Oracle® Fusion Middleware

Upgrade and Migration Guide for Oracle Directory Server Enterprise Edition

11*g* Release 1 (11.1.1.7.0)

E28971-01

January 2013

Provides instructions and suggestions for upgrading or migrating from a previous Directory Server Enterprise Edition installation.

ORACLE

Oracle Fusion Middleware Upgrade and Migration Guide for Oracle Directory Server Enterprise Edition, 11*g* Release 1 (11.1.1.7.0)

E28971-01

Primary Author: Gina Cariaga

Contents

10 Migrating Directory Proxy Server

11 Migrating Identity Synchronization for Windows

Preface

The *Upgrade and Migration Guide for Oracle Directory Server Enterprise Edition* describes how to migrate the components of Directory Server Enterprise Edition to version 11*g* Release 1 (11.1.1.7.0). The guide provides migration instructions for Directory Server, Directory Proxy Server, and Identity Synchronization for Windows.

Who Should Use This Book

This guide is intended for directory service administrators who are migrating to Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0). The guide might also be useful to business planners who are considering migrating to the new version.

How This Book Is Organized

- Chapter 1, "Determing Whether to Upgrade or Migrate an Existing Installation"
- Part I, "Upgrading from ODSEE 11g Release 1, 7.x, or 6.x"
- Part II, "Migrating from ODSEE 5.2 to ODSEE 11g Release 1 (11.1.1.7.0)"

Examples Used in This Guide

For consistency, the same example data is used throughout this guide. Replace these values with the appropriate values for your system.

Variable	Values used in examples
Suffix (SUFFIX_DN)	`dc=example,dc=com`
Instance path (INSTANCE_PATH)	For Directory Server: `/local/dsInst/` For Directory Proxy Server: `/local/dps/`
Hostnames (HOST)	`host1`, `host2`, `host3`
Port (PORT)	LDAP: Default for root: 389. Default for non-root: 1389 SSL default: Default for root: 636. Default for non-root: 1636

Oracle Directory Server Enterprise Edition Documentation Set

This documentation set explains how to use Oracle Directory Server Enterprise Edition to evaluate, design, deploy, and administer directory services. In addition, it shows

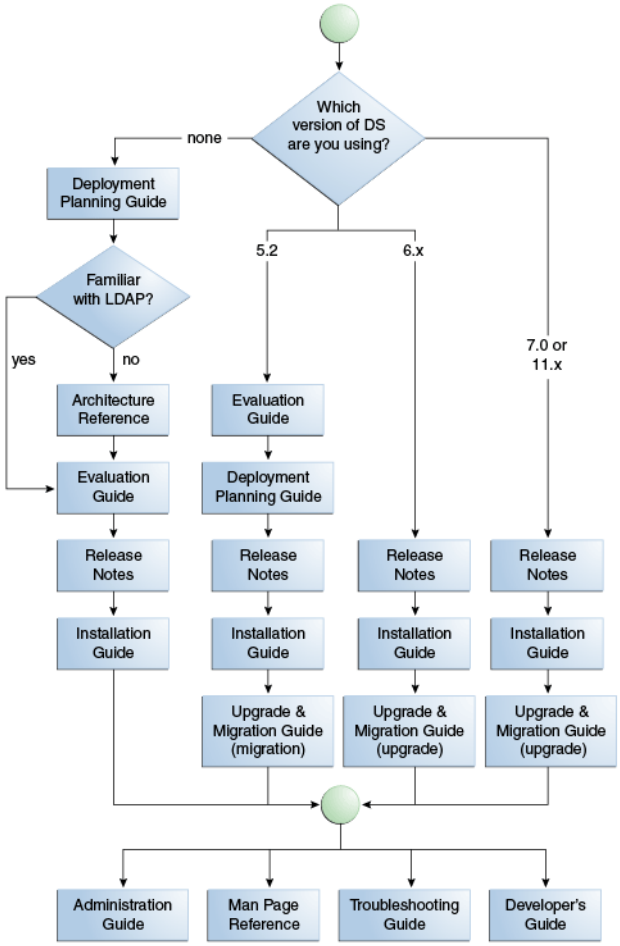
how to develop client applications for Directory Server Enterprise Edition. The Oracle Fusion Middleware Directory Server Enterprise Edition Documentation Library is available at http://docs.oracle.com/cd/E29127_01/index.htm.

The following table lists the documents that make up the Directory Server Enterprise Edition documentation set.

Document Title	Contents
Release Notes for Oracle Directory Server Enterprise Edition	Contains the latest information about Directory Server Enterprise Edition, including known problems.
Evaluation Guide for Oracle Directory Server Enterprise Edition	Introduces the key features of this release. Demonstrates how these features work and what they offer in the context of a deployment that you can implement on a single system.
Deployment Planning Guide for Oracle Directory Server Enterprise Edition	Explains how to plan and design highly available, highly scalable directory services based on Directory Server Enterprise Edition. Presents the basic concepts and principles of deployment planning and design. Discusses the solution life cycle, and provides high-level examples and strategies to use when planning solutions based on Directory Server Enterprise Edition.
Installation Guide for Oracle Directory Server Enterprise Edition	Explains how to install the Directory Server Enterprise Edition software. Shows how to configure the installed software and verify the configured software.
Upgrade and Migration Guide for Oracle Directory Server Enterprise Edition	Provides instructions for upgrading versions 11.1.1.3, 7.x, and 6 installations, and instructions for migrating version 5.2 installations.
Administrator's Guide for Oracle Directory Server Enterprise Edition	Provides command-line instructions for administering Directory Server Enterprise Edition. For hints and instructions about using the Directory Service Control Center, DSCC, to administer Directory Server Enterprise Edition, see the online help provided in DSCC.
Reference for Oracle Directory Server Enterprise Edition	Introduces technical and conceptual foundations of Directory Server Enterprise Edition. Describes its components, architecture, processes, and features.
Man Page Reference for Oracle Directory Server Enterprise Edition	Describes the command-line tools, schema objects, and other public interfaces that are available through Directory Server Enterprise Edition. Individual sections of this document can be installed as online manual pages.
Developer's Guide for Oracle Directory Server Enterprise Edition	Shows how to develop directory client applications with the tools and APIs that are provided as part of Directory Server Enterprise Edition.
Troubleshooting for Oracle Directory Server Enterprise Edition Guide	Provides information for defining the scope of the problem, gathering data, and troubleshooting the problem areas by using various tools.

Document Title	Contents
Release Notes for Identity Synchronization for Windows 6.0	Provides the latest information for installing, migrating, and upgrading Identity Synchronization for Windows 6.0 SP1.
Deployment Planning Guide for Identity Synchronization for Windows 6.0	Provides general guidelines and best practices for planning and deploying Identity Synchronization for Windows.
Installation and Configuration Guide for Identity Synchronization for Windows 6.0	Describes how to install and configure Identity Synchronization for Windows.

For an introduction to Directory Server Enterprise Edition, review the following documents in the order in which they are listed in the following figure.



Related Reading

The SLAMD Distributed Load Generation Engine is a Java application that is designed to stress test and analyze the performance of network-based applications. This application was originally developed by Sun Microsystems, Inc. to benchmark and analyze the performance of LDAP directory servers. SLAMD is available as an open source application under the Sun Public License, an OSI-approved open source license. To obtain information about SLAMD, go to `http://www.slamd.com/`. SLAMD is also available as a java.net project. See `https://slamd.dev.java.net/`.

Java Naming and Directory Interface (JNDI) supports accessing the Directory Server using LDAP and DSML v2 from Java applications. For information about JNDI, see http://www.oracle.com/technetwork/java/jndi/index.html. The *JNDI Tutorial* contains detailed descriptions and examples of how to use JNDI. This tutorial is at http://download.oracle.com/javase/jndi/tutorial/.

Identity Synchronization for Windows uses Message Queue with a restricted license. Message Queue documentation is available at http://www.oracle.com/technetwork/indexes/documentation/index.html.

Identity Synchronization for Windows works with Microsoft Windows password policies.

- Information about password policies for Windows 2003, is available in the Microsoft documentation (http://technet.microsoft.com/en-us/windowsserver/default.aspx) online.
- Information about the Microsoft Certificate Services Enterprise Root certificate authority, is available in the Microsoft support documentation (http://support.microsoft.com/default.aspx?scid=kb;en-us;247078) online.
- Information about configuring LDAP over SSL on Microsoft systems, is available in the Microsoft support documentation (http://support.microsoft.com/default.aspx?scid=kb;en-us;321051) online.

Redistributable Files

Directory Server Enterprise Edition does not provide any files that you can redistribute.

Default Paths and Command Locations

This section explains the default paths used in documentation, and provides locations of commands on different operating systems and deployment types.

Default Paths

The table in this section describes the default paths that are used in this document. For complete descriptions of the files installed, see Chapter 1, "Directory Server Enterprise Edition File Reference" in *Reference for Oracle Directory Server Enterprise Edition*.

Placeholder	Description	Default Value
install-path	Represents the base installation directory for Directory Server Enterprise Edition software.	When you install from a zip distribution using unzip, the *install-path* is the *current-directory*/dsee7.
instance-path	Represents the full path to an instance of Directory Server or Directory Proxy Server.	No default path exists. Instance paths must nevertheless always be found on a *local* file system.
	Documentation uses /local/dsInst/ for Directory Server and /local/dps/ for Directory Proxy Server.	On Solaris systems, the /var directory is recommended:

Placeholder	Description	Default Value
serverroot	Represents the parent directory of the Identity Synchronization for Windows installation location	Depends on your installation. Note that the concept of a *serverroot* no longer exists for Directory Server and Directory Proxy Server.
isw-*hostname*	Represents the Identity Synchronization for Windows instance directory	Depends on your installation
/*path*/*to*/cert8.db	Represents the default path and file name of the client's certificate database for Identity Synchronization for Windows	*current-working-dir*/cert8.db
serverroot/isw-*hostname*/linebreaklogs/	Represents the default path to the Identity Synchronization for Windows local log files for the System Manager, each connector, and the Central Logger	Depends on your installation
serverroot/isw-*hostname*/linebreaklogs/central/	Represents the default path to the Identity Synchronization for Windows central log files	Depends on your installation

Command Locations

The table in this section provides locations for commands that are used in Directory Server Enterprise Edition documentation. To learn more about each of the commands, see the relevant man pages. See also "Sofware Layout for Directory Server Enterprise Edition" in the *Reference for Oracle Directory Server Enterprise Edition*.

Command	Zip Distribution
certutil	*install-path*/bin/certutil
dpadm	*install-path*/bin/dpadm
dpconf	*install-path*/bin/dpconf
dsadm	*install-path*/bin/dsadm
dsccagent	*install-path*/bin/agent
dsccmon	*install-path*/bin/dsccmon
dsccreg	*install-path*/bin/dsccreg
dsccsetup	*install-path*/bin/dsccsetup
dsconf	*install-path*/bin/dsconf
dsmig	*install-path*/bin/dsmig
dsutil	*install-path*/bin/dsutil
entrycmp	*install-path*/bin/entrycmp
fildif	*install-path*/bin/fildif
idsktune	At the root of the unzipped zip distribution
insync	*install-path*/bin/insync
ldapmodify	*install-path*/dsrk/bin/ldapmodify
ldapsearch	*install-path*/dsrk/bin/ldapsearch
repldisc	*install-path*/bin/repldisc

Typographic Conventions

The following table describes the typographic conventions that are used in this book.

Typeface	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories, and onscreen computer output	Edit your `.login` file. Use `ls a` to list all files. `machine_name% you have mail.`
`AaBbCc123`	What you type, contrasted with onscreen computer output	`machine_name%` **`su`** `Password:`
aabbcc123	Placeholder: replace with a real name or value	The command to remove a file is `rm` *filename*.
AaBbCc123	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the *User's Guide*. A *cache* is a copy that is stored locally. Do *not* save the file. **Note:** Some emphasized items appear bold online.

Shell Prompts in Command Examples

The following table shows the default UNIX system prompt and superuser prompt for shells that are included in the Oracle Solaris OS. Note that the default system prompt that is displayed in command examples varies, depending on the Oracle Solaris release.

Shell	Prompt
Bash shell, Korn shell, and Bourne shell	`$`
Bash shell, Korn shell, and Bourne shell for superuser	`#`
C shell	`machine_name%`
C shell for superuser	`machine_name#`

Symbol Conventions

The following table explains symbols that might be used in this book.

Symbol	Description	Example	Meaning
`[ ]`	Contains optional arguments and command options.	`ls [-l]`	The `-l` option is not required.
`{ | }`	Contains a set of choices for a required command option.	`-d {y|n}`	The `-d` option requires that you use either the `y` argument or the `n` argument.
`${ }`	Indicates a variable reference.	`${com.sun.javaRoot}`	References the value of the `com.sun.javaRoot` variable.

Symbol	Description	Example	Meaning
-	Joins simultaneous multiple keystrokes.	Control-A	Press the Control key while you press the A key.
+	Joins consecutive multiple keystrokes.	Ctrl+A+N	Press the Control key, release it, and then press the subsequent keys.
>	Indicates menu item selection in a graphical user interface.	File > New > Templates	From the File menu, choose New. From the New submenu, choose Templates.

Documentation, Support, and Training

See the following web sites for additional resources:

- Documentation (http://www.oracle.com/technetwork/indexes/documentation/index.html)
- Support (http://www.oracle.com/us/support/systems/index.html)
- Training (http://education.oracle.com)

Oracle Software Resources

Oracle Technology Network (http://www.oracle.com/technetwork/index.html) offers a range of resources related to Oracle software:

- Discuss technical problems and solutions on the ODSEE Discussion Forum (http://forums.oracle.com/forums/forum.jspa?forumID=877) and the Directory Services blog (http://blogs.oracle.com/directoryservices/).
- See the latest announcements on the Directory Services blog (http://blogs.oracle.com/directoryservices/).
- Download ODSEE 11g Example Files (http://www.oracle.com/technetwork/middleware/id-mgmt/learnmore/odsee11113-examples-350399.zip).

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

1

Determining Whether to Upgrade or Migrate an Existing Installation

Upgrade and migration options enable you to replace an existing installation of Directory Server Enterprise Edition with the 11*g* Release 1 (11.1.1.7.0) release. The following topics are contained in this chapter:

1.1 Understanding What Happens During Upgrade and During Migration

Upgrading is supported for all Directory Server Enterprise versions other than Sun Java Directory Server 5.x. For Sun Java Directory Server 5.x, migration is the only option.

When you upgrade an existing 11g Release 1 , 7.x, or 6.x ODSEE instance to 11*g* Release 1 (11.1.1.7.0), the Directory Server configuration and files are automatically upgraded *in place* in the instance. You don't have to copy, export, or import anything.

When you migrate a 5.x instance to 11*g* Release 1 (11.1.1.7.0) using the `dsmig` command, the `dsmig` tool generates a new 11*g* Release 1 (11.1.1.7.0) instance, and then automatically copies over all the configuration from the existing 5.2 instance to the new 11*g* Release 1 (11.1.1.7.0) instance. If you cannot use the `dsmig` command, or simply choose not to use it, then you must maually copy the configuration, user data, schema, security components, and plug-ins from the existing 5.2 instance to the new 11*g* Release 1 (11.1.1.7.0) instance.

1.2 Using an Upgrade or Migration Path

Upgrade or migrate to 11*g* Release 1 (11.1.1.7.0) based upon the existing installation version number, and based upon whether ODSEE was initially installed using a zip distribution or using a native package distribution.

ODSEE 11*g* Release 1 (11.1.1.7.0) provides the following paths:

Upgrade an Existing 11g Release 1 or 7.x Zip Distribution Installation

When you upgrade an existing 11g Release 1 or 7.x ODSEE instance that was initially installed using a zip distribution, you overwrite the 11g Release 1 or 7.x version with a new installation of the 11*g* Release 1 (11.1.1.7.0) binaries. Co-existence with the older version is not possible.

Upgrade an Existing 11g Release 1 or 7.x Native Package Installation

When you upgrade an existing 11g Release 1 or 7.x ODSEE instance that was initially installed using a native package distribution, the 11*g* Release 1 (11.1.1.7.0) binaries are installed next to the older version. The older version can temporarily co-exist on the same machine.

Upgrading an Existing 6.x Zip or Native Package Installation

When you upgrade an existing Version 6.x instance, whether initially installed using a zip or native package, the 11*g* Release 1 (11.1.1.7.0) binaries are installed next to the older version. The older version can temporarily co-exist on the same machine.

Note: If you are upgrading an existing 6.2 installation to 11*g* Release 1 (11.1.1.7.0), you must complete important pre-upgrade steps. See Section 1.3, "Completing Pre-Upgrade and Pre-Migration Tasks."

Migrate an Existing 5.2 Zip or Native Package Installation

- If you use the `dsmig` tool, the 11*g* Release 1 (11.1.1.7.0) instance is automatically generated. All configuration and user data, and all other necessary files are copied from the 5.2 instance to the new 11*g* Release 1 (11.1.1.7.0) instance. The 5.2 instance and 11*g* Release 1 (11.1.1.7.0) instance cannot co-exist on the same machine.
- If you cannot use the `dsmig` tool or choose not to use it, you must manually create the new 11*g* Release 1 (11.1.1.7.0) instance. You must also manually copy the existing configuration and user data, security components, and plug-ins from the older 5.2 instance to the new 11*g* Release 1 (11.1.1.7.0) instance.

1.3 Completing Pre-Upgrade and Pre-Migration Tasks

Before you begin upgrading or migration, be sure to complete the following preparation steps:

- Before upgrading legacy Directory Server and Directory Proxy Server instances, make a backup of all the instances so that they can be restored if you encounter a problem during upgrade. Use a filesystem utility such as `tar` or `cpio` to backup the entire filesystem. For example:

  ```
  $ tar cf BACKUP_INSTANCE INSTANCE_DIRECTORY
  ```

- If you are upgrading from version 6.2 to 11*g* Release 1 (11.1.1.7.0), complete the following steps before proceeding with upgrade.

