network) or using a diskette swap.

- 6** (Conditional) If you selected the diskette swap, continue with **Step 6a**. If you selected the automatic copy over the network, skip to **Step 7**.
- 6a** To copy the `nwnnici.nlm` file to the source and destination servers, click *Copy NLM* and then click *Next*.
- 6b** Insert a blank formatted diskette into the floppy drive on the destination server.
- 6c** At the destination server console, enter
- ```
load nwnnici -1
```
- 6d** Remove the diskette from the destination server and insert it into the source server's floppy drive.
- 6e** At the source server console, enter
- ```
load nwnnici -2
```
- This copies the NCI files to the diskette.
- 6f** Remove the diskette from the source server and insert it into the destination server's floppy drive.
- 6g** At the destination server console, enter
- ```
load nwnnici -3
```
- This copies the NCI files to the destination server.
- 6h** Click *Next*.

---

**TIP:** If you get NCI errors when eDirectory tries to load or when you copy the NCI files, check to see if `pki.nlm` will load on the destination server. If it won't load, see [Section 12.4.2, "NCI Errors," on page 114](#).

---

- 7** Delete all user connections (except your own) to the source and destination servers, then click *Next*.
- If you want to first broadcast a logout message to any users logged in to the server, select *Broadcast Logout Message*, type the message in the field, and then click *OK*.
- 8** Type the passwords for the source and destination trees, then click *Next*.
- 9** Resolve any critical errors or warnings on the Migrate NDS/eDir Verification Results screen, then click *Next*.
- 10** Perform the eDirectory step-by-step migration.

The eDirectory migration is divided into several steps. This is for diagnostic purposes. If the eDirectory migration fails for any reason, you know exactly what step it failed on and can take the appropriate measures to fix the problem.

For more information on the NDS/eDirectory migration process, including steps to restore the source and destination servers, see [Section 12.5, "Recovering from NDS/eDirectory Migration Failures," on page 115](#).

- 10a** Click *Next*.

The first step changes `autoexec.ncf` and `timesync.cfg`; modifies the server name in `hosts`, `hostname`, and `snmp.cfg`; and renames `smdr.cfg` to `smdr.mig`. The first step also renames `rootcert.der` in both the `sys:system` and `sys:public` directories to `rootcert.der.bak`.

At the end of the migration process, the source server is brought down and the destination server reboots and takes over the name and identity of the source server.

Migration Wizard automatically modifies the following items in the destination server's `autoexec.ncf` file:

- ♦ The file server name is changed to the name of the source server.
- ♦ The time zone is changed to the one stored in the source server's `autoexec.ncf` file.
- ♦ The server ID is changed to the IPX™ internal net value or server ID stored in the source server's `autoexec.ncf` file.
- ♦ The default time server type is changed to the value stored in the source server's `autoexec.ncf` file.
- ♦ The bindery context is changed to the bindery context stored in source server's `autoexec.ncf` file

---

**IMPORTANT:** During the migration, the source server's Timesync information is not automatically migrated.

---

**10b** Click *Next* again.

This step backs up eDirectory and copies the eDirectory backup files to the destination server and to `sys:system\nuw30\ndsbu` on the source server.

**10c** Down the source server by clicking *Next*.

The Source Server Status dialog box displays.

**10d** Verify that the source server is down by selecting *Yes*.

**10e** Click *Next* again.

This step removes eDirectory from the destination server and deletes the client connection.

**10f** Click *Next* again.

This step upgrades eDirectory on the destination server if necessary, restores eDirectory on the destination server, and prepares to reboot the destination server.

**10g** Reboot the destination server by clicking *Next*.

**10h** When you are ready to proceed, select *Yes > Finish*.

**11** Check the former destination server and verify that it has restarted and taken on the name of the source server.

The server console prompt should display the source server's name.

**12** Exit the Migration Wizard.

The project file is automatically saved.

**13** Reboot your workstation and log in to the former destination server.

This clears old connections from the workstation and establishes a clean connection to the former destination server.

If you can't log in, refer to [Section 12.1.1, "Workstation-to-Server Connection Problems,"](#) on [page 111](#).

**14** Restart the Migration Wizard utility.

**15** Read the About screen, then click *OK*.

**16** Select *Open Last Project > OK*.

The utility verifies that the first three steps of the project file are complete.

- 17 Select *Yes* when prompted if you are ready to proceed to the fourth step.

## 11.8 Migration Step 4: Finish the NDS/eDirectory Migration

The Finish the NDS/eDirectory Migration step upgrades the schema and restores the trustees to the new server after it has restarted.

- 1 In the Project View dialog box, click *Finish NDS/eDir Migration*.

The Continue NDS/eDir Migration dialog box appears, outlining the eDirectory health checks and other tasks you should complete before continuing.

- 2 To run the NDS/eDirectory backlinker process, go to the destination server console and enter the following commands:

```
set dstrace=on
set dstrace+=blink
set dstrace=*b
```

Check the Directory Services screen for messages indicating the successful completion of the backlinker process.

- 3 On the Continue NDS/eDir Migration screen, select *Yes > Next*.
- 4 Type the tree password in the field provided, then click *Next > Continue*.
- 5 Review the error and success logs, then click *Done*.
- 6 In the Project View dialog box, click *Close*.
- 7 Select *File > Exit* to exit the Migration Wizard.