  1. Export database to an LDIF file.

     For more information see the `dsadm export` command in *dsadm*.

  2. Upgrade Directory Server Enterprise Edition 6.2 installation to version 6.3.

     For detailed information, see *Sun Directory Server Enterprise Edition 6.3 Installation Guide*.

  3. Import data from the LDIF file that was created in Step 1.

     For more information, see "Importing Data From an LDIF File" in *Administrator's Guide for Oracle Directory Server Enterprise Edition*

- In some cases, directly upgrading the server instances is not possible. For example, upgrading a version 6 32-bit instance that was running on Red Hat Enterprise Linux or SUSE Linux Enterprise Edition 64-bit platform is no longer possible. The instance has to be 64-bit to run on 64-bit platform. Such cases require extra steps.

If you are upgrading version 6 instances on a platform that is no longer supported, see Section 4.4, "Upgrading Directory Server Enterprise Edition 6 on Unsupported Platforms."

- If Directory Server chaining is configured, then delete such configurations before proceeding with upgrade or migration.
- Stop the Cacao module. For example:

Version 6.x Zip Distribution

 # INSTALL_PATH`/dsee6/cacao_2/usr/sbin/cacaoadm stop`

Versions 11.1.1.3, 11.1.1.5, or 7.x Zip Distributions

`# INSTALL_PATH/dsee7/bin/cacaoadm` stop

INSTALL_PATH`/dsee7/bin/cacaoadm` stop

For Native Package Installations

```
# /usr/sbin/cacaoadm stop
```

1.4 Taking the Next Steps

See the appropriate documentation for the upgrade or migration option you've chosen:

To Upgrade an Existing 11g Release 1 or 7.x zip distribution Installation

See Section 2, "Upgrading an Existing 11g Release 1 or 7.x Zip Distribution Installation."

To Upgrade an Existing 11g Release 1 or 7.x Native Package Installation

See Chapter 3, "Upgrading an Existing 11g Release 1 or 7.x Native Package Installation."

To Upgrade an Existing 6.x Zip or Native Package Installation

See Chapter 4, "Upgrading an Existing 6.x Zip or Native Package Installation."

To Migrate a Version 5.2 Zip or Native Package Installation

See Chapter 5, "Overview of the Migration Process for Directory Server."

Part I

Upgrading from ODSEE 11g Release 1, 7.x, or 6.x

Part II contains the following chapters:

2

Upgrading an Existing 11g Release 1 or 7.x Zip Distribution Installation

This chapter provides instructions for upgrading an existing 11g Release 1 or 7.x installation that was initially installed using a zip distribution. The following topics are included in this chapter:

- **Before You Begin Upgrading**
- **Upgrading the Administration (DSCC) Host**
- **Upgrading the Directory Server and Directory Proxy Server Hosts**

For information about what happens during upgrading, and about the various upgrade and migration options, see Chapter 1, "Determing Whether to Upgrade or Migrate an Existing Installation."

2.1 Before You Begin Upgrading

- Be sure you have resolved all issues listed in Section 1.3, "Completing Pre-Upgrade and Pre-Migration Tasks."
- Although you will run commands named `prepare-patch` and `complete-patch` in the following procedures, you are actually upgrading (and not "patching") the software.
- Upgrading must be performed by the user account that owns the Directory Server Enterprise Edition installation.
- Identify the server that hosts Directory Service Control Center. Always upgrade the Administration (DSCC) host before upgrading any Directory Server host or the Directory Proxy Server host.
- Upgrading requires two major procedures:
  1. Upgrading the Administration (DSCC) Host
  2. Upgrading the Directory Server and Directory Proxy Server Hosts

2.2 Upgrading the Administration (DSCC) Host

Before you can manage the Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0) instances using Directory Service Contol Center (DSCC), you must first complete some preparation steps, and then redeploy the Directory DSCC WAR file. After the DSCC WAR file is redeployed, then you can start using Directory Service Control Center 11*g* Release 1 (11.1.1.7.0) to access existing version 6x, 7.0, and 11*g* Release 1 (11.1.1.5.0 or 11.1.1.3.0) instances.

2.2.1 Prepare to Redeploy the DSCC WAR File

1. Stop the Cacao module. For example:

   Version 6.x Zip Distribution

   # *INSTALL_PATH*/dsee6/cacao_2/usr/sbin/cacaoadm stop

   Versions 11.1.1.3, 11.1.1.5, or 7.x Zip Distributions

   ```
   # INSTALL_PATH/dsee7/bin/cacaoadm stop
   ```
   # *INSTALL_PATH*/dsee7/bin/cacaoadm stop

   For Native Package Installations

   ```
   # /usr/sbin/cacaoadm stop
   ```

2. Run the following command:

   ```
   # install-path/bin/dsccsetup prepare-patch
   ```

3. Install ODSEE 11g R1 (11.1.1.7.0), overwriting the existing installation.

   See "Chapter 2, Installing Directory Server Enterprise Edition" in *Oracle Directory Server Enterprise Edition Installation Guide*.

4. Run the following command:

   ```
   # install-path/bin/dsccsetup complete-patch
   ```

2.2.2 Redeploy the DSCC WAR File

1. Create the WAR file for DSCC.

   ```
   # install-path/bin/dsccsetup war-file-create
   Created install-path/var/dscc7.war
   ```

   Make note of the WAR file location.

2. Deploy `dscc7.war` in an Application server.

For detailed instructions, see both of the following:

- *Pre-Configuring the Directory Server Enterprise Edition Installation* in *Installation Guide for Oracle Directory Server Enterprise Edition*
- "Appendix A, Deploying the DSCC WAR File" in *Installation Guide for Oracle Directory Server Enterprise Edition*

2.3 Upgrading the Directory Server and Directory Proxy Server Hosts

Perform this upgrade procedure on each Directory Server Enterprise Edition installation. However, identify the server that hosts Directory Service Control Center, and upgrade it first, before upgrading any other servers. See Section 2.2, "Upgrading the Administration (DSCC) Host."

Note: Upgrading the Directory Server must be performed by the user account that owns the Directory Server Enterprise Edition installation.

---

1. Stop the Cacao module. For example:

Version 6.x Zip Distribution

```
# INSTALL_PATH/dsee6/cacao_2/usr/sbin/cacaoadm stop
```

Versions 11.1.1.3, 11.1.1.5, or 7.x Zip Distributions

```
# INSTALL_PATH/dsee7/bin/cacaoadm stop
# INSTALL_PATH/dsee7/bin/cacaoadm stop
```

For Native Package Installations

```
# /usr/sbin/cacaoadm stop
```

2. Run the following command.

```
# install-path/bin/dsccsetup prepare-patch
```

The `dsccsetup prepare-patch` command attempts to stop all running instances of Directory Server and Directory Proxy Server.

- If the following message is displayed, then skip to step 3:

```
You can now safely patch your installation.
```

- If the `dsccsetup prepare-patch` command does not have permission to stop a server instance, it displays a message that describes its failure, and you must manally stop the server before continuing. Go to step 2.

3. If the `prepare-patch` command did not stop the server (see Section 2.2.1, "Prepare to Redeploy the DSCC WAR File") then run one of the following commands to make sure that the server is stopped.

To stop a directory server, run this command:

```
# install-path/bin/dsadm stop instance-path
```

To stop a proxy server, run this command:

```
# install-path/bin/dpadm stop instance-path
```

4. Create a temporary directory *TEMP_DIRECTORY*, and store a copy of the installation file in it.

5. Type the following commands to install the Directory Server Enterprise Edition software.

```
# cd TEMP_DIRECTORY
# unzip -q ODSEE11_1_1_5_0_xxx.zip
# cd ODSEE_ZIP_Distribution
# unzip -q sun-dsee7.zip -d install-path
# cd install-path/dsee7
```

This step effectively overwrites the existing installation, so the *install-path* refers to the installation path used in Step 1. All existing files should be overwritten.

6. Run the following command:

```
# install-path/bin/dsccsetup complete-patch
```

The output of `dsccsetup complete-path` specifies the exact path and command you will launch in step 8. Make note of the path and command.

7. If you manually stopped the server in step 2 above, then the Directory Server instance was not automatically upgraded in Step 5. You must now manually upgrade the Directory Service instance by running the following command:

```
# install-path/bin/dsadm upgrade [-i] instance-path
```

8. Create a new DSCC agent and add the agent to the DSCC registry.

   a. Create a DSCC agent using the exact path and command specified in step 5. For example:

   ```
   # install-path/bin/dsccagent create
   Enter DSCC agent password: ***
   Confirm the password: ***
   Agent instance install-path/var/dcc/agent has been created successfully
   Run the following command to register the agent in the registry:
   install-path/bin/dsccreg add-agent install-path/var/dcc/agent
   ```

   b. Register the new DSCC agent in the DSCC registry.

   Use the command displayed at the completion of the previous step. For example:

   ```
   # install-path/bin/dsccreg add-agent install-path/var/dcc/agent
   ```

   c. Start the DSCC agent.

   ```
   # install-path/bin/dsccagent start
   ```

9. Create an SNMP agent, and configure Directory Server instances to use the SNMP agent.

   a. Create the SNMP agent.

   ```
   # install-path/bin/dsccagent enable-snmp
   ```

   b. Configure all Directory Server instances you want to manage through SNMP.

   Run the following command to obtain the DS port number for an instance you want to manage through SNMP:

   ```
   install-path/bin/dsconf set-plugin-prop dssnmp argument:on argument:3995
   Instance Path         :   install-dir/dsee7/var/dcc/agent
   Owner                 :   root
   JMX port              :   3997
   SNMP port             :   3996
   DS port               :   3995
   State                 :   Stopped
   PID                   :   -
   DSCC hostname         :   host2
   DSCC non-secure port  :   3998
   DSCC secure port      :   3999
   SNMP v3               :   Disabled
   Instance version      :   A-A00
   ```

   Run the following command using the DS port number obtained in the previous step to set the port number argument:

   ```
   # install-patch/bin/dsconf set-plugin-prop dssnmp argument:on argument:3995
   ```

After upgrading is complete, when you start DSCC, it uses the new DSCC agent.

3

Upgrading an Existing 11g Release 1 or 7.x Native Package Installation

This chapter provides instructions for upgrading an existing 11g Release 1 or 7.x installation that was initially installed using a native package distribution. The following topics are included in this chapter:

- **Before You Begin Upgrading**
- **Upgrading the Administration (DSCC) Host**
- **Upgrading the Directory Server and Directory Proxy Server Hosts**

For information about what happens during upgrading, and about various upgrade and migration options, see Chapter 1, "Determing Whether to Upgrade or Migrate an Existing Installation."

3.1 Before You Begin Upgrading

- Be sure you have resolved all issues listed in Section 1.3, "Completing Pre-Upgrade and Pre-Migration Tasks."
- Upgrading must be performed by the user account that owns the Directory Server Enterprise Edition installation.
- Although you will run a command named `prepare-patch` in the following procedures, you are actually upgrading (and not "patching") the software.
- Identify the server that hosts Directory Service Control Center. Always upgrade the Administration (DSCC) host before upgrading any Directory Server host or Directory Proxy Server host.
- Upgrading requires two major procedures:
  1. Upgrading the Administration (DSCC) Host
  2. **Upgrading the Directory Server and Directory Proxy Server Hosts**

3.2 Upgrading the Administration (DSCC) Host

1. Stop the Cacao module. For example:

   Version 6.x Zip Distribution

   # *INSTALL_PATH*`/dsee6/cacao_2/usr/sbin/cacaoadm stop`

   Versions 11.1.1.3, 11.1.1.5, or 7.x Zip Distributions

   `# INSTALL_PATH/dsee7/bin/cacaoadm` stop
   # *INSTALL_PATH*`/dsee7/bin/cacaoadm` stop

For Native Package Installations

```
# /usr/sbin/cacaoadm stop
```

2. Install Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0).

   See "Chapter 2 Installing Directory Server Enterprise Edition" in the *Installation Guide for Oracle Directory Server Enterprise Edition*.

3. On Solaris 10 only, disable SMF services associated with Active Directory Server.

4. Stop the existing DSCC registry and export its content.

   The variable *install-path* specifies the path where the existing Directory Server Enterprise Edition installed.

   a. Stop the existing DSCC registry.

      ```
      # install-path/bin/dsadm stop install-path/var/dcc/ads
      ```

   b. Record the existing DSCC registry port numbers.

      ```
      # native-install-path/bin/dsadm info install-path/var/dcc/ads
      ```

   c. Export the existing DSCC registry content.

      ```
      # native-install-path/bin/dsadm export /var/opt/SUNWdsee7/dcc/ads cn=dscc
      /tmp/dscc.ldif
      ```

      The `/tmp/dscc.ldif` file contains the server configuration.

5. Create and redeploy a new 11g R1 11.1.1.7.0 WAR file.

6. Create and populate the DSCC 11*g* Release 1 (11.1.1.7.0) registry with the previous version registry content.

   a. Create the DSCC 11*g* Release 1 (11.1.1.7.0) registry by using the same ports that the existing DSCC registry has used.

      ```
      # install-path/bin/dsccsetup ads-create -p port -P secure-port
      ```

      The `port` and `secure-port` values are the values that are recorded in Step 2b.

   b. Stop the registry.

      ```
      # install-path/bin/dsadm stop install-path/var/dcc/ads
      ```

   c. Import the `/tmp/dscc.ldif` file.

      ```
      # install-path/bin/dsadm import install-path/var/dcc/ads /tmp/dscc.ldif
      cn=dscc
      ```

   d. Start the registry.

      ```
      # install-path/bin/dsadm start install-path/var/dcc/ads
      ```

   e. Verify all the registrations of the server.

      ```
      # install-path/bin/dsccreg list-servers -p port-number
      ```

      All the existing servers are displayed.

   f. You can see all the Directory Server instances.

      ```
      # install-path/bin/dsccmon view-servers -p port-number
      ```

      The server instances are shown as the legacy version instances.

3.3 Upgrading the Directory Server and Directory Proxy Server Hosts

To use the existing Directory Server and Directory Proxy Server instances with the Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0) installation, you must upgrade all the legacy instances.

The upgrade process modifies the current configuration and instance data without allowing to revert back the changes.

Before upgrading legacy Directory Server and Directory Proxy Server instances, make a backup of all the instances so that they can be restored in case of any problem. Use a filesystem utility such as `tar` or `cpio`. For example:

```
$ tar cf BACKUP_INSTANCE INSTANCE_DIRECTORY
```

Repeat the following procedure for each existing version 7.x or 11g Release 1 (11.1.1.5.0 or 11.1.1.3.0) Directory Server or Directory Proxy Server instance that was initially installed using a native package distribution.

1. Identify the port that Cacao is running on, and make note of it. You will need this port number in step 8.

   ```
   $ install-path/bin/dsccsetup status
   ***
   DSCC Agent is registered in Cacao
   Cacao uses a custom port number (11168)
   ***
   DSCC Registry has been created
   Path of DSCC registry is /var/opt/SUNWdsee7/dcc/ads
   Port of DSCC registry is 3998
   ```

2. Stop the Cacao module. For example:

   Version 6.x Zip Distribution

   # *INSTALL_PATH*`/dsee6/cacao_2/usr/sbin/cacaoadm stop`

   Versions 11.1.1.3, 11.1.1.5, or 7.x Zip Distributions

   `# `*`INSTALL_PATH`*`/dsee7/bin/cacaoadm` stop
   # *INSTALL_PATH*`/dsee7/bin/cacaoadm` stop

   For Native Package Installations

   `# /usr/sbin/cacaoadm stop`

3. Disable all the features specific to native packages by using the native packages installation.

   - If the instance is registered to start at boot, type the following command:

     Directory Server

     # *native-dsee-install-path*`/bin/dsadm autostart --off INSTANCE_PATH`

     Directory Proxy Server

     # *native-dsee-install-path*`/bin/dpadm autostart --off INSTANCE_PATH`

   - If the instance is registered as a Windows service, type the following command:

     Directory Server

     # *native-dsee-install-path*`\bin\dsadm.exe disable-service --type WIN_SERVICE INSTANCE_PATH`

Directory Proxy Server

```
# native-dsee-install-path\bin\dpadm.exe disable-service --type WIN_
SERVICE INSTANCE_PATH
```

- If the instance is registered as an SMF service, type the following command:

  Directory Server

  ```
  # native-dsee-install-path/bin/dsadm disable-service --type SMF INSTANCE_
  PATH
  ```

  Directory Proxy Server

  ```
  # native-dsee-install-path/bin/dpadm disable-service --type SMF INSTANCE_
  PATH
  ```

4. Run the following command.

   ```
   # native-dsee-install-path/bin/dsccsetup prepare-patch
   ```

   The `dsccsetup prepare-patch` command attempts to stop all running instances of Directory Server and Directory Proxy Server.

   - If the following message is displayed, then skip to step 4:

     ```
     You can now safely patch your installation.
     ```

   - If the `dsccsetup prepare-patch` command does not have permission to stop a server instance, it displays a message that describes its failure, and you must manally stop the server before continuing. Go to step 3.

5. If the `prepare-patch` command in the previous step did not stop the server, then run one of the following commands to make sure that the server is stopped.

   To stop a directory server, run this command:

   ```
   # native-dsee-install-path/bin/dsadm stop INSTANCE_PATH
   ```

   To stop a proxy server, run this command:

   ```
   # native-dsee-install-path/bin/dpadm stop INSTANCE_PATH
   ```

6. Type the following commands to install the Directory Server Enterprise Edition software.

   ```
   # cd TEMP_DIRECTORY
   # unzip -q ODSEE11_1_1_7_0_xxx.zip
   # cd ODSEE_ZIP_Distribution
   # unzip -q sun-dsee7.zip -d install-path
   # cd install-path/dsee7
   ```

7. Upgrade the server instance. For example:

   ```
   # install-path/bin/dsadm upgrade [-i] instance-path
   ```

8. Create a new DSCC agent and add the agent to the DSCC registry.

   a. Create a DSCC agent using the same port as Cacao if possible (see step 1):

   ```
   # install-path/bin/dsccagent create -p 11168
   Enter DSCC agent password: ***
   Confirm the password: ***
   Agent instance install-path/var/dcc/agent has been created successfully
   Run the following command to register the agent in the registry:
   install-path/bin/dsccreg add-agent install-path/var/dcc/agent
   ```

b. Register the new DSCC agent in the DSCC registry.

Use the command displayed at the completion of the previous step. For example:

```
# install-path/bin/dsccreg add-agent install-path/var/dcc/agent
```

c. If the new DSCC agent doesn't listen on the same port as Cacao, then run the following command:

```
# install-path/bin/dsccreg add-server
```

d. Start the DSCC agent.

```
# install-path/bin/dsccagent start
```

9. Create an SNMP agent, and configure Directory Server instances to use the SNMP agent.

a. Create the SNMP agent.

```
# install-path/bin/dsccagent enable-snmp
```

b. Configure all Directory Server instances you want to manage through SNMP.

Run the following command to obtain the DS port number for an instance you want to manage through SNMP:

```
# install-path/bin/dsccagent info
Instance Path         :   install-dir/dsee7/var/dcc/agent
Owner                 :   root
JMX port              :   3997
SNMP port             :   3996
DS port               :   3995
State                 :   Stopped
PID                   :   -
DSCC hostname         :   host2
DSCC non-secure port  :   3998
DSCC secure port      :   3999
SNMP v3               :   Disabled
Instance version      :   A-A00
```

Run the following command using the DS port number obtained in the previous step to set the port number argument:

```
# install-path/bin/dsconf set-plugin-prop dssnmp argument:on argument:3995
```

After upgrading is complete, when you start DSCC, it uses the new DSCC agent.

4

Upgrading an Existing 6.x Zip or Native Package Installation

This chapter provides instructions for upgrading an existing version 6.x installation that was initially installed using either a zip or native package distribution. The following topics are included in this chapter:

- **Before You Begin Upgrading**
- **Upgrading the Administration (DSCC) Host**
- **Upgrading Directory Server and Directory Proxy Server Hosts**
- **Upgrading Directory Server Enterprise Edition 6 on Unsupported Platforms**

For information about what happens during upgrading, and about various upgrade and migration options, see Chapter 1, "Determing Whether to Upgrade or Migrate an Existing Installation."

4.1 Before You Begin Upgrading

- Be sure you have resolved all issues listed in Section 1.3, "Completing Pre-Upgrade and Pre-Migration Tasks."
- Upgrading must be performed by the user account that owns the Directory Server Enterprise Edition installation.
- Identify the server that hosts Directory Service Control Center. Always upgrade the Administration (DSCC) host before upgrading its Directory Server host or the Directory Proxy Server host.
- Upgrading requires two major procedures:
  1. Upgrading the Administration (DSCC) Host
  2. Upgrading Directory Server Enterprise Edition 6 on Unsupported Platforms

4.2 Upgrading the Administration (DSCC) Host

To access the Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0) instances using DSCC, you must upgrade DSCC 6 to version 11*g* Release 1 (11.1.1.7.0).

Using DSCC 11*g* Release 1 (11.1.1.7.0) you can access version 6, 7.0, and 11*g* Release 1 (11.1.1.5.0 and 11.1.1.3.0) instances.

1. Stop the Cacao module. For example:

Version 6.x Zip Distribution

INSTALL_PATH/dsee6/cacao_2/usr/sbin/cacaoadm stop

Versions 11.1.1.3, 11.1.1.5, or 7.x Zip Distributions

INSTALL_PATH/dsee7/bin/cacaoadm stop
INSTALL_PATH/dsee7/bin/cacaoadm stop

For Native Package Installations

/usr/sbin/cacaoadm stop

2. Install Directory Server Enterprise Edition 11g Release 1 (11.1.1.7.0).

   For more information, see " Installing Directory Server Enterprise Edition," in *Installation Guide for Oracle Directory Server Enterprise Edition*.

3. On Solaris 10 only, disable SMF services associated with Active Directory Server.

4. Stop the DSCC 6 registry and export its content.

   The dsee6-install-path specifies the path where Directory Server Enterprise Edition 6 is installed.

   a. Stop the DSCC 6 registry.

      ```
      # dsee6-install-path/ds6/bin/dsadm stop
      dsee6-install-path/var/dscc6/dcc/ads
      ```

   b. Record the DSCC 6 registry port numbers.

      ```
      # dsee6-install-path/ds6/bin/dsadm info
      dsee6-install-path/var/dscc6/dcc/ads
      ```

   c. Export the DSCC 6 registry content.

      ```
      # dsee6-install-path/ds6/bin/dsadm export
      dsee6-install-path/var/dscc6/dcc/ads cn=dscc /tmp/dscc.ldif
      ```

      The /tmp/dscc.ldif file contains the server configuration.

5. Create and populate the DSCC 11g Release 1 (11.1.1.7.0) registry with the version 6 registry content.

   a. Create the DSCC 11g Release 1 (11.1.1.7.0) registry by using the same ports that DSCC 6 registry has used.

      ```
      # install-path/bin/dsccsetup ads-create -p port -P secure-port
      ```

   b. Stop the registry.

      ```
      # install-path/bin/dsadm stop install-path/var/dcc/ads
      ```

   c. Import the /tmp/dscc.ldif file.

      ```
      # install-path/bin/dsadm import install-path/var/dcc/ads /tmp/dscc.ldif
      cn=dscc
      ```

   d. Start the registry.

      ```
      # install-path/bin/dsadm start install-path/var/dcc/ads
      ```

   e. Verify all the registrations of the server.

      ```
      # install-path/bin/dsccreg list-servers -p port-number
      ```

All the existing servers are displayed. All the registrations are version 6 registrations.

f. You can see all the Directory Server instances.

```
# install-path/bin/dsccmon view-servers -p port-number
```

The server instances are shown as version 6 instances.

6. Install a supported application server, and then Deploy the DSCC 11g Release 1 (11.1.1.7.0) WAR file.

See "Appendix A, Deploying the DSCC WAR File," in *Oracle Directory Server Enterprise Edition Installation Guide*.

If you have upgraded DSCC that was installed by using a zip distribution, you must access DSCC as root.

7. Uninstall Directory Server Enterprise Edition 6.

For more information, see the *Directory Server Enterprise Edition 6 Installation Guide*.

4.3 Upgrading Directory Server and Directory Proxy Server Hosts

The following procedure is valid for upgrading native packages -based instances on the Solaris operating system to zip distribution-based instances on the Solaris operating system.

1. Stop the Cacao module. For example:

Version 6.x Zip Distribution

```
# INSTALL_PATH/dsee6/cacao_2/usr/sbin/cacaoadm stop
```

Versions 11.1.1.3, 11.1.1.5, or 7.x Zip Distributions

```
# INSTALL_PATH/dsee7/bin/cacaoadm stop
# INSTALL_PATH/dsee7/bin/cacaoadm stop
```

For Native Package Installations

```
# /usr/sbin/cacaoadm stop
```

2. Install Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0).

3. Before you upgrade the version 6 instances that were created using native packages to the 11*g* Release 1 (11.1.1.7.0) zip distribution instances, disable all the features specific to native packages by using the version 6 native packages installation.

- If your instance is registered to start at boot, type the following command:

```
$ install-path/bin/dsadm autostart --off INSTANCE_PATH
```

- If your instance is registered as a Windows service, type the following command:

```
$ install-path/bin/dsadm disable-service --type WIN_SERVICE INSTANCE_PATH
```

- If your instance is registered as an SMF service, type the following command:

```
$ install-path/bin/dsadm disable-service --type SMF INSTANCE_PATH
```

- If your instance is registered in a cluster, type the following command:

```
$ install-path/bin/dsadm disable-service --type CLUSTER INSTANCE_PATH
```

4. Type the following command from the version 11*g* Release 1 (11.1.1.7.0) installation to upgrade the Directory Server instances.

   ```
   $ install-path/bin/dsadm upgrade [-i] INSTANCE_PATH
   ```

   For example, to upgrade the `/local/example` instance, type the following command:

   ```
   # install-path/bin/dsadm upgrade /local/example
   Directory Server instance '/local/example' will be upgraded to version 11g
   Release 1 (11.1.1.7.0).
   It will no longer be usable with DSEE 6 commands.
   Moving legacy scripts into '/local/example/bak/2011-03-28-01-45-18' ...
   Adding new files to instance ...
   Upgrading dse.ldif ...
   Old version of dse.ldif has been moved into
   '/local/example/bak/2011-03-28-01-45-18'.
   Upgrading dse.ldif ...
   Old version of dse.ldif has been moved into
   '/local/example/bak/2011-03-28-01-45-18'.
   Old version of 00core.ldif has been moved into
   '/local/example/bak/2011-03-28-01-45-18'.
   Directory Server instance '/local/DSEE-2011-03-28-01-26/instances/SSL_02' is
   now ready to be used with ODSEE 11g Release 1 (11.1.1.7.0) comm
   ```

   Use `–i` with the `dsadm upgrade` command to suppress the warning message.

5. Create a new DSCC agent and add the agent to the DSCC registry.

   a. Create a DSCC agent:

      ```
      # install-path/bin/dsccagent create
      Enter DSCC agent password: ***
      Confirm the password: ***
      Agent instance install-path/var/dcc/agent has been created successfully
      Run the following command to register the agent in the registry:
      install-path/bin/dsccreg add-agent install-path/var/dcc/agent
      ```

   b. Register the new DSCC agent in the DSCC registry.

      Use the command displayed at the completion of the previous step. For example:

      ```
      # install-path/bin/dsccreg add-agent install-path/var/dcc/agent
      ```

   c. If the new DSCC agent doesn't listen on the same part as Cacao, then run the following command:

      ```
      # install-path/bin/dsccreg add-server
      ```

6. Create an SNMP agent, and configure Directory Server instances to use the SNMP agent.

   a. Create the SNMP agent.

      ```
      # install-path/bin/dsccagent enable-snmp
      ```

   b. Configure all Directory Server instances you want to manage through SNMP.

      Run the following command to obtain the DS port number for an instance you want to manage through SNMP:

      ```
      # install-path/bin/dsccagent info
      Instance Path         :   install-dir/dsee7/var/dcc/agent
      ```

```
Owner                 :   root
JMX port              :   3997
SNMP port             :   3996
DS port               :   3995
State                 :   Stopped
PID                   :   -
DSCC hostname         :   host2
DSCC non-secure port  :   3998
DSCC secure port      :   3999
SNMP v3               :   Disabled
Instance version      :   A-A00
```

Run the following command using the DS port number obtained in the previous step to set the port number argument:

```
# install-patch/bin/dsconf set-plugin-prop dssnmp argument:on argument:3995
```

7. Remove Directory Server Enterprise Edition 6 with a system command. For example:

   `# rm -r` *install-path*

8. (Optional) If you disabled any services prior to upgrading, be sure to re-enable those services now.

After upgrading is complete, when you start DSCC, it uses the new DSCC agent.

Directory Server 6 is Noncompliant with RFC 4522

After upgrading to version 11*g* Release 1 (11.1.1.7.0), the following version 6 behavior is preserved:

Directory Server 6 is noncompliant with RFC 4522 when returning binary attributes in search results. To preserve this behavior, by default, the `compat-flag` Directory Server configuration property is set to `no-rfc4522`. To check the value of `compat-flag`, refer to the following command:

```
$ dsconf get-server-prop -p port compat-flag
```

For more information about the `compat-flag` property, see *server*.

Upgraded Instances Cannot Be Restored

The legacy instances, once upgraded, cannot be restored to the previous installation.

The following `dsadm` commands do not require legacy instances to be upgraded before using them.

```
- info
- stop
- disable-service
- autostart --off
- get-flags
- set-flags
- add-cert
- add-selfsign-cert
- export-cert
- import-cert
- import-selfsign-cert
- list-certs
- remove-cert
- renew-cert
- renew-selfsign-cert
```

```
- request-cert/show-cert
- show-access-log
- show-error-log
- delete
```

To use the upgraded instances with DSCC 11*g* Release 1 (11.1.1.7.0), you must unregister the Directory Server instances from DSCC 6 and register them with DSCC 11*g* Release 1 (11.1.1.7.0). For more information about registration and unregistration, refer to *dsccreg*.

4.4 Upgrading Directory Server Enterprise Edition 6 on Unsupported Platforms

In Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0), some platforms are no more supported. You must perform the specific operations to use your existing data and instances.

For more information about supported platforms, see the ODSEE Certification Matrix. (http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html).

Refer to the following procedure based on your requirements:

- To Upgrade Directory Server Enterprise Edition From Legacy Operating System
- To Upgrade 32-bit Server Instances

4.4.1 To Upgrade Directory Server Enterprise Edition From Legacy Operating System

For more information on supported operating systems, see the ODSEE Certification Matrix.
(http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html).

1. Stop the Directory Server and Directory Proxy Server instances.
2. Take a backup of the whole filesystem.

   For more information, refer to *Backing Up a File System* in *Binary Backup* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

   If you need to upgrade only the Directory Proxy Server instances, use only the `dpadm backup` command.
3. Upgrade your operating system version or choose a different machine with the supported operating system version installed.

   Note: If you are upgrading your operating system on the same machine, do not forget to copy your back up data to other machine.

4. Install Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0).

   Based on the solution, refer to any of the following procedures:

   - Based on your previous installation and platform combination, see the *Hardware and Operating System Requirements* in *Release Notes for Oracle Directory Server Enterprise Edition*to find out what type of distribution you can install.
   - For detailed installation instructions, see the *Installation Guide for Oracle Directory Server Enterprise Edition*.

5. Restore the filesystem that you backed up in Step 2.

   In case of only Directory Proxy Server instances, you can restore them using `dpadm restore`.

6. Upgrade your legacy server instances.

   - For Directory Server instances:

     install-path`/bin/dsadm upgrade` *INSTANCE_PATH*

   - For Directory Proxy Server instances:

     install-path`/bin/dpadm upgrade` *INSTANCE_PATH*

4.4.2 To Upgrade 32-bit Server Instances

There is no direct way to upgrade Directory Server Enterprise Edition 6 32-bit server instances that are running on 64-bit Red Hat Enterprise Linux or SUSE Linux Enterprise Edition operating system. Even though the server instances cannot be upgraded fully automatically, the `dsadm upgrade` and `dpadm upgrade` commands upgrade the server configuration successfully.

Refer to the following procedure to upgrade such instances:

1. If your Directory Server instance is configured to use non-default directories for databases, note the following paths:

   - For databases:

     `DSEE_6_install-path/ds6/bin/dsconf get-server-prop -p` *port-number* `db-env-path db-log-path`

   - For each suffix:

     `DSEE_6_install-path/ds6/bin/dsconf get-suffix-prop -p` *port-number SUFFIX_DN* `db-path`

2. Export your data using version 6 installation.

   DSEE_6_install-path`/ds6/bin/dsadm export` *INSTANCE_PATH SUFFIX_DN LDIF_FILE*

3. Take a backup of all the instances.

   `$ tar cf` *BACKUP_INSTANCE INSTANCE_DIRECTORY*

4. Upgrade your legacy server instances.

   Note: If you have a customized schema, that needs to be manually upgraded as well. See the documentation for your version of Directory Server Enterprise Edition for detailed instructions on how to upgrade customized schema. See the Legacy Sun Identity Management Documentation webpage at http://www.oracle.com/technetwork/documentation/legacy-sun-identity-mgmt-193462.html.

   - For Directory Server instances:

     DSEE_7_install-path`/bin/dsadm upgrade` *INSTANCE_PATH*

   - For Directory Proxy Server instances:

```
DSEE_7_install-path/bin/dpadm upgrade INSTANCE_PATH
```

5. If your Directory Server instance was configured to use non-default directories for databases, the configuration has been reset but files have not been deleted. Before reconfiguring your instance to use non-default directories, you must delete all old databases, caches, and transaction logs.
6. Import your data in the version 11*g* Release 1 (11.1.1.7.0) server instance.

   For each suffix:

   ```
   install-path/bin/dsadm import INSTANCE_PATH LDIF_FILE SUFFIX_DN
   ```

See Also

Migrating User Data Manually

Part II

Migrating from ODSEE 5.2 to ODSEE 11*g* Release 1 (11.1.1.7.0)

This part includes the information related to migration from version 5.2 and all the later releases of 5.2, to 11*g* Release 1 (11.1.1.7.0). In this part of the document, all the references to version 5.2 refer to 5.2 and all the later versions of 5.2.

The migration procedure leaves the original instance intact and creates a new instances to use with the 11*g* Release 1 (11.1.1.7.0) installation. If required, the original instances can still be used.

This part includes the following chapters:

- Chapter 5, "Overview of the Migration Process for Directory Server" explains the steps involved in migrating Directory Server.
- Chapter 6, "Automated Migration Using the `dsmig` Command" explains how to use the migration tool.
- Chapter 7, "Migrating Directory Server Manually" describes the process for manual migration of each part of the server.
- Chapter 8, "Migrating a Replicated Topology" explains how to migrate a replicated topology and the issues involved in migrating replicated servers.
- Chapter 9, "Architectural Changes in Directory Server Since Version 5.2" explains the architectural changes that affect migration from a previous version.
- Chapter 10, "Migrating Directory Proxy Server" explains the Directory Proxy Server migration.
- Chapter 11, "Migrating Identity Synchronization for Windows" explains the Identity Synchronization for Windows migration.

5

Overview of the Migration Process for Directory Server

This chapter describes the steps involved in migrating version 5.2 to Oracle Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0). ODSEE 11*g* Release 1 (11.1.1.7.0) provides a migration tool, `dsmig`, that automates aspects of the migration for certain platform/version combinations. If servers within your topology fall outside of these combinations, the same migration steps must be performed manually.