Continue with the next section, [Perform Post-Migration Tasks](#).

## 11.9 Perform Post-Migration Tasks

- 1 Run *DSRepair* on the destination server and select *Unattended Full Repair* to ensure that eDirectory is functioning properly.
- 2 Using *ConsoleOne*<sup>®</sup>, verify that the user information migrated successfully.

---

**TIP:** During the migration, the standard `sys: directory` from the source server is saved in the `sys.mig directory` on the destination server.

---

- 3 Run *DSRepair > Time Synchronization* to verify that your source server is synchronized with the rest of your servers.
- 4 Verify that the correct IP address is assigned to the new server in all appropriate files.

For example, check `autoexec.ncf`, `sys:\etc\hosts`, and `sys:\etc\hostname`, or type `config` at the server console.

---

**IMPORTANT:** Failure to have the correct IP address in the `hosts` or `hostname` files causes the post-installation of some products to fail.

---

- 5 (Conditional) If you have performed a migration to a NetWare 6.0 destination server, verify that `sys:\public\rootcert.der` exists.

If it does not exist, copy the file from an existing server on the network, or create a new one following the instructions in [TID #10066860 \(http://support.novell.com/cgi-bin/search/searchtid.cgi?/10066860.htm\)](http://support.novell.com/cgi-bin/search/searchtid.cgi?/10066860.htm).

If the `rootcert.der` file does not exist, a post-migration install of applications could fail.

- 6 (Conditional) If you haven't already done so, install the latest NetWare Support Pack on the destination server.

This ensures that you get the latest code for the applications that you are reinstalling. The latest Support Packs are available at the [Novell Support Web site \(http://support.novell.com/misc/patlst.htm\)](http://support.novell.com/misc/patlst.htm).

- 7 Reinstall any server applications.

---

**IMPORTANT:** Because the source server's eDirectory database replaces the destination server's eDirectory database, all eDirectory objects on the destination server before the migration, including those representing applications, are replaced by the eDirectory objects that exist on the source server. However, the NLM programs associated with the destination server's applications still exist. Because you cannot manage applications without their corresponding eDirectory objects, you must reinstall the applications to restore their eDirectory objects to the tree.

---

You can reinstall these network products and services using either of two methods:

- ♦ Go to the destination server, load the GUI interface if necessary by typing `startx`, and click the Novell icon in the lower-left corner of the servertop. Then click *Install > Add* to install products.
- ♦ To install products remotely, run the Novell Deployment Manager utility (`nwdeploy.exe`, or `nwdeploynobrowser.exe` for a nonbrowser-based version) located on *NetWare 6.5 CD 1 (Operating System)*. Under Post-Install tasks, select *Install NetWare 6.5 Products* and follow the on-screen instructions to run the Remote Product Install utility.

### Installing Tomcat and exteNd Application Server after the Migration

If needed, after completing a NetWare 6.5-to-NetWare 6.5 migration using the Migration Wizard, complete the following steps to ensure that Tomcat installs correctly:

- 1 Copy `sys:\sys.mig\java` to `sys:\java`, overwriting all existing files.
- 2 Copy `sys:\sys.mig\adminsrv` to `sys:\adminsrv`, overwriting all existing files.
- 3 Copy `sys:\sys.mig\system\ipconf` to `sys:\system\ipconf`, overwriting all existing files.

After completing a NetWare 6.5-to-NetWare 6.5 migration using the Migration Wizard, complete the following steps to ensure that exteNd™ Application Server installs correctly:

- 1 Copy `sys:\sys.mig\java` to `sys:\java`, overwriting all existing files.
- 2 Copy `sys:\sys.mig\etc\my.cnf` to `sys:\etc\my.cnf`.

## Installing Native File Access for UNIX after the Migration

If needed, after completing a NetWare 5.1-to-NetWare 6.5 migration using the Migration Wizard, complete the following steps to ensure that Native File Access for UNIX installs correctly:

**1** Delete the NFAU User object.

**2** Run the schinst utility by entering

```
schinst -n -w
```

SCHINST takes the administrator's FDN and password as input for extending the schema.

**3** Run nisinst.

**4** Execute nfsstart.



# Troubleshooting Server Migrations

# 12

Refer to the appropriate section if you are having trouble with any of the following when using the NetWare® Migration Wizard:

- ♦ [Connection Problems \(page 111\)](#)
- ♦ [Issues During the File Copy \(page 112\)](#)
- ♦ [SMDR Errors \(page 113\)](#)
- ♦ [Miscellaneous Errors \(page 113\)](#)
- ♦ [Recovering from NDS/eDirectory Migration Failures \(page 115\)](#)

## 12.1 Connection Problems

To eliminate unnecessary connection problems, make sure that

- ♦ The source and destination servers have enough available server and workstation licenses to do the migration.
- ♦ The eDirectory™ user that you are using to do the migration has no concurrent connection limitations. To check this, do the following:
  - ♦ Run iManager or ConsoleOne® on the workstation.
  - ♦ Edit the properties of the User object.
  - ♦ Click the Login Restrictions tab.
  - ♦ Deselect the Limit Concurrent Connections option.
- ♦ The eDirectory user that you are using to do the migration has the Supervisor right to the source server's eDirectory object. Use iManager or ConsoleOne to verify that the User object is listed in the source server's Operators list.