This chapter includes the following topics:

5.1 Before You Migrate

This chapter provides an overview of the upgrade and data migration process.

Before upgrading, familiarize yourself with the new features and fixes available in the current version. Take the opportunity to review design decisions made during implementation of existing directory services. For a description of all new features and fixes, see Chapter 1, *New Features in Oracle Directory Server Enterprise Edition 11g* Release 1 (11.1.1.7.0), in *Release Notes for Oracle Directory Server Enterprise Edition*. For information about the new features that specifically affect migration, see Chapter 9, "Architectural Changes in Directory Server Since Version 5.2".

5.1.1 Prerequisites to Migrate a Single Directory Server Instance

Before migrating a server instance, ensure that the following prerequisites are met:

- Directory Server 11*g* Release 1 (11.1.1.7.0) must be installed. The new server can be installed on the same machine as the existing server or on a different machine.
- Ensure that the new machine has sufficient local disk space to house binaries and databases for both the old and new servers, and also enough extra space to hold LDIF files containing the entries in all existing suffixes. You can estimate the local disk space required as somewhat larger than the following calculation.

  ```
  local space required = 2 * (space for existing server) + (space for LDIF files)
  ```

- If you are using the automatic migration tool, the following two prerequisites must be met:

- The existing server instance must be stopped cleanly.
- If the new server is located on a different machine, a complete image of the original server instance must be created on the new machine. This includes all schema files, configuration files, security files, and database files, in an identical layout to the original server root.

To determine whether you should use automatic or manual migration, see Deciding on Automatic or Manual Migration.

- If your Directory Server deployment includes Identity Synchronization for Windows, you must uninstall Identity Synchronization for Windows before migrating Directory Server. For information about migrating Identity Synchronization for Windows, see Chapter 11, "Migrating Identity Synchronization for Windows".

5.2 The New Product Distribution

Directory Server 11*g* Release 1 (11.1.1.7.0) is provided in a compressed archive (zip) distribution.

Installation from zip can be done anywhere on the system and as a non-root user. The zip distribution can be installed as many times as required and multiple distinct versions of the same product can coexist on a single operating system instance.

5.3 Outline of Migration Steps

The Directory Server migrating can be broken down into the following distinct steps:

1. Migrating the Schema
2. Migrating the Security Settings
3. Migrating the Configuration
4. Migrating the Data
5. Migrating the Plug-Ins
6. Post-migration tasks

To avoid unforeseen problems with the migration, these steps should be performed in the order listed above. In certain cases, you can automate some or all of these steps, using the `dsmig` command. The following section indicates what can be automated and what must be done manually, depending on your existing deployment.

5.4 Deciding on Automatic or Manual Migration

This section provides a table that shows when you can use `dsmig` and when you need to migrate manually. It is based on the migration steps described in the previous section.

Table 5–1 Migration Matrix Showing Support for Automated Migration

Migrating To	Migration Step					
Software (32/64-bit)	**OS**	**Schema**	**Config**	**Security**	**Data**	**Plug-Ins**
Any	Any	Manual	Manual	Manual	Manual	Manual

Table 5–1 (Cont.) Migration Matrix Showing Support for Automated Migration

Migrating To	Migration Step					
Software (32/64-bit)	OS	Schema	Config	Security	Data	Plug-Ins
Different	Any	`dsmig`	`dsmig`	`dsmig`	Manual	Manual
Same	Different	`dsmig`	`dsmig`	`dsmig`	Manual	Manual
Same	Same	`dsmig`	`dsmig`	`dsmig`	`dsmig`	Manual

The following two chapters explain how to perform each migration step outlined above, either automatically, or manually. For information on automatic migration, see Chapter 6, "Automated Migration Using the `dsmig` Command". For information on manual migration, see Chapter 7, "Migrating Directory Server Manually".

6

Automated Migration Using the `dsmig` Command

Oracle Directory Server Enterprise Edition11*g* Release 1 (11.1.1.7.0) provides a command-line migration tool to help you migrate from a Directory Server 5.2 instance to an ODSEE 11*g* Release 1 (11.1.1.7.0) instance. You can use the migration tool only if your deployment satisfies the requirements for automatic migration described in Deciding on Automatic or Manual Migration.

The migration tool provides migration *per instance*. If several instances exist within the same server root, the migration tool must be run for each individual instance.

This chapter explains how to use the migration tool and covers the following topics:

6.1 About the Automatic Migration Tool

The migration tool, `dsmig`, is delivered with the Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0). When these ODSEE been installed, `dsmig` is located in *`install-path`*`/bin`.

The `dsmig` command must be run on the machine on which the new Directory Server instance will be located. When the command is run, a *migration* directory is created within the new instance directory (*`new-instance-path`*`/migration`). This directory is a repository for data produced by the migration, including log files and migration status files.

The `dsmig` command includes a set of sub-commands and options, that map to the individual migration steps described in Outline of Migration Steps. For information about the usage of `dsmig`, see *dsmig*.

6.2 Prerequisites for Running `dsmig`

In this section, *old instance* refers to the 5.2 instance and *new instance* refers to the Directory Server 11*g* Release 1 (11.1.1.7.0) instance.

Before you use dsmig to migrate an instance, ensure that the following tasks have been performed:

- The Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0) has been installed.

  The Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0) can be installed on the same machine that holds the *old instance*, or on a different machine.

- The old instance must have been stopped correctly.

  A disorderly shutdown of the old instance will cause problems during the migration. Even if the old and new instance are on different machines, the old instance must be stopped before the migration is started.

- dsmig has access to the old instance files.

- If the old and new instances are on different machines, a *complete image* of the old instance must be created on the machine that hosts the new instance.

  The complete image includes all the files required for migration of the instance (schema, configuration, security and database files). The complete image files must be located in the same directories as they were under the original Server Root. You can run cp -r to achieve this, provided none of the files have been relocated outside the Server Root.

You can create and start the new instance manually, but is not mandatory to create the new instance before running dsmig. dsmig checks whether a new Directory Server instance exists in the specified path. If a new instance exists, the commands are carried out on this instance. If a new instance does not exist, the instance is created automatically.

The new instance can be created anywhere except for the exact location of the old instance.

Note: The dsmig command uses the 389 and 636 ports, by default, when creating an instance. If these ports are already in use, provide different ports to create an instance. For more information, see *dsmig*.

While creating a new instance, a DN and a password for the directory manager is stored in nsslapd-rootdn and nssalpd-rootpw attributes under cn=config. During the migration process, the values for these attributes from the old instance are not propagated as these attributes already hold a value for the new instance. The same behavior is applied to nsslapd-secureport and nsslapd-port attributes for the same reason.

6.3 Using dsmig to Migrate the Schema

Directory Server 5.2 schema files are located in *serverRoot*/slapd-*instance-path*/config/schema. Directory Server 11*g* Release 1 (11.1.1.7.0) schema files are located in *INSTANCE-PATH*/config/schema.

Directory Server 11*g* Release 1 (11.1.1.7.0) provides a schema file, 00ds6pwp.ldif, that contains password policy attributes. In addition, certain configuration attributes have been added to 00core.ldif.

To migrate the schema automatically, run the following command:

```
$ dsmig migrate-schema old-instance-path new-instance-path
```

When you run this command, any custom schema defined in the 99user.ldif file are copied to the new instance. If the new instance is already in production, and you have already modified the 99user.ldif file of the new instance, dsmig performs a *best effort* merge of the two files. Custom schema defined in any other files are also copied to the new instance.

For more information, see *dsmig*.

6.4 Using dsmig to Migrate Security Data

To migrate the security settings automatically, run the following command:

```
$ dsmig migrate-security old-instance-path new-instance-path
```

During the migration of security settings, dsmig performs the following tasks:

- Backs up the certificate and database files in the new instance.
- Copies the certificate database and key database files from the old instance to the new instance.
- Copies the password file from the old instance to the new instance.
- Copies the certificate mapping file from the old instance to the new instance.
- Copies the security module database.

For more information, see *dsmig*.

6.5 Using dsmig to Migrate Configuration Data

Directory Server 5.2 configuration is specified in the file *serverRoot*/slapd-*instance-path*/config/dsee.ldif. Directory Server 11*g* Release 1 (11.1.1.7.0) configuration is specified in the file *instance-path*/config/dsee.ldif.

To migrate the configuration automatically, run the following command:

```
$ dsmig migrate-config old-instance-path new-instance-path
```

In this step, dsmig reads each LDIF entry in the configuration file (dsee.ldif) of the old instance. If these entries exist in the corresponding Directory Server 11*g* Release 1 (11.1.1.7.0) configuration file, their values are updated.

Note: The dsmig migrate-config command resets the server to the read-write mode. After migration, you can switch the server in the read-only mode by running the following command:

```
$ dsconf set-server-prop read-write-mode:read-only
```

Migration of the configuration is done over LDAP. By default, dsmig binds to the new instance securely, issuing a StartTLS request.

Note: By default, StartTLS is not enabled on Windows. If you are running dsmig on Windows, use the -e or --unsecured option to specify an unsecure connection. Alternatively, use the -Z or --use-secure-port option to specify a secure connection over SSL. If you do not use either of these options on Windows, dsmig issues a warning and the migration process terminates with an error.

For more information see *dsmig*. For details of the specific configuration attributes that are migrated, see Migration of Specific Configuration Attributes.

6.5.1 Plug-in Configuration Data

dsmig migrates configuration data for certain Directory Server plug-ins only. For most system plug-ins, configuration data is *not* migrated automatically.

dsmig migrates the following system plug-ins:

- CoS
- 7-bit Check
- DSML Frontend
- Pass-Through Authentication
- Referential Integrity
- Retro Change Log
- UID Uniqueness

When you migrate the configuration in verbose mode, dsmig issues a warning indicating which system plug-in configurations are not migrated.

Plug-ins that you have created are not migrated. However, during the migration process user plug-in configuration data is dumped in the file *new-instance-path*/migration/old_userplugins_conf.ldif. These plug-ins must be recompiled when the migration is complete.

6.5.2 Configuration Data For Suffixes With Multiple Back Ends

Configuration data for suffixes with multiple back ends is not migrated. If dsmig detects that a suffix has more than one backend, it does not migrate any of the configuration entries that belong to that suffix. This includes configuration entries for the mapping tree, replicas, replication agreements, LDBM instances, indexes, and encrypted attributes. Instead, all of these entries are dumped in the file *new-instance-path*/migration/old_distribution_conf.ldif.

The entries in the old_distribution_conf.ldif file refer to the old instance so should not be imported directly to the new instance. For more information about distribution, see Chapter 21, *Directory Proxy Server Distribution*, in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

6.5.3 Replication Configuration Data

Configuration data for replication is not migrated by default. If you want this data to be migrated, use dsmig with the -R option. By default, the data is dumped in the file *new-instance-path*/migration/old_replication_conf.ldif. You can import the replication configuration data from this file after migration, if required.

6.5.4 Configuration Data for o=netscapeRoot

Configuration data for the o=NetscapeRoot suffix is not migrated by default. If this information is required, use the -N option to migrate the configuration data. If you do not use the -N option, the data is dumped in the file *new-instance-path*/migration/old_netscape_conf.ldif. You can import the configuration data from this file after migration, if required.

6.5.5 Configuration Attributes Not Migrated by dsmig

The following common configuration attributes are not migrated automatically.

This is not an exhaustive list. You might have used additional configuration attributes that must be migrated manually.

```
ds-hdsml-dsmlschemalocation
ds-hdsml-soapschemalocation
dsKeyedPassword
dsMappedDN
dsMatching-pattern
dsMatching-regexp
dsSaslPluginsEnable
dsSaslPluginsEnable
dsSaslPluginsPath
dsSearchBaseDN
dsSearchFilter
nsabandonedsearchcheckinterval
nsbindconnectionslimit
nsbindretrylimit
nsbindtimeout
nschecklocalaci
nsconcurrentbindlimit
nsconcurrentoperationslimit
nsconnectionlife
nshoplimit
nsMatchingRule
nsmaxresponsedelay
nsmaxtestresponsedelay
nsoperationconnectionslimit
nspossiblechainingcomponents
nspossiblechainingcomponents
nspossiblechainingcomponents
nspossiblechainingcomponents
nspossiblechainingcomponents
nspossiblechainingcomponents
nsproxiedauthorization
nsreferralonscopedsearch
nsslapd-db-durable-transaction
nsslapd-db-home-directory
nsslapd-db-replication-batch-val
nsslapd-db-transaction-logging
nsslapd-directory
nsslapd-disk-full-threshold
nsslapd-disk-low-threshold
nsslapd-exclude-from-export
nsslapd-localhost
nsslapd-localuser
nsslapd-mode
nsslapd-port
nsslapd-rewrite-rfc1274
nsslapd-secureport
```

```
nsslapd-security
nsSSL2
nsSSL3
nsSSLActivation
nsSSLServerAuth
nsSSLSessionTimeout
nsState
nstransmittedcontrols
plugin-order-preoperation-finish-entry-encode-result
```

6.6 Using dsmig to Migrate User Data

In Directory Server 5.2, data is stored in *serverRoot*/slapd-*instance-name*/db. Directory Server 11*g* Release 1 (11.1.1.7.0) stores user data in *instance-path*/db.

To migrate data automatically, run the following command:

```
$ dsmig migrate-data old-instance-path new-instance-path
```

All suffixes are migrated by default, except the o=netscapeRoot suffix. dsmig copies the data, the indexes, and the transaction logs. The database context, that is, the state of the database, is not migrated.

In the Directory Server administration model, there is no Configuration Directory Server. This means that the o=netscapeRoot suffix is no longer relevant, unless your deployment includes Identity Synchronization for Windows. By default, dsmig does not migrate the o=netscapeRoot database, unless specifically requested. To migrate the o=netscapeRoot database, use the -N option with the migrate-data subcommand.

For more information, see *dsmig*.

Note: During data migration, Directory Server checks whether nested group definitions exceed 30 levels. Deep nesting can signify a circular group definition, where a nested group contains a group that is also its parent. When a group with more than 30 nesting levels is encountered, Directory Server stops calculating the isMemberOf attributes for additional levels.

Each time this happens, Directory Server logs an error. You safely ignore these errors, although you should examine the definition of the group mentioned in the error message for potential circular definitions.

6.6.1 Troubleshooting New Instances After Migration

After running dsmig migrate-data, if the error log of new instance contains lots of error messages, refer to the following steps:

1. Stop all the Directory Server running instances.
2. Remove nsslapd-infolog-area and nsslapd-infolog-level completely from the dsee.ldif file.
3. Start the Directory Server instances.

After the migration process, if you get an error while changing your password using the ldapmodify command, refer to the following steps:

1. Check pwd-compat-mode using the following command:

```
dsconf get-server-prop pwd-compat-mode
```

2. If `pwd-compat-mode` is set to `DS-6 mode`, you must use the `pwdPolicy` object class while changing the password using the `ldapmodify` command.

6.7 Tasks to be Performed After Automatic Migration

If you have used `dsmig` to migrate your server automatically, only the following two post-migration tasks must be completed:

- If you have customized user plug-ins, these need to be recompiled and added to the new server manually.
- If the migrated server was part of a replicated topology, see Issues Related to Migrating Replicated Servers.

7

Migrating Directory Server Manually

If your deployment does not satisfy the requirements for automatic migration described in Deciding on Automatic or Manual Migration, you must migrate the servers manually. This chapter describes the process for manual migration of each part of the server.

The chapter covers the following topics:

- Before You Start a Manual Migration
- Migrating the Schema Manually
- Migrating Configuration Data Manually
- Migrating Security Settings Manually
- Migrating User Data Manually
- Migrating User Plug-Ins Manually
- Tasks to be Performed After Manual Migration

7.1 Before You Start a Manual Migration

Migrating an instance manually involves migrating each part of the server in the same order as performed by the automatic migration tool (`dsmig`). In this section, *old instance* refers to the version 5.2 instance and *new instance* refers to the 11*g* Release 1 (11.1.1.7.0) instance.

Before you start a manual migration, ensure that the following tasks have been performed:

- Directory Server 11*g* Release 1 (11.1.1.7.0) software has been installed.

  Directory Server 11*g* Release 1 (11.1.1.7.0) software can be installed on the same machine that holds the Directory Server 5.2 instance, or on a different machine.

- The new instance has been created.

  The new instance can be created anywhere except for the exact location of the old instance. The new instance can be installed on the same LDAP/LDAPS port or on a different port. If you use different ports, any replication agreements to the new instance must be changed accordingly.

  While creating a new instance, a DN and a password for the directory manager is stored in `nsslapd-rootdn` and `nssalpd-rootpw` attributes under `cn=config`. During the migration process, the values for these attributes from the old instance are not propagated as these attributes already hold a value for the new instance.

The same behavior is applied to `nsslapd-secureport` and `nsslapd-port` attributes for the same reason.

- The old instance has been stopped correctly.

  A disorderly shutdown of the old instance will cause problems during migration. Even if the old and new instances are on different machines, the old instance must be stopped before migration is started.

7.2 Migrating the Schema Manually

Directory Server 5.2 schema files are located in *serverRoot*`/slapd-`*serverID*`/config/schema`. Directory Server 11*g* 11*g* Release 1 (11.1.1.7.0) schema files are located in *instance-path*`/config/schema`.

Directory Server 11*g* Release 1 (11.1.1.7.0) provides a new schema file, `00ds6pwp.ldif`, that contains new password policy attributes. In addition, certain configuration attributes have been added to `00core.ldif`. Apart from these files, the standard schema files provided with Directory Server 11*g* Release 1 (11.1.1.7.0) are identical to those provided in version 5.

To migrate the schema, perform the following steps:

1. Copy the `99user.ldif` file from the existing instance to the new instance. If you have already added custom schema to the new instance, you will need to choose which version of the custom schema to keep.
2. If you have defined custom schema in any other files, copy these files to the new instance.
3. Any fractional replication information must be redefined in the new instance.

7.3 Migrating Configuration Data Manually

Directory Server 5.2 configuration is specified in the file *serverRoot*`/slapd-`*serverID*`/config/dsee.ldif`. Directory Server 11*g* Release 1 (11.1.1.7.0) configuration is specified in the file *instance-path*`/config/dsee.ldif`.

The following section describes the specific configuration attributes that must be migrated from the old instance to the new instance.

7.3.1 Migration of Specific Configuration Attributes

The values of the following attribute types must be migrated.

7.3.1.1 Global Configuration Attributes

The implementation of global scope ACIs requires all ACIs specific to the `rootDSE` to have a `targetscope` field, with a value of `base` (`targetscope="base"`). ACIs held in the `rootDSE` are specific to each Directory Server instance and are not replicated. Therefore there should be no incompatibility problems when running a Directory Server 11*g* Release 1 (11.1.1.7.0) server in a topology containing servers of previous versions. For more information about the changes made with regard to ACI scope, see Changes to ACIs.

In addition to the ACI change, the following attributes under `cn=config` must be migrated:

```
nsslapd-accesscontrol
nsslapd-accesslog-level
```

```
nsslapd-accesslog-logbuffering
nsslapd-accesslog-logexpirationtime
nsslapd-accesslog-logexpirationtimeunit
nsslapd-accesslog-logging-enabled
nsslapd-accesslog-logmaxdiskspace
nsslapd-accesslog-logminfreediskspace
nsslapd-accesslog-logrotationtime
nsslapd-accesslog-logrotattiontimeunit
nsslapd-accesslog-maxlogsize
nsslapd-accesslog-maxlogsperdir
nsslapd-attribute-name-exceptions
nsslapd-auditlog-logexpirationtime
nsslapd-auditlog-logexpirationtimeunit
nsslapd-auditlog-logging-enabled
nsslapd-auditlog-logmaxdiskspace
nsslapd-auditlog-logminfreediskspace
nsslapd-auditlog-logrotationtime
nsslapd-auditlog-logrotattiontimeunit
nsslapd-auditlog-maxlogsize
nsslapd-auditlog-maxlogsperdir
nsslapd-certmap-basedn
nsslapd-ds4-compatible-schema
nsslapd-enquote-sup-oc
nsslapd-errorlog-level
nsslapd-errorlog-logexpirationtime
nsslapd-errorlog-logexpirationtimeunit
nsslapd-errorlog-logging-enabled
nsslapd-errorlog-logmaxdiskspace
nsslapd-errorlog-logminfreediskspace
nsslapd-errorlog-logrotationtime
nsslapd-errorlog-logrotattiontimeunit
nsslapd-errorlog-maxlogsize
nsslapd-errorlog-maxlogsperdir
nsslapd-groupevalnestlevel
nsslapd-idletimeout
nsslapd-infolog-area
nsslapd-infolog-level
nsslapd-ioblocktimeout
nsslapd-lastmod
nsslapd-listenhost
nsslapd-maxbersize
nsslapd-maxconnections
nsslapd-maxdescriptors
nsslapd-maxpsearch
nsslapd-maxthreadsperconn
nsslapd-nagle
nsslapd-readonly
nsslapd-referral
nsslapd-referralmode
nsslapd-reservedescriptors
nsslapd-return-exact-case
nsslapd-rootpwstoragescheme
nsslapd-schema-repl-useronly
nsslapd-schemacheck
nsslapd-search-tune
nsslapd-securelistenhost
nsslapd-security
nsslapd-sizelimit
nsslapd-threadnumber
nsslapd-timelimit
```

```
ds-start-tls-enabled
```

7.3.1.2 Security Configuration Attributes

All attributes under `"cn=encryption,cn=config"` must be migrated.

If you are using certificate authentication or the secure port, the key file path and certificate database file path under `"cn=encryption,cn=config"` must be updated. The values of the following attributes must be migrated:

```
nsKeyfile
nsCertfile
```

7.3.1.3 Feature Configuration Attributes

The values of the `aci` attributes under `"cn=features,cn=config"` must be migrated.

In addition, the values of all identity mapping attributes must be migrated.

7.3.1.4 Mapping Tree Configuration Attributes

All entries under `"cn=mapping tree,cn=config"` must be migrated.

The Netscape Root database has long been deprecated, and does not exist in Directory Server 11*g* Release 1 (11.1.1.7.0). If your old instance made specific use of the Netscape Root database, the attributes under `o=netscaperoot` must be migrated. Otherwise, they can be ignored.

7.3.1.5 Replication Configuration Attributes

Before migrating replication configuration attributes, ensure that there are no pending changes to be replicated. You can use the `insync` command to do this.

In addition to the configuration attributes, all entries under `cn=replication,cn=config` must be migrated. You must manually update the host and port on all replication agreements to the new instance, as well as the path to the change log database (`nsslapd-changelogdir`).

The following sections list the replication configuration attributes that must be migrated:

7.3.1.5.1 Change Log Attributes

Table 7–1 Change Log Attribute Name Changes

Old Attribute Name	Directory Server Attribute Name
`nsslapd-changelogmaxage`	`dschangelogmaxage`
`nsslapd-changelogmaxentries`	`dschangelogmaxentries`

In addition, these attributes must be moved from `cn=changelog5,cn=config` to `cn=replica,cn=suffixname,cn=mapping tree,cn=config` entries (for each suffix name).

7.3.1.5.2 Fractional Replication Configuration Attributes If your topology uses fractional replication, the following attribute names must be changed.

Table 7–2 Fractional Replication Attribute Name Changes

Old Attribute Name	Directory Server 11*g* Release 1 (11.1.1.7.0) Attribute Name
dsFilterSPType == fractional_include	dsReplFractionalInclude
dsFilterSPType == fractional_exclude	dsReplFractionalExclude

7.3.1.5.3 Replica Configuration Attributes The values of the following replica configuration attributes must be migrated:

```
ds5ReferralDelayAfterInit
nsDS5Flags
nsDS5ReplicaBindDN
nsDS5ReplicaId
nsDS5ReplicaLegacyConsumer
nsDS5ReplicaName
nsDS5ReplicaPurgeDelay
nsDS5ReplicaReferral
nsDS5ReplicaRoot
nsDS5ReplicaTombstonePurgeInterval
aci
```

The `dschangelogmaxage` and `dschangelogmaaxentries` attributes are added to the replica entry.

7.3.1.5.4 Replication Agreement Configuration The values of the following attributes must be migrated for each replication agreement:

```
description
ds5agreementEnable
ds5ReplicaTransportCompressionLevel
ds5ReplicaTransportGroupSize
ds5ReplicaTransportWindowSize
nsDS5ReplicaBindDN
nsDS5ReplicaBindMethod
nsDS5ReplicaCredentials
nsDS5ReplicaHost
nsDS5ReplicaPort
nsDS5ReplicaRoot
nsDS5ReplicaTimeout
nsDS5ReplicaTransportInfo
nsDS5ReplicaUpdateSchedule
aci
```

Issues can arise when you migrate the `nsDS5ReplicaCredentials` attribute. For more information, see Manual Reset of Replication Credentials.

There is no `ds5PartialReplConfiguration` attribute in Directory Server 11*g* Release 1 (11.1.1.7.0). This attribute must be removed.

If you are using fractional replication, the `dsReplFractionalInclude` and `dsReplFractionalExclude` attributes are added for each replication agreement.

All attributes under `"cn=replication,cn=config"` are migrated.

7.3.1.6 Password Policy Configuration Attributes

For details on configuration of the Directory Server 11*g* Release 1 (11.1.1.7.0) password policy, see Chapter 7, *Directory Server Password Policy*, in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. The attributes that define the password policy are

stored in the entry cn=Password Policy,cn=config. Note that in Directory Server 5.2, password policy attributes were located directly under cn=config.

The attributes of the pwdPolicy object class replace the old password policy attributes. For a description of these attributes see the pwdPolicy(5dsoc) man page.

By default, this password policy is backward compatible with the old password policy. However, because backward compatibility is not guaranteed indefinitely, you should migrate to the new password policy as soon as is convenient for your deployment. For information about password policy compatibility and about rewriting a suffix, see *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

While Directory Server 11*g* Release 1 (11.1.1.7.0) automatically manages coexistence between new and old password policies and entry operational attributes during migration and subsequent operations, you need to migrate any applications that refer to the old password policy attributes. The following table provides a mapping of the legacy password policy configuration attributes to the new attributes.

Table 7–3 Mapping Between 5.2 and 11g Release 1 (11.1.1.7.0) Password Policy Attributes

Legacy Directory Server Attribute	Directory Server 11*g* Release 1 (11.1.1.7.0) Attribute
passwordMinAge	pwdMinAge
passwordMaxAge	pwdMaxAge
passwordExp	pwdMaxAge
passwordInHistory	pwdInHistory
passwordSyntax	pwdCheckQuality
passwordMinLength	pwdMinLength
passwordWarning	pwdExpireWarning
-	pwdGraceLoginLimit
passwordMustChange	pwdMustChange
passwordChange	pwdAllowUserChange
-	pwdSafeModify
passwordStorageScheme	passwordStorageScheme
passwordExpireWithoutWarning	-
passwordLockout	pwdLockout
passwordLockoutDuration	pwdLockoutDuration
passwordUnlock	pwdLockoutDuration
passwordMaxFailure	pwdMaxFailure
passwordResetFailureCount	pwdFailureCountInterval

7.3.1.7 SNMP Attributes

The entry cn=SNMP,cn=config does not exist in Directory Server 11*g* Release 1 (11.1.1.7.0). All attributes under this entry are therefore deprecated. For information about setting up SNMP in Directory Server 11*g* Release 1 (11.1.1.7.0), see *Setting Up SNMP for Directory Server* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

7.3.1.8 UniqueID Generator Configuration Attributes

The `nsState` attribute under `cn=uniqueid generator,cn=config` must be migrated.

7.3.1.9 Database Configuration Attributes

General database configuration attributes are stored under `cn=config,cn=ldbm database,cn=plugins,cn=config`. The following attributes must be migrated:

```
nsslapd-lookthroughlimit
nsslapd-allidsthreshold
nsslapd-cache-autosize
nsslapd-cache-autosize-split
nsslapd-cachesize
nsslapd-db-checkpoint-interval
nsslapd-db-circular-logging
nsslapd-db-durable-transactions
nsslapd-db-idl-divisor
nsslapd-db-locks
nsslapd-db-logbuf-size
nsslapd-db-logfile-size
nsslapd-db-page-size
nsslapd-db-transaction-batch-val
nsslapd-db-tx-max
nsslapd-dbncache
nsslapd-import-cachesize
nsslapd-exclude-from-export
nsslapd-disk-low-threshold
nsslapd-disk-full-threshold
```

Database-specific attributes are stored in entries of the form `cn=`*`database instance name`*`,cn=ldbm database,cn=plugins,cn=config`. The following attributes must be migrated:

```
nsslapd-suffix
nsslapd-cachesize
nsslapd-cachememsize
nsslapd-readonly
nsslapd-require-index
```

If your deployment uses the `NetscapeRoot` suffix, you must migrate the attributes under `cn=netscapeRoot,cn=ldbm database,cn=plugins,cn=config`. You must also replace the database location (`nsslapd-directory`) with the location of the new Directory Server instance.

All default index configuration attributes must be migrated, except for system indexes. Default index configuration attributes are stored in the entry `cn=default indexes,cn=ldbm database,cn=plugins,cn=config`. Indexes for the `NetscapeRoot` database do not need to be migrated.

All index configuration attributes must be migrated, except for system indexes. Index configuration attributes are stored in entries of the sort `cn=`*`index name`*`, cn=index, cn=`*`database instance name`*`, cn=ldbm database, cn=plugins, cn=config`.

All attribute encryption configuration attributes must be migrated.

7.3.1.10 Plug-In Configuration Attributes

If you have changed the configuration of any standard plug-in, you must update that configuration. You must also update the configuration of all custom plug-ins. At a minimum, you must recompile all custom plug-ins and add their configuration to the directory. For a detailed list of plug-in API changes, see Chapter 2, *Changes to the*

Plug-In API Since Directory Server 5.2, in *Developer's Guide for Oracle Directory Server Enterprise Edition*.

The following sections describe the standard plug-ins whose configuration must be migrated if you have changed it.

7.3.1.10.1 7-Bit Check Plug-In The configuration of this plug-in is stored under `cn=7-bit check,cn=plugins,cn=config`. The following attributes must be migrated:

```
nsslapd-pluginarg*
nsslapd-pluginenabled
```

7.3.1.10.2 Class of Service Plug-In The configuration of this plug-in is stored under `cn=Class of Service,cn=plugins,cn=config`. The following attributes must be migrated:

```
nsslapd-pluginarg0
nsslapd-pluginenabled
```

7.3.1.10.3 DSML Frontend Plug-In The configuration of this plug-in is stored under `cn=DSMLv2-SOAP-HTTP,cn=frontends,cn=plugins,cn=config`. The following attributes must be migrated:

```
ds-hdsml-port
ds-hdsml-iobuffersize
ds-hdsml-requestmaxsize
ds-hdsml-responsemsgsize
ds-hdsml-poolsize
ds-hdsml-poolmaxsize
ds-hdsml-clientauthmethod
ds-hdsml-rooturl
ds-hdsml-soapschemalocation
ds-hdsml-dsmlschemalocation
nsslapd-pluginenabled
```

7.3.1.10.4 Pass Through Authentication Plug-In The configuration of this plug-in is stored under `cn=Pass Through Authentication,cn=plugins,cn=config`. The following attribute must be migrated:

```
nsslapd-pluginenabled
```

The `nsslapd-pluginarg*` attributes must be migrated only if you require the configuration for `o=netscapeRoot` to be migrated.

7.3.1.10.5 Password Synchronization Plug-In The configuration of this plug-in is stored under `cn=pswsync,cn=plugins,cn=config`. The following attribute must be migrated:

```
nsslapd-pluginenabled
```

7.3.1.10.6 Referential Integrity Plug-In The configuration of this plug-in is stored under `cn=Referential Integrity Postoperation,cn=plugins,cn=config`. The following attributes must be migrated:

```
nsslapd-pluginarg*
nsslapd-pluginenabled
```

7.3.1.10.7 Retro Change Log Plug-In The configuration of this plug-in is stored under `cn=Retro Changelog PlugIn,cn=plugins,cn=config`. The following attributes must be migrated:

```
nsslapd-changelogmaxage
nsslapd-changelogmaxentries
nsslapd-pluginarg*
nsslapd-pluginenabled
```

7.3.1.10.8 UID Uniqueness Plug-In The configuration of this plug-in is stored under `cn=UID Uniqueness,cn=plugins,cn=config`. The following attributes must be migrated:

```
nsslapd-pluginarg*
nsslapd-pluginenabled
```

7.4 Migrating Security Settings Manually

When you migrate an instance manually, the order in which you perform the migration of the security and the migration of the configuration is different to when you migrate using `dsmig`. If you migrate the security settings by replacing the default Directory Server 11*g* Release 1 (11.1.1.7.0) certificate and key databases with the old databases, as described in this section, you *must* migrate the configuration first.

To migrate the security settings manually, perform the following steps:

1. If you have already started using the new instance, stop the instance.
2. Back up the certificate database and key database files on the new instance.
3. Copy the certificate database and key database files from the existing instance to the new instance.

   ```
   $ cp serverRoot/alias/slapd-serverID-cert8.db instance-path/alias/slapd-cert8db
   $ cp serverRoot/alias/slapd-serverID-key3.db instance-path/alias/slapd-key3.db
   ```

4. Copy the password file from the existing instance to the new instance.

   ```
   $ cp serverRoot/alias/slapd-serverID-pin.txt instance-path/alias/slapd-pin.txt
   ```

5. Update the certificate database password.

   ```
   $ dsadm set-flags instance-path cert-pwd-prompt=on
   ```

6. Copy the certificate mapping file from the existing instance to the new instance.

   ```
   $ cp serverRoot/shared/config/certmap.conf instance-path/alias/certmap.conf
   ```

7. If the existing instance uses an external security token, copy the security module database and the external token library to the new instance.

   ```
   $ cp serverRoot/alias/secmod.db instance-path/alias/secmod.db
   ```

8. Start the new instance.

The security configuration attributes are migrated when you migrate the rest of the configuration attributes. In this sense, migration of the security settings is not complete until you have migrated the configuration. Migration of the configuration is described in the following section.

7.5 Migrating User Data Manually

If your topology does not support automatic data migration, you must migrate the data manually. This involves exporting the data from the existing instance and re-importing it to the new instance.

To migrate data manually, perform the following steps:

1. If you already have data in the new instance, back up any conflicting suffixes in the new instance.
2. If you are migrating a master server instance in a replicated topology, make sure that the master is synchronized with all servers that are direct consumers of that master.

   It is not possible to migrate the change log manually. A new change log is created in the 11*g* Release 1 (11.1.1.7.0) instance.
3. Export the required suffixes to LDIF by using the `db2ldif` command. This command exports all the suffix contents to an LDIF file, when the server is either running or stopped.

   The following example exports two suffixes to a single LDIF file.

   ```
   $ serverRoot/slapd-serverID/db2ldif -a example.ldif \
    -r -s "ou=people,dc=example,dc=com" -s "ou=departments,dc=example,dc=com"
   ```

   In this example, `-a` specifies the resulting LDIF file, `-r` indicates that replication information should be exported, and `-s` specifies the suffixes to be included in the export.
4. On the new instance, import the LDIF files by using the `dsadm import` command. For example, the following commands import the LDIF file created previously into the two suffixes that were exported.

   ```
   $ dsadm import instance-path example.ldif ou=people,dc=example,dc=com
   $ dsadm import instance-path example.ldif ou=departments,dc=example,dc=com
   ```

5. If the retro change log was configured on the old instance, export the retro change log to LDIF by using the `db2ldif` command.