### 12.1.1 Workstation-to-Server Connection Problems

If you have problems establishing or maintaining connections between your servers and workstations, try one or more of the following:

- ♦ Reboot the client workstation to clear the cache in the Novell® Client™ software.
- ♦ Map a drive to the server instead of logging in. This is especially useful when connecting with the IPX™ protocol.
- ♦ Search for the server by its IP or IPX address instead of its name. Type the IP or IPX address in the Server field of the Novell Login dialog box.
- ♦ Try connecting to the server and not the eDirectory tree by specifying only the name of the server and leaving the tree name and context blank.
- ♦ Clear all unauthenticated connections. To do this, right-click the N icon and then click NetWare Connections. Detach from all servers and trees that you are not authenticated to, then try logging in again.

- ♦ Make sure your Preferred NetWork Protocol is set correctly by doing the following:
  - ♦ Right-click the N icon.
  - ♦ Select *Novell Client Properties > Protocol Preferences*.
  - ♦ Select the desired preferred network protocol, then click *OK*.
  - ♦ Reboot the workstation.
- ♦ Unbind the protocol you are not using from the destination server. For example, if you are using IP for the migration but IPX is bound on the destination server, unbind the IPX protocol on the destination server during the migration.

## 12.1.2 Server-to-Server Connection Problems

If you have problems establishing or maintaining connections between your servers, try one or more of the following:

- ♦ Do not remove the source and destination servers from their respective eDirectory trees. The servers must be able to communicate with the other servers in the tree during the migration.
- ♦ Make sure the destination and source servers can communicate with each other.  
For IP connections, enter `ping` at the server console and specify the other server's IP address. For IPX connections, enter `display servers` at the server console.
- ♦ For IP connections, verify that you have corresponding addressing, subnet mask, and gateway information. If you are using IPX, make sure the frame type and the IPX network number/server ID are consistent between the source and destination servers.
- ♦ Reboot the destination server.

## 12.2 File Copy Problems

This section describes what to do if problems are encountered when copying files and restoring trustees.

### 12.2.1 Issues During the File Copy

If you are having problems during the file copy, try one or more of the following:

- ♦ Enable login on both the destination and source servers. If you have disabled login before you started the file copy, the servers can't log in to each other in order to migrate the files.

---

**NOTE:** If you have selected to do so, Migration Wizard disables user logins for you during the migration.

---

- ♦ If files are copying very slowly, make sure that the servers and workstation are configured at the highest common LAN speed. Verify that the NICs and anything in between are all hard coded to either communicate half-duplex or full-duplex; they need to be the same throughout. If there are problems with full-duplex, use half-duplex.

---

**NOTE:** If compressed files are migrated to uncompressed volumes, file copy might be slower.

---

- ♦ If Migration Wizard encounters filenames with a total path length of more than 256 bytes, the file copy stops. You might need to reorganize the data on your source server if your path lengths are longer than 256 bytes.

## 12.2.2 Data Set Currently In Use Errors in the Error Log

If you see `NWSMTS error: Data set is currently in use and cannot be accessed` errors in the error log file after the migration, it means the specified files were open during the file copy and were not migrated. You can expect to see these errors for files such as `sys:_swap_.mem` and others that are always open. These errors are mainly informational.

## 12.2.3 Problems Restoring Trustees

- ◆ If you see the error `An unknown error has occurred. (Source Server: SRV1 Path: 'SYS:SYSTEM\NUW30\TRUSTEE.REF' Error: '1' Function: 'fopen (OpenTrusteeReference)'` when migrating from NetWare 5.1 to NetWare 6.5 SP6, make sure you have disabled file caching in the Novell Client. For more information, see [Section 3.1, “Meeting the Workstation Requirements,” on page 27](#).
- ◆ If the trustees fail to restore and you get a `0xffffffb` error, this means that you did not modify your server’s IP address in all the necessary places. For more information, see [Section 11.6, “Migration Step 2: Edit Configuration Files,” on page 103](#).
- ◆ If you need to restore trustees, you can click the *Finish NDS/eDir Migration* button in the Migration Wizard, or select *Restore Trustees* on the toolbar.

## 12.3 SMDR Errors

Sometimes the SMDR program that is running on the destination server can’t make a connection to the source server. To correct this problem, try one or more of the following:

- ◆ Unbind the protocol you are not using from the destination server. For example, if you are using IP for the migration but IPX is bound on the destination server, unbind the IPX protocol on the destination server during the migration.
- ◆ If Migration Wizard can’t load the appropriate `tsa.nlm` on your destination server, manually load it from the destination server console and following the on-screen instructions. Or, enter `smdr new` at the server console to re-create the SMDR object.
- ◆ Load `smdr.nlm` at the destination server console and then enter `smdr new` at the destination server console to solve SMS problems.
- ◆ Make sure the latest NLM™ programs are loaded on your servers.  
Migration Wizard automatically copies the required NLM programs to the source and destination servers. To verify that you have the latest NLM programs loaded, check the files in the `NetWare Migration Wizard\products\nw3x` directory. You might need to load TSA312 manually.
- ◆ Check your primary connections. Right-click the N icon, then select *NetWare Connections*. Make sure the destination tree and server are marked as Primary.
- ◆ Reboot the source server.

## 12.4 Miscellaneous Errors

This section identifies other errors that might be encountered when using the NetWare Migration Wizard.

## 12.4.1 Nuwagent.nlm Load Errors

`Nuwagent.nlm` is the NLM program that Migration Wizard uses to do much of its work. If you get errors that the `nuwagent.nlm` won't load, try the following:

- ♦ Manually load `nuwagent.nlm` at the server console.
- ♦ Enter `smdr new` at the destination server console. This re-creates the SMDR configuration and allows `nuwagent.nlm` to load.

## 12.4.2 NICI Errors

If you are getting NICI errors when eDirectory is trying to load or when you are copying the NICI files in Migration Wizard, this might mean that your NICI files are corrupt. To correct the problem, follow these steps on the server that is getting NICI errors:

- 1 Copy the `*.nfk` file from *NetWare 6.5 CD 1 (Operating System)* to the server's `sys:system` directory.
- 2 Rename the `*.nfk` file that you just copied to `nicifk` (this has no extension).
- 3 Go to the [Novell Support Web site \(http://support.novell.com/filefinder\)](http://support.novell.com/filefinder) and download `nrepair3.exe`.
- 4 Extract `nrepair3.exe` and locate `nrepair.nlm`.
- 5 Run `nrepair.nlm` on the server, clicking *Yes* at all the prompts.
- 6 Reboot the server.
- 7 Load `pki.nlm` on the server and verify that you are no longer getting NICI errors.

If you still see NICI errors, refer to [TID #10025666 \(http://support.novell.com/search/\)](http://support.novell.com/search/) in the Novell Knowledgebase.

## 12.4.3 NMAS Error When Migrating from NetWare 5.1

When migrating from NetWare 5.1 Support Pack 7 with eDirectory 8 to NetWare 6.5 Support Pack 2 using Migration Wizard 8.0, NMAS™ might show a - 1660 (0xFFFF984) error after completing Step 3 (Start NDS®/eDirectory Migration) and rebooting the server and client.

This is the expected behavior because this is a new server that hasn't been fully installed, so there are no objects in the Security container, which means that NMAS (and other security products such as NICI and PKI) have not been configured.

If you have Novell Client™ 4.9 and later, you must disable the NMAS authentication. Right-click the N icon, select *Novell Client Properties > Advanced Login*, then deselect the *NMAS Authentication* option.

## 12.4.4 CCS\_pbeDecrypt Error When Migrating from NetWare 5.0

When performing a migration from NetWare 5.0, you might receive a `CCS_pbeDecrypt` error on the source server console when attempting to back up either the source server trustees or the NDS database.

If this occurs, make sure that the latest Support Pack is installed on the NetWare 5.0 server and then do the following:

- 1 At the NetWare 5.0 source server console, enter

```
down
```

- 2 At the DOS prompt, enter.

```
copy c:\nwserver\expxeng.nlm c:\nwserver\novxeng.nlm
```

- 3 Enter.

```
copy c:\nwserver\domxeng.nlm c:\nwserver\novxeng.nlm
```

---

**NOTE:** This might fail because `domxeng.nlm` is not present. This is not a problem.

---

If you used a directory other than `\nwserver` to store the server files, substitute that directory for `\nwserver` in steps 2 and 3.

- 4 Restart the NetWare 5.0 server.

## 12.5 Recovering from NDS/eDirectory Migration Failures

If the migration fails during the NDS/eDirectory Migration step, you need to restore the source and destination servers to their original configuration before you can retry the NDS/eDirectory migration. The instructions for restoring the servers to their original configurations are different depending on when the migration of data failed.

If Begin NDS/eDir Migration (Step 3) failed and the destination server did not reboot and take on the name and identity of the source server, complete the steps in [“Restore Source Server to Its Original Configuration” on page 115](#).

If Begin NDS/eDir Migration (Step 3) successfully completed and the destination server has already rebooted and taken on the name and identity of the source server, complete the steps in the following sections:

1. [“Remove NDS/eDirectory from the Destination Server” on page 116](#).
2. [“Remove NDS/eDirectory from the Source Server” on page 117](#).
3. [“Restore NDS/eDirectory to the Source Server” on page 117](#).
4. [“Reinstall the Destination Server” on page 118](#).

### 12.5.1 Restore Source Server to Its Original Configuration

If Begin NDS/eDir Migration (Step 3) failed and the destination server did *not* reboot and take on the name and identity of the source server, you need only restore NDS/eDirectory to the source server. When NDS/eDirectory has been restored, you have restored the source server to its original configuration and you are ready to try the NDS/eDirectory migration again.

- 1 Enter one of the following at the server console of the source server:
  - ♦ `load install` if the source server is running NetWare 4
  - ♦ `nwconfig` if the source server is running NetWare 5 or later

- 2 Select *Directory Options > Directory Backup and Restore > Restore Local DS Information* after Hardware Upgrade.
- 3 Press F3 and enter `sys : system\nuw30\ndsbu` when prompted for the location of the backup files.