   ```
   $ serverRoot/slapd-serverID/db2ldif -a changelog.ldif \
    -s "cn=changelog"
   ```

   In this example, `-a` specifies the resulting LDIF file, and `-s` specifies the changelog suffix.
6. On the new instance, import the retro change log using the `dsadm import` command. For example, the following command imports the change log LDIF file created previously.

   ```
   $ dsadm import instance-path changelog.ldif cn=changelog
   ```

7. Start the new instance.

Note: During data migration, Directory Server checks whether nested group definitions exceed 30 levels. Deep nesting can signify a circular group definition, where a nested group contains a group that is also its parent. When a group with more than 30 nesting levels is encountered, Directory Server stops calculating the `isMemberOf` attributes for additional levels.

Each time this happens, Directory Server logs an error. You safely ignore these errors, although you should examine the definition of the group mentioned in the error message for potential circular definitions.

7.6 Migrating User Plug-Ins Manually

User plug-ins cannot be migrated. If you have custom user plug-ins, recompile them and add them to the Directory Server 11*g* Release 1 (11.1.1.7.0) instance manually. For a detailed list of plug-in API changes, see C"hapter 2, Changes to the Plug-In API Since Directory Server 5.2" in *Developer's Guide for Oracle Directory Server Enterprise Edition*.

7.7 Tasks to be Performed After Manual Migration

If you have migrated your server manually, the following post-migration tasks are required before you can run the new server.

- If you have customized user plug-ins, these need to be recompiled and added to the new server manually.
- If the migrated server was part of a replicated topology, see Chapter 8, "Migrating a Replicated Topology".
- If you have customized backup, recovery, and installation scripts, you need to rewrite these scripts to comply with the new version.

8

Migrating a Replicated Topology

Directory Server Enterprise Edition 11*g* Release 1 (11.1.1.7.0) does not provide a way to migrate an entire replicated topology automatically. Migrating a replicated topology involves migrating each server individually. Usually, however, you should be able to migrate your entire topology without any interruption in service.

This chapter describes the issues involved in migrating replicated servers, and covers the following topics:

8.1 Overview of Migrating Replicated Servers

Directory Server 11*g* 11*g* Release 1 (11.1.1.7.0) supports an unlimited number of masters in a multi-master topology. This and other changes might mean that you redesign your topology rather than migrate to an identical topology with new servers. See Part III, *Logical Design*, in *Deployment Planning Guide for Oracle Directory Server Enterprise Edition* before continuing.

When migrating replicated old server instances, you typically start with the consumers, continue with the hubs, and finish with the masters. This bottom-up approach involves interrupting only one server at a time, rather than interrupting an entire branch of the replication topology. The approach also helps you avoid potential custom schema synchronization issues between masters and consumers.

Note: In a Multi-Master Replication configuration that includes 5.2 servers, a maximum of four masters (of any version) is supported due to the four master restriction with version 5.2. Therefore, as long as your topology includes any 5.2 servers, the topology cannot have more than four masters.

8.2 Issues Related to Migrating Replicated Servers

Depending on your replication topology, and on your migration strategy, certain issues might arise when you migrate replicated servers. These issues are described in the following sections.

8.2.1 Issues With the Password Policy

If you are migrating a multi-master replicated topology, a situation will arise where a 11*g* Release 1 (11.1.1.7.0) master is replicating to a old server. In this situation, an object class violation will occur if changes are made to the password policy attributes on the 11*g* Release 1 (11.1.1.7.0) server, and replicated to the old server. The password policy attributes are managed internally by the server but they might be updated in the event of a bind, a user password modify, or the addition of an entry with the `userpassword` attribute.

To avoid the object class violation, the 11*g* Release 1 (11.1.1.7.0) password policy schema file (`00ds6pwp.ldif`) *must* be copied to every version 5.2 server that will be supplied by a 11*g* Release 1 (11.1.1.7.0) master. When the password policy schema file has been copied, restart the version 5.2 server.

8.2.2 Migration of Replication Agreements

If possible, you should migrate replicated servers to the same host name and port number. If you *must* change the host name or port number of a replicated server, all replication agreements that point to that server must be updated manually to point to the new server. For example, if you migrate a consumer server from `red.example.com:1389` to `blue.example.com:1389`, the replication agreements on all masters that point to `red.example.com:1389` must be updated manually to point to `blue.example.com:1389`.

Replication agreements *from* the migrated master to consumers in the topology are managed by the `dsmig` migration tool. If your topology does not support automated migration, these replication agreements must also be updated manually.

8.2.3 Migration of Referrals

Referrals are also affected if you migrate a *master* replica to a new host or port. The details of each master in a topology are present in the Replica Update Vector (RUV) of all other servers in the topology. The RUV of each server is used to determine the referrals. When you change the host name or port number of a master server during migration, all referrals to that master from other servers in the topology become invalid. The easiest way to correct this is to use the following steps, in order, when performing the migration.

1. Before migrating a master server, verify that there are no pending changes to be replicated. You can use the `insync` tool to do this.
2. Demote the master server to a hub, as described in *Promoting or Demoting Replicas* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.
3. Migrate the hub server, either using `dsmig` or the manual migration progress.
4. Promote the hub server to a master, as described in *Promoting or Demoting Replicas* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. When you promote the hub, you must assign a `replicaID` to the new migrated master. This new `replicaID` must be different to the `replicaID` of the old server that is being migrated, and must be unique within the replicated topology.

8.2.4 Manual Reset of Replication Credentials

`dsmig` does not migrate the password of the default replication manager entry (`cn=replication manager,cn=replication,cn=config`). Instead, the replication manager password is deleted. Therefore, whether you are using manual or automatic migration, you must reset the replication manager password manually.

To reset the replication manager password, use the following command:

```
$ dsconf set-server-prop -h host -p port def-repl-manager-pwd-file:filename
$ dsconf set-repl-agmt-prop -p port_master1 replicated_suffix \
master2:port_master2 auth-pwd-file:filename
```

Note: The `dsmig migrate-config` command returns commands that must be launched to reset replication credentials properly.

In addition, `dsmig` does not migrate non-default replication manager entries. If a old version replica uses an entry other than the default replication manager, and if this entry is under `cn=config`, you must add the default replication manager manually. Please refer to the documentation to add a non-default replication manager entry manually. For information about adding a non-default replication manager, see *Using a Non-Default Replication Manager* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

8.2.5 Problems Related to Tombstone Purging

In some cases, after migrating a replicated topology you might experience problems related to tombstone purging. In some cases, tombstone entries are not purged when they should be. This problem can be resolved by re-indexing the `objectclass` attribute of the corresponding suffix.

8.3 Replication Recommendations

Directory Server 11*g* Release 1 (11.1.1.7.0) does not limit the number of masters in a multi-master topology. A fully-meshed, multi-master topology with no hubs or consumers is recommended in most cases.

Advantages of an all-master topology include the following:

- **Availability.** Write traffic is never disrupted if one of the servers goes down.
- **Simplicity.** In an all-master topology, there is no need to set up referrals to route reads and writes to different servers.

There may be reasons that an all-master topology is not viable in a specific deployment. For example, fractional replication cannot be used in an all-master topology because fractional replication is only supported from masters to consumers.

8.4 Migration Scenarios

This section provides sample migration scenarios for a variety of replicated topologies.

8.4.1 Migrating a Replicated Topology to an Identical Topology

Before you start migrating replicated servers, determine whether your deployment might not be better served by changing the architecture of the topology. This section describes how to migrate if you want to keep your existing topology. Migrating a replicated topology to an identical topology, involves migrating the consumers, then the hubs, then the masters. The following sections demonstrate a sample migration of a simple multi-master topology.

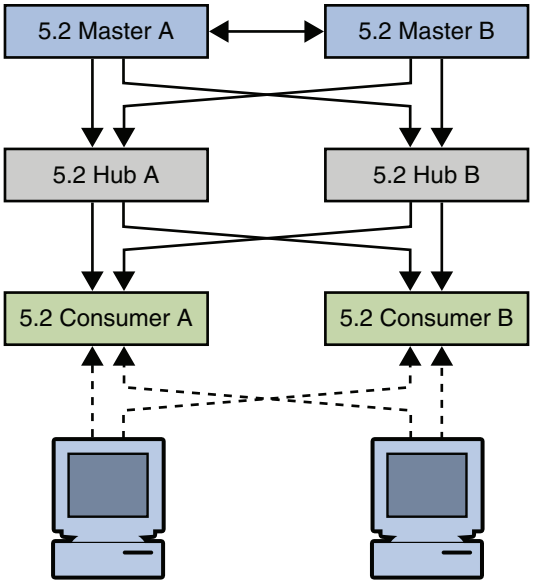
8.4.1.1 Migrating the Consumers

For each consumer in the replicated topology:

1. Reroute clients to another consumer in the topology.
2. Disable any replication agreements to the consumer you want to migrate.
3. Stop the consumer.
4. Migrate the consumer according to the instructions under Chapter 5, "Overview of the Migration Process for Directory Server".
5. Start the consumer.
6. Enable the replication agreements from the hubs to that consumer.
7. If you have migrated the data, check that replication is in sync.
8. If you have not migrated the data, reinitialize the consumer.
9. Reroute clients back to the consumer.

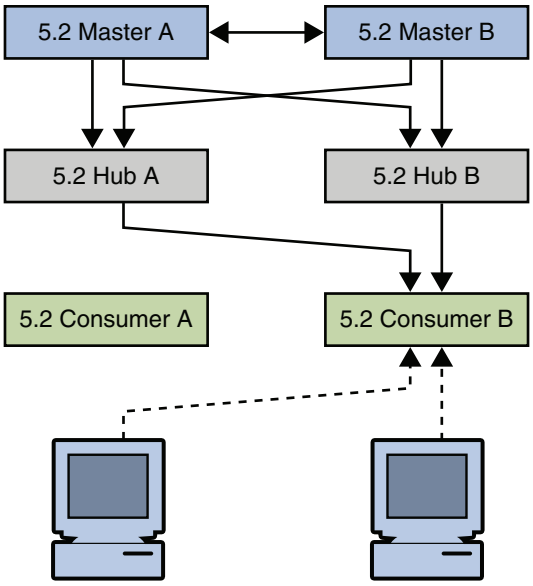
The following sequence of diagrams illustrate the migration of a consumer, as described above. The first diagram shows the version 5.2 topology before the migration.

Figure 8–1 Legacy Topology



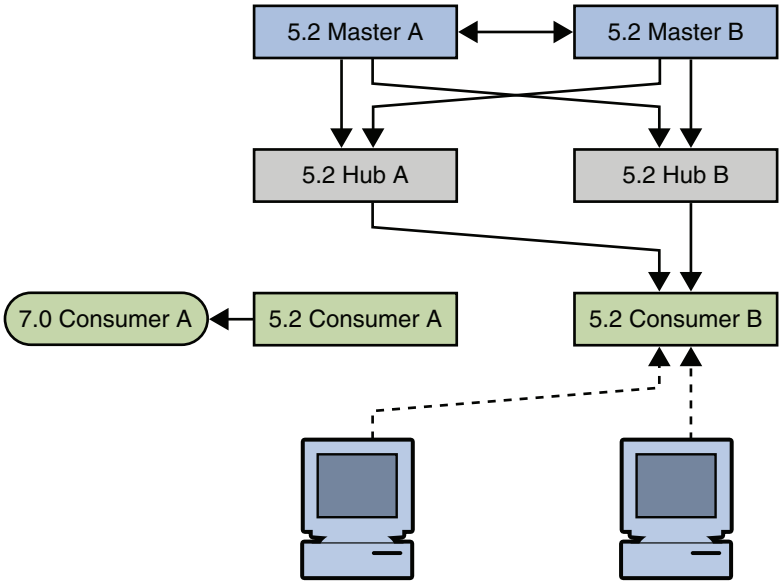
The first step involves rerouting clients and disabling replication agreements, effectively isolating the consumer from the topology.

Figure 8–2 Isolating the Consumer From the Topology



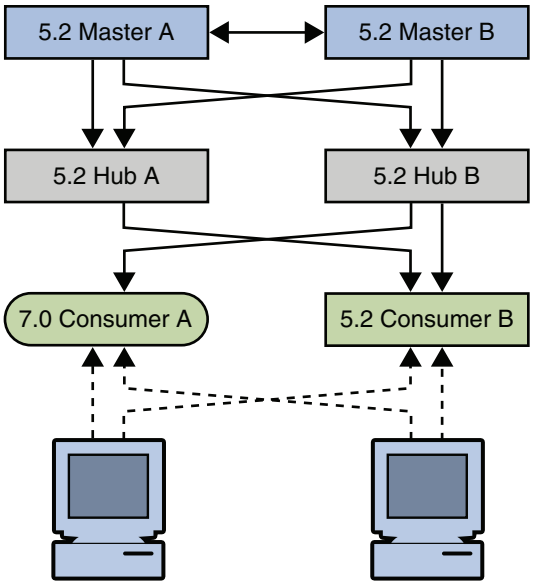
The next step involves migrating the consumer.

Figure 8–3 Migrating Consumer



The next step involves enabling the replication agreements to the new consumer, initializing the consumer if necessary, and rerouting client applications to the new consumer.

Figure 8–4 Placing the 11g Release 1 (11.1.1.7.0) Consumer Into the Topology



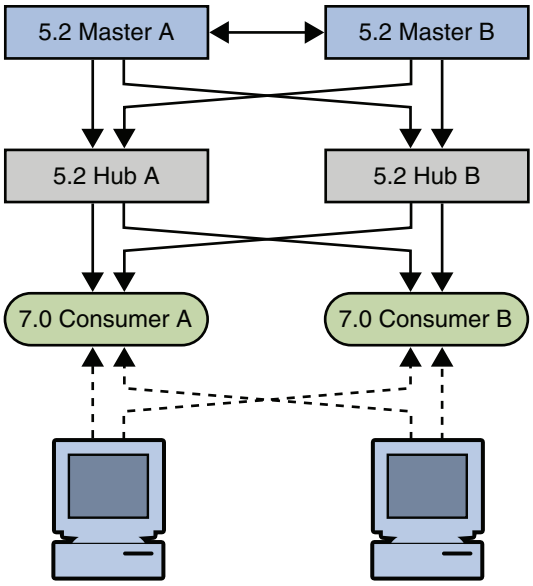
8.4.1.2 Migrating the Hubs

For each hub in the replicated topology:

1. Disable replication agreements from the masters to the hub you want to migrate.
2. Disable replication agreements from the hub you want to migrate to the consumers.
3. Stop the hub.
4. Migrate the hub according to the instructions under Chapter 5, "Overview of the Migration Process for Directory Server".
5. Start the hub.
6. Enable the replication agreements from the masters to that hub.
7. Enable the replication agreements from that hub to the consumers.
8. If you have migrated the data, check that replication is in sync.
9. If you have not migrated the data, reinitialize the hub.

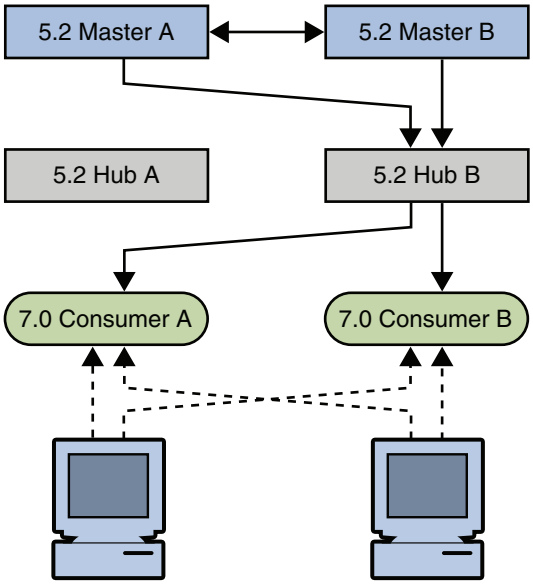
The following sequence of diagrams illustrate the migration of a hub, as described above. The first diagram shows the topology before migrating the hubs.

Figure 8–5 Topology With Migrated Consumers



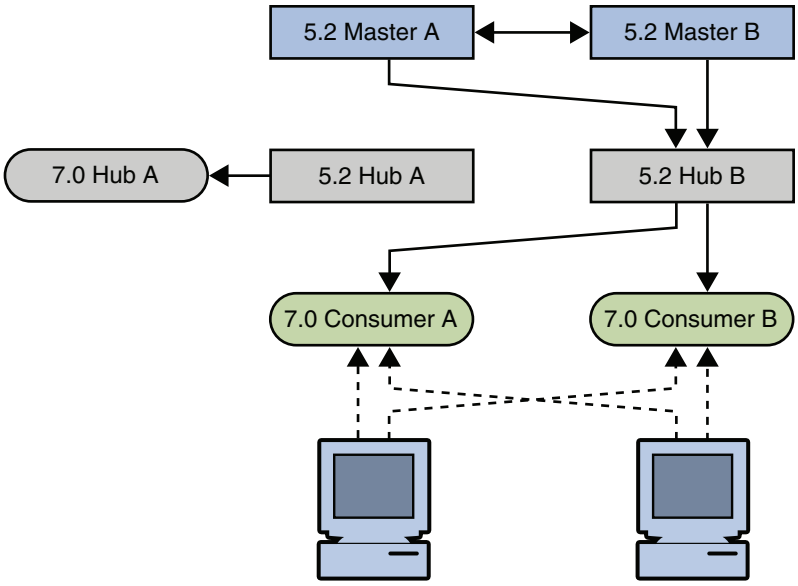
The first migration step involves disabling replication agreements, effectively isolating the hub from the topology.