NDS/eDirectory has now been restored to the source server.

---

**IMPORTANT:** Do not reboot the destination server. Because the destination server did not take over the identity of the source server, no other action is required prior to performing the NDS/eDirectory migration again.

---

- 4 Perform the NDS/eDirectory migration again.
  - 4a Launch Migration Wizard and open the project you were previously working on.
  - 4b When the project opens and you see the Project Window, click *Begin NDS/eDir Migration*.
  - 4c Follow the instructions in [Section 11.7, “Migration Step 3: Begin NDS/eDirectory Migration,”](#) on page 104.

## 12.5.2 Remove NDS/eDirectory from the Destination Server

If *Begin NDS/eDir Migration* (Step 3) successfully completed and the destination server has already rebooted and taken on the name and identity of the source server, you must remove NDS/eDirectory from the destination server before you can restore NDS/eDirectory to the source server.

- 1 At the destination server console, enter `nwconfig`.
- 2 Select *Directory Options > Remove Directory Services from This Server*.
- 3 Press Enter when you see a warning instructing you to not remove Directory Services.  
Ignore any other errors during the removal of NDS/eDirectory.
- 4 Select *Yes* to remove Directory Services.
- 5 Specify the Admin username and password.
- 6 Press Enter to reference a different object.

This object is used when NDS/eDirectory is restored back to the source server.

---

**WARNING:** Do not press Esc. If you do, the server references you entered will not be saved or restored to the server.

---

- 7 Specify the full Admin username as the placeholder object distinguished name.
- 8 Specify Root as the distinguished name to change from.
- 9 (Conditional) If the information about the single reference time source appears, review the information and press Enter.
- 10 (Conditional) If your server holds the master copy of a replica, press Enter when you see a warning.
- 11 Designate another server to hold the master replica.  
You can choose to let NWCONFIG randomly select another server or you can designate one yourself.
- 12 Return to the NWCONFIG utility and select *Remove Directory Services from This Server* to verify that NDS/eDirectory has been removed.

If a message appears saying that NDS/eDirectory has already been removed, bring the destination server down and continue with the next section, [Remove NDS/eDirectory from the Source Server](#).

If NDS/eDirectory was not successfully removed, exit NWCONFIG and enter `nwconfig -dsremove` at the destination server console. Then follow this procedure again, beginning with [Step 2 on page 116](#).

### 12.5.3 Remove NDS/eDirectory from the Source Server

After NDS/eDirectory has been removed from the destination server, remove NDS/eDirectory from the source server.

- 1 Restart the source server by entering `server` at the DOS command prompt.
- 2 Enter one of the following:
  - ♦ `load install -dsremove` (if source server is running NetWare 4)
  - ♦ `nwconfig -dsremove` (if source server is running NetWare 5 or later)INSTALL or NWCONFIG will now ignore any warnings or errors during the removal of NDS.
- 3 Select *Directory Options > Remove Directory Services from This Server*.
- 4 Press Enter to skip past any warning screens.
- 5 Select *Yes* to remove NDS/eDirectory.
- 6 Press Enter to skip the error message warning you that eDirectory is locked. Ignore, but keep track of, any additional eDirectory error messages that appear.
- 7 When the INSTALL or NWCONFIG menu appears again, select *Remove Directory Services* again.

If a message indicates that eDirectory is already removed, continue with the next section, [Restore NDS/eDirectory to the Source Server](#).

If eDirectory was not properly removed, contact [Novell Support \(http://www.novell.com/support\)](http://www.novell.com/support).

### 12.5.4 Restore NDS/eDirectory to the Source Server

By removing NDS/eDirectory from the source server, you removed the server from any replica rings that held a partition of the source server. Now you must complete the following procedure to restore NDS/eDirectory to the source server.

- 1 Enter one of the following at the server console:
  - ♦ `load install` (if source server was running NetWare 4)
  - ♦ `load nwconfig` (if source server was running NetWare 5 or later)
- 2 Select *Directory Services > Install Directory Services onto This Server*.
- 3 Select the eDirectory tree where the source server existed prior to migration.
- 4 Select a time zone and time configuration parameters. Make a note of any warnings or errors that appear during the restoration of eDirectory and press Esc to continue without fixing the errors.
- 5 Enter the Admin name and password.

- 6 Type the context where the source server existed prior to migration, then press F10.
- 7 Save the NDS (Directory) information.
- 8 Wait while the server synchronizes with the eDirectory tree, which might take a while.
- 9 Return to the INSTALL or NWCONFIG utility and select *Directory Options > Directory Back Up and Restore > Restore Reference from another Object to This Server*.

This restores all references that you assigned to the Server object when you removed eDirectory from the destination server.

- 10 Press Enter.
- 11 Enter the full Admin username as the placeholder object distinguished name, then specify Root as the distinguished name to change from.
- 12 Exit the NWCONFIG or INSTALL utility.
- 13 At the server console of the source server, enter `load dsrepair`.
- 14 Select *Unattended Full Repair > Advanced Options > Check Volume Objects and Trustees*.
- 15 Enter the Admin username and password.
- 16 Exit DSREPAIR.
- 17 At the workstation where you performed the migration, open your project. (Make sure you have removed eDirectory from the destination server, as instructed in [“Remove NDS/eDirectory from the Destination Server”](#) on page 116, and returned the destination server to its temporary tree with its temporary server name.)
- 18 From the Migration Wizard Project menu, select *Restore Trustees* to restore the trustee assignments.
- 19 (Conditional) If the source server held the master replica of any partitions and you want to restore these partitions prior to doing the eDirectory migration again, use DSREPAIR to re-create them.

The source server is now restored to its original configuration.

Continue with the next section, [Reinstall the Destination Server](#).

## 12.5.5 Reinstall the Destination Server

To perform the migration again, you must reinstall the operating system on the destination server.

---

**TIP:** If you had your server imaged, you can just restore the image rather than reinstall the server.

---

- 1 Bring down the destination server.
- 2 Install NetWare and follow the on-screen instructions during the installation.

After NetWare is installed on the destination server, you are ready to perform the eDirectory migration again. Go to [Section 11.7, “Migration Step 3: Begin NDS/eDirectory Migration,”](#) on page 104.

# Supplemental Information



- ♦ Chapter 13, “Copying Double-Byte Character Set Data,” on page 121
- ♦ Chapter 14, “Security Considerations,” on page 127
- ♦ Appendix A, “Documentation Updates,” on page 129



# Copying Double-Byte Character Set Data

# 13

When you have servers containing extended ASCII data (multinational characters) or double-byte character set data (Japanese, Korean, and other oriental languages), extra care is required to ensure that this data is migrated correctly. This chapter outlines the additional steps you need to take when copying this data to Open Enterprise Server (OES) Linux and NetWare® servers.

- [Section 13.1, “Preparing the Workstation,” on page 121](#)
- [Section 13.2, “Changing the Language Setting on OES Linux Servers,” on page 121](#)
- [Section 13.3, “Changing the NetWare Server Code Page,” on page 122](#)

## 13.1 Preparing the Workstation

If you are copying extended ASCII or double-byte character set data from a server, the workstation must have Windows installed with the same language as the server. For example, if you are migrating a Japanese server, make sure your workstation is running Windows with Japanese language support.

For information on how to install language support in Windows XP, see [Windows XP Language Interface Pack \(http://www.microsoft.com/downloads/details.aspx?familyid=0db2e8f9-79c4-4625-a07a-0cc1b341be7c&displaylang=en\)](http://www.microsoft.com/downloads/details.aspx?familyid=0db2e8f9-79c4-4625-a07a-0cc1b341be7c&displaylang=en).

You must also enable UTF-8 support in the Novell Client™ on the workstation where you run the Server Consolidation and Migration Toolkit.

To do this, right-click the N icon on the workstation toolbar, then click *Novell Client Properties > Advanced Settings > Use UTF8 encoding and NCPs > Setting: On*.

---

**TIP:** For Windows 2000/2003 consolidation projects, you can run the Server Consolidation Utility on the Windows server itself. This is the preferred method, especially if you have data that uses extended ASCII or double-byte character sets. (You cannot run the Server Consolidation Utility on Windows NT servers, because the Novell Client no longer supports Windows NT.)

---

## 13.2 Changing the Language Setting on OES Linux Servers

If you are copying extended ASCII or double-byte character set data from a NetWare server to an OES Linux server using the Novell Server Consolidation Utility, you must first change the language setting on the Linux server to match the language used on the NetWare server. You can do this using the YaST utility. See “[Language Selection](http://www.novell.com/documentation/oes/index.html?page=/documentation/oes/sles_admin/data/sec-i-yast2-sprache.html)” in the [SUSE® Linux Enterprise Server documentation \(http://www.novell.com/documentation/oes/index.html?page=/documentation/oes/sles\\_admin/data/sec-i-yast2-sprache.html\)](http://www.novell.com/documentation/oes/index.html?page=/documentation/oes/sles_admin/data/sec-i-yast2-sprache.html) for more information.

## 13.2.1 Copying Data from NetWare 5.1 Source Servers

The following additional steps are required for NetWare® 5.1 source servers. They are not necessary for NetWare 6.0, NetWare 6.5, or OES NetWare servers.

- 1 On the NetWare 5.1 server, install the updated SMS Target Service Agent (TSA) modules included in `tsa5up18.exe` or later. To download this update, see [TID #2971717 \(http://support.novell.com/cgi-bin/search/searchtid.cgi?/2971717.htm\)](http://support.novell.com/cgi-bin/search/searchtid.cgi?/2971717.htm).
- 2 On the OES Linux server, install the new SMS `tsafs (.39)` rpm that comes with the Server Consolidation and Migration Toolkit.
- 3 Change the language setting on the OES Linux server to match the language on the NetWare server, as explained in [Section 13.2, “Changing the Language Setting on OES Linux Servers,” on page 121](#).
- 4 Unload the `tsafs` module by typing the following command at the shell prompt:  

```
/opt/novell/sms/bin/smsconfig -u tsafs
```
- 5 Reload the `tsafs` module with support for multi-byte character set data (this command is case-sensitive):  

```
/opt/novell/sms/bin/smsconfig -l tsafs --useCodeset=SJIS-WIN
```
- 6 Verify the new setting by typing the following command:  

```
/opt/novell/sms/bin/smsconfig -t
```

## 13.3 Changing the NetWare Server Code Page

When using the Server Consolidation Utility to copy extended ASCII and double-byte character set data from NetWare® to NetWare, the source and destination NetWare servers must have the same code page set, or data will be lost during the consolidation.