Figure 8–6 Isolating the Hub From the Topology



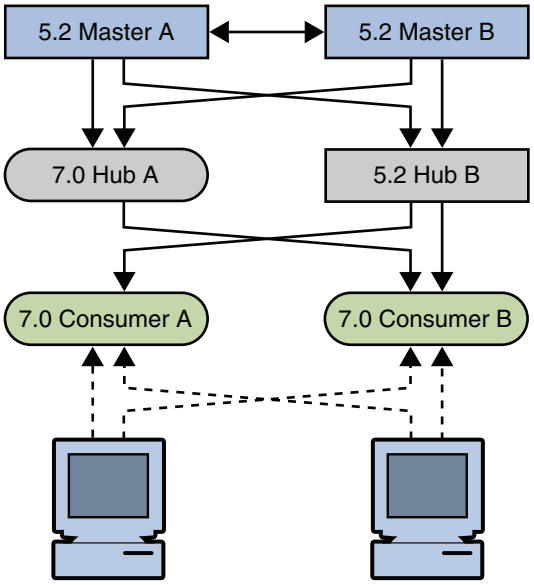
The next step involves migrating the legacy hub.

Figure 8–7 Migrating Hub



The next step involves enabling the replication agreements to the new hub and initializing the hub if necessary.

Figure 8–8 Placing the 11g Release 1 (11.1.1.7.0) Hub Into the Topology



Check that the replication on the consumers is in sync with the rest of the topology before migrating another hub. A server that has just been migrated does not have a change log, and can therefore not update consumer servers that are out of sync. Allow the topology to stabilize and all servers to synchronize before migrating the next supplier server.

8.4.1.3 Migrating the Masters

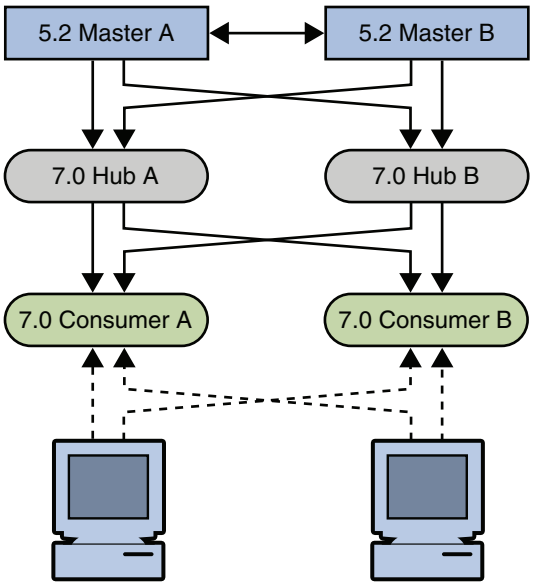
For each master in the replicated topology:

1. If you have client applications that write to the master you want to migrate, reroute these applications to write to another master in the topology.
2. Ensure that the master is no longer receiving write requests. You can do this by enabling read-only mode on the master.
3. Check that replication is synchronized between the master and all its consumers.

   Migration of the change log is not supported if you are migrating manually, so the preceding two steps are mandatory in this case. Although automatic migration *does* migrate the change log, you should still perform the above steps to avoid the risk of losing changes.
4. Disable any replication agreements to and from the master you want to migrate.
5. Stop the master.
6. Migrate the master according to the instructions under Chapter 5, "Overview of the Migration Process for Directory Server".
7. Start the master.
8. Enable the replication agreements from the master to the hubs and other masters in the topology.
9. If you have migrated the data, check that replication is in sync.
10. If you have not migrated the data, reinitialize the master from another master in the topology.
11. If you rerouted client applications (Step 2), you can now route the applications to write to the migrated master.

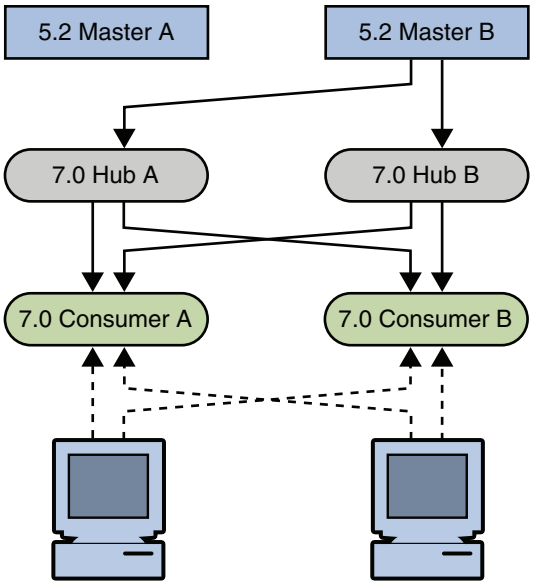
The following sequence of diagrams illustrate the migration of a master, as described above. The first diagram shows the topology before the migration of the masters.

Figure 8–9 Topology With Consumers and Hubs Migrated



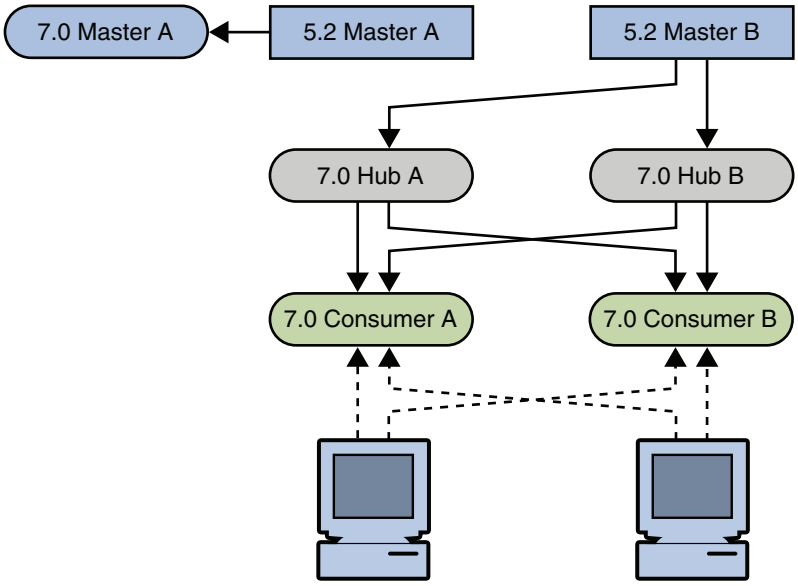
The first step in migrating a master involves disabling replication agreements, effectively isolating the master from the topology.

Figure 8–10 Isolating the Master From the Topology



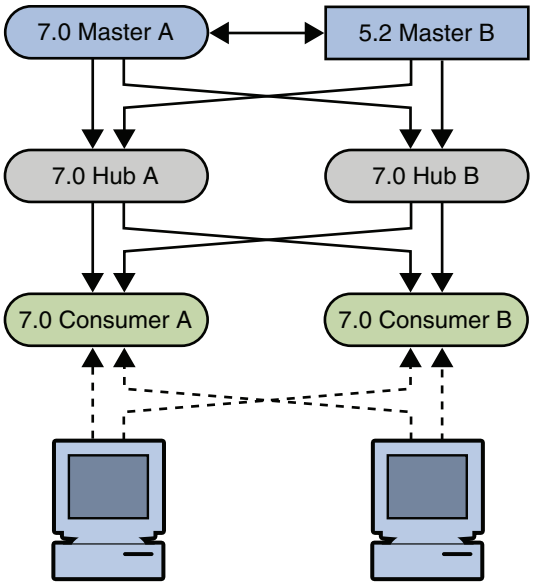
The next step involves migrating a master.

Figure 8–11 Migrating Master



The next step involves enabling the replication agreements to and from the new master and initializing the master if necessary.

Figure 8–12 Placing the 11g Release 1 (11.1.1.7.0) Master Into the Topology



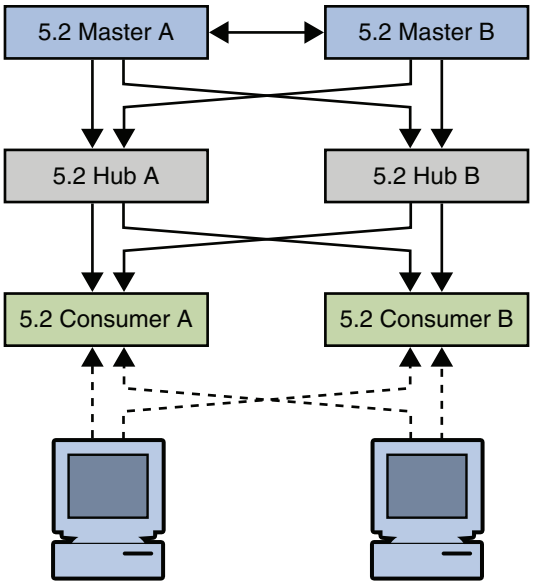
Check that the replication on all hubs and consumers is in sync with the rest of the topology before migrating another master. A server that has just been migrated does not have a change log, and can therefore not update servers that are out of sync. Allow the topology to stabilize and all servers to synchronize before migrating the next supplier server.

8.4.2 Migrating a Replicated Topology to a New Topology

Before you start migrating replicated servers, determine whether your deployment might not be better served by changing the architecture of the topology. This section describes how to migrate a basic legacy topology to an all-master topology. Migrating to an all-master topology involves migrating the consumers, hubs, and masters, then promoting the hubs to masters and the consumers to hubs, then to masters. The following sections demonstrate a sample migration of a simple multi-master topology to a new all-master topology.

The following figure shows the legacy topology.

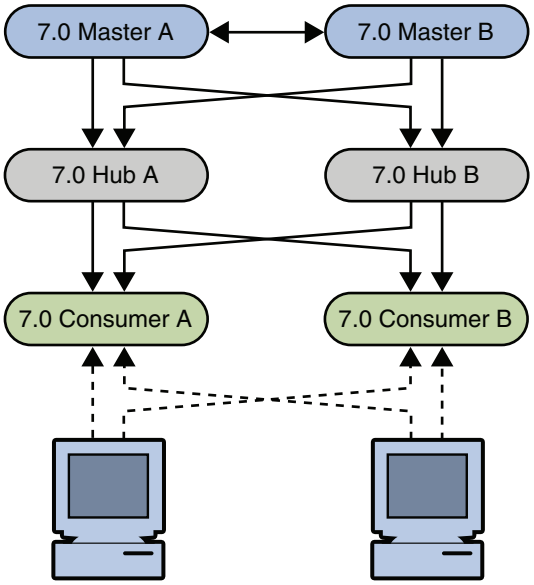
Figure 8–13 Legacy Topology



8.4.2.1 Migrating All the Servers

The first step is to migrate all the servers individually, as described in Migrating a Replicated Topology to an Identical Topology. The resulting topology is illustrated in the following figure.

Figure 8–14 Topology With Migrated Servers

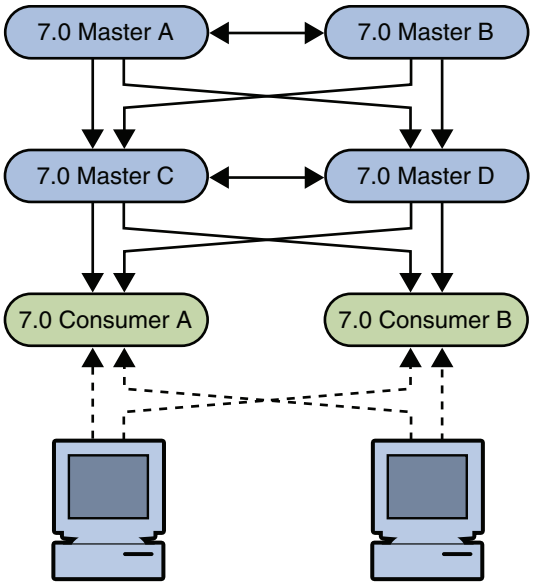


8.4.2.2 Promoting the Hubs

The next step involves promoting the hubs to masters, and creating a fully-meshed topology between the masters. To promote the hubs, follow the instructions in *Promoting or Demoting Replicas* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

The following diagram illustrates the topology when the hubs have been promoted.

Figure 8–15 Migrated Topology With Promoted Hub Replicas

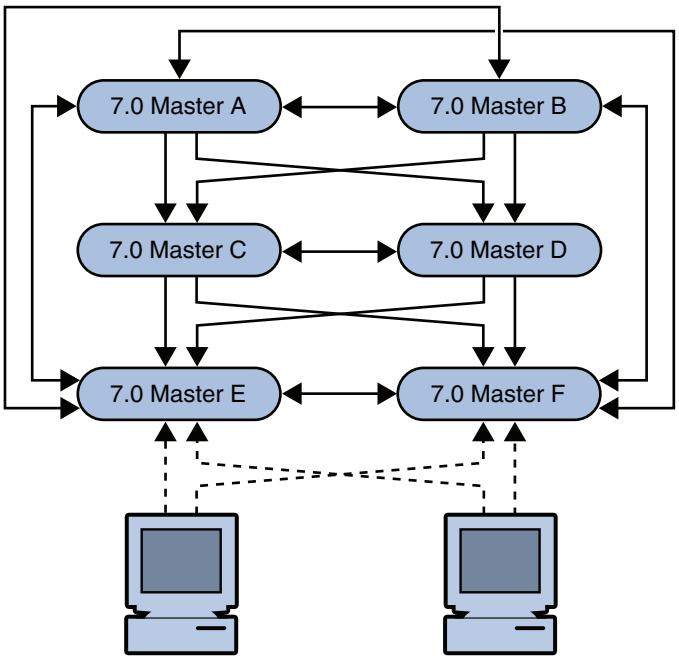


8.4.2.3 Promoting the Consumers

The next step involves promoting the consumers to hubs, and then to masters, and creating a fully-meshed topology between the masters. To promote the consumers, follow the instructions in "Promoting or Demoting Replicas" in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

The following diagram illustrates the topology when the consumers have been promoted.

Figure 8–16 New Fully-Meshed All-Master Topology



8.4.3 Migrating Over Multiple Data Centers

Migrating servers over multiple data centers involves migrating each server in each data center individually. Before you start migrating replicated servers, determine whether your deployment might not be better served by changing the architecture of the topology. If you want to keep your existing topology, follow the examples in Migrating a Replicated Topology to an Identical Topology for each data center. To migrate to a new topology, follow the examples in Migrating a Replicated Topology to a New Topology for each data center.

9

Architectural Changes in Directory Server Since Version 5.2

This chapter describes the architectural changes in Directory Server that affect migration from 5.2. For information on *all* changes and bug fixes in Directory Server, see Chapter 1, *New Features in Oracle Directory Server Enterprise Edition11g* Release 1 (11.1.1.7.0), in *Release Notes for Oracle Directory Server Enterprise Edition*.

This chapter covers the following topics:

9.1 Changes in the Administration Framework

Directory Server 11*g* Release 1 (11.1.1.7.0) does not include an administration server, as in 5.2 versions. Servers are now registered in the Directory Service Control Center (DSCC) and can be administered remotely by using the web-based GUI or the command-line tools.

To migrate to the new administration framework, you need to do the following:

- Migrate each server individually
- Register each server in the DSCC

9.1.1 Removal of the *ServerRoot* Directory

In the new administration model, a Directory Server instance is no longer tied to a *ServerRoot*. Each Directory Server instance is a standalone directory that can be manipulated in the same manner as an ordinary standalone directory.

9.1.2 Removal of the `o=netscapeRoot` Suffix

In previous versions of Directory Server, centralized administration information was kept in `o=netscapeRoot`. In the new administration model, the concept of a *configuration directory server* no longer exists. The `o=netscapeRoot` suffix is no longer

required, and the `netscapeRoot` database files are therefore *not* migrated. The configuration data for this suffix can be migrated, if it is specifically required.

9.2 Changes to ACIs

The following changes have been made to ACIs in Directory Server 11*g* Release 1 (11.1.1.7.0).

9.2.1 Changes in the ACI Scope

In Directory Server 5.2 ACIs on the root DSE had base scope. In Directory Server 11*g* Release 1 (11.1.1.7.0), ACIs on the root DSE have global scope by default, equivalent to `targetscope="subtree"`.

To reproduce the same behavior as Directory Server 5.2, add `targetscope="base"` to ACIs on the root DSE. If you use `dsmig` to migrate the configuration, this is done automatically.

9.2.2 Changes in Suffix-Level ACIs

In Directory Server 5.2, the following ACI was provided, at the suffix level:

```
aci: (targetattr != "nsroledn || aci || nsLookThroughLimit ||
  nsSizeLimit || nsTimeLimit || nsIdleTimeout || passwordPolicySubentry ||
  passwordExpirationTime || passwordExpWarned || passwordRetryCount ||
  retryCountResetTime || acc ountUnlockTime || passwordHistory ||
  passwordAllowChangeTime")(version 3.0; acl "Allow self entry modification
  except for nsroledn, aci, resource limit attributes, passwordPolicySubentry
  and password policy state attributes"; allow (write)userdn ="ldap:///self";)
```

This ACI allowed self-modification of user passwords, among other things. This ACI is no longer provided in Directory Server 11*g* Release 1 (11.1.1.7.0). Instead, the following global ACIs are provided by default:

```
aci: (targetattr != "aci") (targetscope = "base") (version 3.0;
aci "Enable read access to rootdse for anonymous users";
allow(read,search,compare) user dn="ldap:///anyone"; )

aci: (targetattr = "*") (version 3.0; acl "Enable full access
for Administrators group";  allow (all)(groupdn =
"ldap:///cn=Administrators,cn=config"); )

aci: (targetattr = "userPassword") ( version 3.0; acl "allow
userpassword self modification"; allow (write) userdn = "ldap:///self";)
```

In Directory Server 11*g* Release 1 (11.1.1.7.0), the default `userPassword` ACI at root DSE level provides equivalent access control to the default legacy ACI at suffix level. However, if you want to reproduce exactly the same access control as in legacy version, add the following ACI to your suffix. This ACI is the legacy ACI, with the new password policy operational attributes for Directory Server 11*g* Release 1 (11.1.1.7.0).

```
aci: (targetattr != "nsroledn || aci || nsLookThroughLimit ||
  nsSizeLimit || nsTimeLimit || nsIdleTimeout || passwordPolicySubentry ||
  passwordExpirationTime || passwordExpWarned || passwordRetryCount ||
  retryCountResetTime || accountUnlockTime || passwordHistory ||
  passwordAllowChangeTime || pwdAccountLockedTime || pwdChangedTime ||
  pwdFailureTime || pwdGraceUseTime || pwdHistory ||
  pwdLastAuthTime || pwdPolicySubentry || pwdReset")(version 3.0;
```

```
acl "Allow self entry modification except for nsroledn,
aci, resource limit attributes, passwordPolicySubentry
and password policy state attributes"; allow (write)userdn ="ldap:///self";)
```

Tip: Do not allow users write access to everything and then deny write access to specific attributes. Instead, explicitly list the attributes to which you allow write access.