---

**WARNING:** Novell does not recommend converting a foreign-language code page server back to English, nor converting a foreign-language code page server to another foreign-language code page. If either is done, it is possible that documents and folders named with or containing foreign characters might become irreversibly corrupted.

---

There are two recommended ways to create a NetWare server with foreign-code page support:

- ♦ Install the server with the regional support you want
- ♦ Convert an English server to a foreign-language code page

### 13.3.1 Install a NetWare Server with Regional Support

To install an English server with code page support for a foreign language, you must have an English NetWare installation CD or access to English NetWare install files.

- 1 Begin the NetWare installation.

For information on installing your specific version of NetWare, see the [Novell online documentation \(http://www.novell.com/documentation\)](http://www.novell.com/documentation).

During the installation, a Regional Settings screen displays. You see three options:

- ♦ Country: 001 (USA)

- ♦ Code page: 437 (United States English)
  - ♦ Keyboard: United States
- 2** Change the first option, Country, to the country you want the server to support.  
For example, if you want to install your English server with Japanese double-byte support, change the Country option to 081 (Japan).  
When you change the Country option, the Code page and Keyboard options change automatically to the appropriate code page and keyboard.
  - 3** If you intend to type foreign characters using the keyboard on the server console, accept the automatic setting displayed for the Keyboard option.  
If you do not intend to type any foreign characters on the server console, manually change the Keyboard option to US International (the last keyboard option displayed in the list).
  - 4** Complete the server installation.  
When the server reboots after the installation is complete, you will have an English server with a foreign code page.

### 13.3.2 Convert an Existing English NetWare Server to a Foreign Code Page

To convert an existing English server to a foreign code page, you must have an English NetWare installation CD or access to English NetWare install files.

- 1** Bring the server down.
- 2** At the DOS prompt, go to `c:\nwserver`.
- 3** Rename `lconfig.sys` to `lconfig.437`.  
The `lconfig.sys` file determines what code page NetWare will run. The purpose of renaming the existing file is to allow for rolling back to the original configuration if necessary.
- 4** Browse to the `\install\lconfig` directory on the NetWare installation CD or at the location of your NetWare installation files.  
This directory contains the `lconfig.sys` files for all languages. The naming convention is `lc_country_codepage.country_telephone_code`. Therefore, the Japanese `lconfig.sys` file is named `lc_932.081`, for example.

The following is a partial list of `lconfig.sys` files with their associated language names:

- ♦ Chinese-Simplified: `LC_936.086`
- ♦ Chinese-Traditional: `LC_950.088`
- ♦ French: `LC_850.033`
- ♦ German: `LC_850.049`
- ♦ Italian: `LC_850.039`
- ♦ Japanese: `LC_932.081`
- ♦ Korean: `LC_949.082`
- ♦ Portuguese: `LC_860.351`
- ♦ Russian: `LC_855.007` or `LC_866.007`
- ♦ Spanish (Argentina): `LC_850.054`

- ♦ US English: LC\_437.001
- 5** Select the language code page file you want to implement and copy it to the `c:\nwserver` directory.
  - 6** Rename the `lc_XXX.XXX` file you just copied to `lconfig.sys`.  
If you are converting an English server to a single-byte language like German or Russian, then you are finished. When you start the server, you will have foreign-language code page support for the country you selected.  
If you have selected a double-byte code page like Japanese or Chinese, continue with **Step 7**.
  - 7** (Conditional) If installing a double-byte code page, copy the necessary server font files.
    - 7a** Go to `\startup` on your NetWare installation CD and select the font files appropriate for your language:
      - ♦ Japanese: `jpn*.fnt`
      - ♦ Korean: `kor*.fnt`
      - ♦ Chinese Traditional: `bg5*.fnt`
      - ♦ Chinese Simplified: `gb*.fnt`
    - 7b** Add `Load vgadisp.nlm` to `c:\nwserver\startup.ncf`.  
`Vgadisp.nlm` allows for double-byte characters such as Japanese or Chinese to be viewed in the C-worthy portion of the system console. It is cosmetic and does not affect the functionality of the server.
  - 8** Restart the server.  
You will now have foreign-language code page support for the country you selected.

### 13.3.3 Verifying the Current Code Page on a NetWare Server

To verify the code page currently installed on your NetWare server, enter `language` at the server console.

This returns “Current NLM language is (4) ENGLISH. Current DOS code page is (437),” if your server is using the English code page.

The following is a list of common code pages used for NetWare (note that some languages support multiple codepages):

- ♦ 437: United States English
- ♦ 850: Multilingual (English, French, German, Italian, Portuguese, Spanish)
- ♦ 852: Slavic
- ♦ 855: Cyrillic I
- ♦ 857: Turkish
- ♦ 860: Portuguese
- ♦ 861: Icelandic
- ♦ 862: Hebrew
- ♦ 863: French Canadian
- ♦ 865: Nordic
- ♦ 866: Russian

- ◆ 869: Greek
- ◆ 874: Thailand
- ◆ 932: Japanese
- ◆ 936: Chinese Simplified
- ◆ 949: Korean
- ◆ 950: Chinese Traditional



This section provides information on how to use the utilities included in the Novell® Server Consolidation and Migration Toolkit in the most secure way possible.

- ♦ [Section 14.1, “General Security Guidelines,” on page 127](#)
- ♦ [Section 14.2, “Server Consolidation Utility Security,” on page 127](#)
- ♦ [Section 14.3, “Migration Wizard Security,” on page 127](#)

## 14.1 General Security Guidelines

Access to network resources in general, and servers in particular, should be governed by the security guidelines outlined in “[Security](#)” in the *OES 2: Planning and Implementation Guide*.

When using either the Server Consolidation Utility or the NetWare Migration Wizard, data between the source and destination servers is sent over a plain-text tunnel. In a secure environment, the source server, destination server, and client workstation should be attached to the same physical network segment with no connectivity outside of the internal network.

## 14.2 Server Consolidation Utility Security

Standard security algorithms and well-established obfuscation methods are used in the Novell Server Consolidation Utility to protect the privacy of administrator passwords.

In a secure environment, you should not use the server-based processing feature. The XML script that is generated contains the administrator passwords in obfuscated form. Although the passwords are not written to the file in clear text, a knowledgeable hacker could derive the passwords from the obfuscated versions. For more information, see [Section 6.12, “Server-Based Processing,” on page 61](#).

## 14.3 Migration Wizard Security

Standard security algorithms and well established obfuscation methods are used in the NetWare® Migration Wizard to protect the privacy of administrator passwords.

In a secure environment, you should use the diskette method to copy NICI keys from the source server to the destination server, instead of copying the keys over the wire. For more information, see [Step 5 on page 104](#).



# Documentation Updates

# A

This section contains information on documentation content changes that have been made in the *Novell Server Consolidation and Migration Toolkit 1.2 Administration Guide*. This information can help you to keep current on updates to the documentation.

All changes that are noted in this section were also made in the documentation. 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 changes listed in this section.

The documentation update information is grouped according to the date the changes were published. Within a dated section, the changes are listed by the names of the main table of contents sections.

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 on the front title page and in the Legal Notices section immediately following the title page.

This documentation was updated on the following dates:

- ♦ [Section A.1, “September 28, 2007 \(Open Enterprise Server 2\),” on page 129](#)
- ♦ [Section A.2, “December 23, 2005 \(Open Enterprise Server SP2\),” on page 129](#)

## A.1 September 28, 2007 (Open Enterprise Server 2)

Changed version numbers to Server Consolidation and Migration Toolkit 1.2, Server Consolidation Utility 4.2, and NetWare® Migration Utility 8.2. Added information about support for eDirectory™ 8.8 SP2.

## A.2 December 23, 2005 (Open Enterprise Server SP2)

Combined the *Novell Server Consolidation Utility 4.1 Administration Guide* and the *Novell NetWare Migration Wizard 8.1 Administration Guide* and added them to this guide. Also reformatted the page design to comply with revised Novell® documentation standards.

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

- ♦ [Section A.2.1, “Server Consolidation and Migration Overview,” on page 129](#)
- ♦ [Section A.2.2, “What’s New,” on page 130](#)
- ♦ [Section A.2.3, “Installing the Server Consolidation and Migration Toolkit,” on page 130](#)
- ♦ [Section A.2.4, “Consolidating Data to OES Linux,” on page 130](#)
- ♦ [Section A.2.5, “Copying Double-Byte Character Set Data,” on page 130](#)

### A.2.1 Server Consolidation and Migration Overview

The following updates were made in this section:

| Location                                                                    | Change                                                                |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Section 1.3, "Supported Source and Destination Server Versions," on page 18 | Updated the list of supported source and destination server versions. |

## A.2.2 What's New

The following updates were made in this section:

| Location                                                                  | Change                                                                 |
|---------------------------------------------------------------------------|------------------------------------------------------------------------|
| Section 2.2, "What's New in the Server Consolidation Utility," on page 21 | Added new and enhanced features for Server Consolidation Utility 4.11. |

## A.2.3 Installing the Server Consolidation and Migration Toolkit

The following updates were made in this section:

| Location                                                        | Change                                                         |
|-----------------------------------------------------------------|----------------------------------------------------------------|
| Section 3.1, "Meeting the Workstation Requirements," on page 27 | Updated the workstations requirements for running the toolkit. |

## A.2.4 Consolidating Data to OES Linux

The following updates were made in this section:

| Location                                                                                      | Change                                                                            |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Section 8.4, "Migrating iPrint Printers and Print Managers from NetWare to Linux," on page 79 | Updated the requirements for migrating iPrint printers from NetWare to OES Linux. |

## A.2.5 Copying Double-Byte Character Set Data

The following updates were made in this section:

| Location                                             | Change                                                                      |
|------------------------------------------------------|-----------------------------------------------------------------------------|
| "Copying Double-Byte Character Set Data" on page 121 | Added information about changing the language support on OES Linux servers. |