9.3 Command Line Changes

The functionality of most command-line tools is replaced by only two commands: `dsadm` and `dsconf`.

The following table shows commands used in Directory Server 5.2, and the corresponding commands for Directory Server 6, and 11*g* Release 1 (11.1.1.7.0). In version 11*g* Release 1 (11.1.1.7.0), the default path of these commands is `/opt/SUNWdsee7/bin`. When installed from the zip installation, the default path is *`install-path`*`/dsee7/bin`.

Table 9–1 Directory Server 5, 6, and 7 commands

Version 5.2 Command	Version 6 Command	Version 11*g* Release 1 (11.1.1.7.0) Command	Description
`bak2db`	`dsadm restore`	`dsadm restore`	Restore a database from backup (locally, offline)
`bak2db-task`	`dsconf restore`	`dsconf restore`	Restore a database from backup (remotely, online)
`db2bak`	`dsadm backup`	`dsadm backup`	Create a database backup archive (locally, offline)
`db2bak-task`	`dsconf backup`	`dsconf backup`	Create a database backup archive (remotely, online)
`db2index`	`dsadm reindex`	`dsadm reindex`	Create and generate indexes (locally, offline)
`db2index-task`	`dsconf reindex`	`dsconf reindex`	Create and generate indexes (remotely, online)
`db2ldif`	`dsadm export`	`dsadm export`	Export database contents to LDIF (locally, offline)
`db2ldif-task`	`dsconf export`	`dsconf export`	Export database contents to LDIF (remotely, online)
`entrycmp`	`entrycmp`	`entrycmp`	Compare the same entry in multiple replicas
`fildif`	`fildif`	`fildif`	Create a filtered version of an LDIF file
`getpwenc`	Removed	Removed	Print encrypted password
`idsktune`	`idsktune`	`idsktune`	Check patches and verifies system tuning
`insync`	`insync`	`insync`	Indicate synchronization between multiple replicas
`ldif2db`	`dsadm import`	`dsadm import`	Import database contents from LDIF (locally, offline)
`ldif2db-task`	`dsconf import`	`dsconf import`	Import database contents from LDIF (remotely, online)

Table 9–1 (Cont.) Directory Server 5, 6, and 7 commands

Version 5.2 Command	Version 6 Command	Version 11*g* Release 1 (11.1.1.7.0) Command	Description
ldif2ldap	ldapmodify -B	ldapmodify -B	Import data from LDIF over LDAP (remotely, online)
MigrateInstance5	dsmig / manual migration procedure	dsmig / manual migration procedure	Migrate data from a previous version
mmldif	mmldif	mmldif	Combine multiple LDIF files
monitor	ldapsearch on cn=monitor	ldapsearch on cn=monitor	Retrieve performance monitoring information
ns-ldapagt	Removed	Removed	Starts a Directory Server SNMP subagent.
pwdhash	pwdhash	pwdhash	Print the encrypted form of a password
repldisc	repldisc	repldisc/dsccmon	Discover a replication topology
restart-slapd	dsadm restart	dsadm restart	Restart a Directory Server instance
restore-config	dsadm start --safe	dsadm start --safe	Restore Administration server configuration
saveconfig	Removed	Removed	Save Administration server configuration
schema_push	schema_push	dsadm start --schema-push or dsadm restart -schema-push	Update schema modification time stamps
start-slapd	dsadm start	dsadm start	Start a Directory Server instance
stop-slapd	dsadm stop	dsadm stop	Stop a Directory Server instance
suffix2instance	dsconf get-suffix-prop	dsconf get-suffix-prop	See the backend name for a suffix
vlvindex	dsadm reindex	dsadm reindex	Create virtual list view indexes

Table 9–2 Directory Server 5, 6, and 7 commands

Version 5.2 Command	Version 6 Command	Version 11*g* Release 1 (11.1.1.7.0) Command	Description
directoryserver accountstatus	ns-accountstatus	dsutil account-status	Establish account status
directoryserver activate	ns-activate	dsutil account-activate	Activate an entry or group of entries
directoryserver configure	Installation procedure	Installation procedure	Install Directory Server
directoryserver inactivate	ns-inactivate	dsutil account-inactivate	Inactivate an entry or group of entries
directoryserver unconfigure	Uninstallation procedure	Uninstallation procedure	Uninstall Directory Server

9.4 Changes to the Console

The downloaded, Java Swing-based console has been replaced by Directory Service Control Center (DSCC). DSCC is a graphical interface that enables you to manage an entire directory service by using a web browser. The DSCC requires no migration. Migrated Directory Server instances can be registered in the DSCC. For more

information about the DSCC see Chapter 2, *Directory Server Overview,* in *Reference for Oracle Directory Server Enterprise Edition*.

9.5 Password Policy

Directory Server 11*g* Release 1 (11.1.1.7.0) implements a password policy that uses the standard object class and attributes described in the "Password Policy for LDAP Directories" Internet-Draft (http://datatracker.ietf.org/doc/draft-behera-ldap-password-policy/).

The password policy provides the following new features:

- A grace login limit, specified by the `pwdGraceAuthNLimit` attribute. This attribute specifies the number of times an expired password can be used to authenticate. If it is not present or if it is set to 0, authentication will fail.
- Safe password modification, specified by the `pwdSafeModify` attribute. This attribute specifies whether the existing password must be sent when changing a password. If the attribute is not present, the existing password does not need to be sent.

In addition, the password policy provides the following controls:

- `LDAP_CONTROL_PWP_[REQUEST|RESPONSE]`
- `LDAP_CONTROL_ACCOUNT_USABLE_[REQUEST|RESPONSE]`

These controls enable LDAP clients to obtain account status information.

The `LDAP_CONTROL_PWP` control provides account status information on LDAP bind, search, modify, add, delete, modDN, and compare operations.

The following information is available, using the OID `1.3.6.1.4.1.42.2.27.8.5.1` in the search:

- Period of time before the password expires
- Number of grace login attempts remaining
- The password has expired
- The account is locked
- The password must be changed after being reset
- Password modifications are allowed
- The user must supply his/her old password
- The password quality (syntax) is insufficient
- The password is too short
- The password is too young
- The password already exists in history

The `LDAP_CONTROL_PWP` control indicates warning and error conditions. The control value is a BER octet string, with the format `{tii}`, which has the following meaning:

- `t` is a tag defining which warning is set, if any. The value of `t` can be one of the following:

```
LDAP_PWP_WARNING_RESP_NONE (0x00L)
LDAP_PWP_WARNING_RESP_EXP (0x01L)
LDAP_PWP_WARNING_RESP_GRACE (0x02L)
```

- The first `i` indicates warning information.

  The warning depends on the value set for `t` as follows:

  - If `t` is set to `LDAP_PWP_WARNING_RESP_NONE`, the warning is `-1`.
  - If `t` is set to `LDAP_PWP_WARNING_RESP_EX`, the warning is the number of seconds before expiration.
  - If `t` is set to `LDAP_PWP_WARNING_RESP_GRACE`, the warning is the number of remaining grace logins.

- The second `i` indicates error information. If `t` is set to `LDAP_PWP_WARNING_RESP_NONE`, the error contains one of the following values:

```
pwp_resp_no_error (-1)
pwp_resp_expired_error (0)
pwp_resp_locked_error (1)
pwp_resp_need_change_error (2)
pwp_resp_mod_not_allowed_error (3)
pwp_resp_give_old_error (4)
pwp_resp_bad_qa_error (5)
pwp_resp_too_short_error (6)
pwp_resp_too_young_error (7)
pwp_resp_in_hist_error (8)
```

The `LDAP_CONTROL_ACCOUNT_USABLE` control provides account status information on LDAP search operations only.

For information about password policy compatibility issues, see *Administrator's Guide for Oracle Directory Server Enterprise EditionAdministrator's Guide for Oracle Directory Server Enterprise Edition*

9.6 Changes to Plug-Ins

This section lists the new plug-ins that have been added in Directory Server since version 5.2. The section also describes what you need to do if you have custom plug-ins created with the old plug-in API.

9.6.1 New Plug-Ins

The following plug-ins have been added:

```
cn=gle,cn=plugins,cn=config
cn=MemberOf Plugin,cn=plugins,cn=config
cn=Monitoring Plugin,cn=plugins,cn=config
cn=ObjectDeletionMatch,cn=plugins,cn=config
cn=pswsync,cn=plugins,cn=config
cn=Replication Repair,cn=plugins,cn=config
cn=RMCE,cn=Password Storage Schemes,cn=plugins,cn=config
cn=Strong Password Check,cn=plugins,cn=config
```

For information about these plug-ins, see the `plugin(5dsconf)` man page.

9.6.2 Changes to the Plug-In API

If you have developed your own custom plug-ins, you need to recompile these to work with Directory Server 11*g* Release 1 (11.1.1.7.0). For a complete list of the changes

made to the plug-in API, see Chapter 2, *Changes to the Plug-In API Since Directory Server 5.2*, in *Developer's Guide for Oracle Directory Server Enterprise Edition*.

9.7 Changes to the Installed Product Layout

This section summarizes the changes to the installed product layout from Directory Server 5.2. Several files and utilities have been deprecated since Directory Server 5.2, as described in the following sections.

9.7.1 Administration Utilities Previously Under *ServerRoot*

In Directory Server 11*g* Release 1 (11.1.1.7.0) the Administration Server is no longer used to manage server instances.

The following system administration utilities previously located under *ServerRoot* have therefore been deprecated:

- `restart-admin`
- `start-admin`
- `startconsole`
- `stop-admin`
- `uninstall`

9.7.2 Binaries Previously Under *ServerRoot*/bin

The following utilities under *ServerRoot*`/bin` have been deprecated:

- *ServerRoot*`/bin/admin/admconfig`
- *ServerRoot*`/bin/https/bin/ns-httpd`
- *ServerRoot*`/bin/https/bin/uxwdog`
- *ServerRoot*`/bin/slapd/server/ns-ldapagt`

On Solaris SPARC, the `ns-slapd` daemon is located in *install-path*`/lib/sparcv`*Solaris-Version*. On platforms other than Solaris SPARC, the `ns-slapd` daemon is located in *install-path*`/lib`.

9.7.3 Libraries and Plug-Ins Previously Under *ServerRoot*/lib

Product libraries and plug-ins in Directory Server 5.2 were located under *ServerRoot*`/lib`. In Directory Server 11*g* Release 1 (11.1.1.7.0), on Solaris SPARC, these libraries and plug-ins are located in *install-path*`/lib/sparcv`*Solaris-Version*. On platforms other than Solaris SPARC, they are located directly under *install-path*`/lib`.

9.7.4 Online Help Files No Longer Exist

The console online help files for Directory Server 11g Release 11.1.1.5.0 were located under `/opt/SUNWdsee7/resources/dcc7app/html`. In this release, the Help button links to the ODSEE online documentation hosted on the Oracle Technology Newtork.

9.7.5 Plug-Ins Previously Under *ServerRoot*/plugins

The following tables describes the new location of sample server plug-ins, and header files for plug-in development.

Table 9–3 Support for Plug-Ins

Directory Server 5.2 Plug-In Directory	Directory Server 11*g* Release 1 (11.1.1.7.0) Plug-In Directory	Remarks
ServerRoot/plugins/slapd/slapi/examples	No longer provided with the product. All sample code files are bundled in an example.zip file that is available at http://www.oracle.com/technology/sample_code/products/oid/index.html.	Sample plug-ins
ServerRoot/plugins/slapd/slapi/include	*install-path*/include	Plug-in header files

SNMP support is no longer handled within Directory Server. All plug-ins and binaries related to SNMP have therefore been deprecated within Directory Server.

These plug-ins include the following:

- *ServerRoot*/plugins/snmp/magt/magt
- *ServerRoot*/plugins/snmp/mibs/
- *ServerRoot*/plugins/snmp/sagt/sagt

For information about enabling SNMP monitoring, see *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

9.7.6 Utilities Previously Under *ServerRoot*/shared/bin

The following tables describes the new location of the administrative tools previously under *ServerRoot*/shared/bin. Note that as a result of the change to the administrative framework, some of these tools have been deprecated.

Table 9–4 Tools Previously Under ServerRoot/shared/bin

5.2 File	11*g* Release 1 (11.1.1.7.0) File	Purpose
ServerRoot/shared/bin/admin_ip.pl	Deprecated	Change IP address
ServerRoot/shared/bin/entrycmp	*install-path*/bin/entrycmp	Compare entries for replication
ServerRoot/shared/bin/fildif	*install-path*/bin/fildif	Dump filtered LDIF
ServerRoot/shared/bin/insync	*install-path*/bin/insync	Check replication synchronization
ServerRoot/shared/bin/ldapcompare	*install_path*/dsee7/dsrk/bin/ldapcompare	Compare attribute value In Directory Server11*g* Release 1 (11.1.1.7.0) you must install the SUNWldapcsdk-tools package to get this utility

Table 9–4 (Cont.) Tools Previously Under ServerRoot/shared/bin

5.2 File	11*g* Release 1 (11.1.1.7.0) File	Purpose
ServerRoot/shared/bin/ldapdelete	*install_path*/dsee7/dsrk/bin/ldapdelete	Delete directory entry In Directory Server 11*g* Release 1 (11.1.1.7.0), you must install the SUNWldapcsdk-tools package to get this utility
ServerRoot/shared/bin/ldapmodify	*install_path*/dsee7/dsrk/bin/ldapmodify	Modify directory entry In Directory Server 11*g* Release 1 (11.1.1.7.0), you must install the SUNWldapcsdk-tools package to get this utility
ServerRoot/shared/bin/ldapsearch	*install_path*/dsee7/dsrk/bin/ldapsearch	Find directory entries In Directory Server 11*g* Release 1 (11.1.1.7.0), you must install the SUNWldapcsdk-tools package to get this utility
ServerRoot/shared/bin/modutil	Deprecated	Manage PKCS #11 modules
ServerRoot/shared/bin/uconv	Deprecated	Convert from ISO to UTF-8
ServerRoot/shared/bin/repldisc	*install_path*/dsee7/bin/repldisc	Discover replication topology

9.7.7 Certificate and Key Files

The following table shows the new locations of the certificate and key files in Directory Server 11*g* Release 1 (11.1.1.7.0).

Table 9–5 Location of Certificate and Key Files

5.2 File	11*g* Release 1 (11.1.1.7.0) File	Remarks
ServerRoot/shared/config/certmap.conf	*instance-path*/alias/certmap.conf	Configuration file for mapping certificates to directory entries
ServerRoot/alias/cert8.db	*instance-path*/alias/slapd-cert8.db	Trusted certificate database file
ServerRoot/alias/key3.db	*instance-path*/alias/slapd-key3.db	Database file containing client keys
ServerRoot/alias/secmod.db	*instance-path*/alias/secmod.db	Database file containing security modules such as PKCS#11

9.7.8 Silent Installation and Uninstallation Templates

In Directory Server 5.2, the *ServerRoot*/setup5 directory contained sample templates for silent installation and uninstallation. Silent installation and uninstallation are no longer needed for Directory Server 11*g* Release 1 (11.1.1.7.0) and these files have therefore been deprecated.

9.7.9 Server Instance Scripts Previously Under *ServerRoot*/slapd-*ServerID*

The command-line administration scripts previously under *ServerRoot*/slapd-*ServerID* have been replaced in the new administration framework and deprecated. These commands and their Directory Server 11*g* Release 1 (11.1.1.7.0) equivalents are described in Command Line Changes.

9.7.10 Server Instance Subdirectories

The following table describes the new locations for the configuration, log and backup data previously located under *ServerRoot*/slapd-*instance-name*

Table 9–6 Instance-Specific Subdirectories

Version 5.2 Directory	Version 11*g* Release 1 (11.1.1.7.0) Directory	Remarks
ServerRoot/slapd-*ServerID*/bak	*instance-path*/bak	Directory instance database backup
ServerRoot/slapd-*ServerID*/confbak	Deprecated	Administration Server configuration backup
ServerRoot/slapd-*ServerID*/conf_bk	Deprecated	Directory instance configuration backup
ServerRoot/slapd-*ServerID*/config	*instance-path*/config	Directory instance configuration
ServerRoot/slapd-*ServerID*/config/schema	*instance-path*/config/schema	Directory instance schema
ServerRoot/slapd-*ServerID*/db	*instance-path*/db	Directory instance databases
ServerRoot/slapd-*ServerID*/ldif	*instance-path*/ldif	Sample LDIF files
ServerRoot/slapd-*ServerID*/locks	*instance-path*/locks	Run time process locks
ServerRoot/slapd-*ServerID*/logs	*instance-path*/logs	Server instance log files
ServerRoot/slapd-*ServerID*/tmp	*instance-path*/tmp	Run time temporary files

10

Migrating Directory Proxy Server

There is no automatic migration path to move from a Directory Proxy Server 5.2 to Directory Proxy Server 11*g* Release 1 (11.1.1.7.0). Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) provides much more functionality than the old versions. While a one to one mapping of configuration information is therefore not possible in most instances, it is possible to configure Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) to behave like a version 5.2 server for compatibility.

This chapter describes how the configuration properties in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) can be used to simulate a version 5.2 configuration.

The chapter covers the following topics:

10.1 Mapping the Global Configuration

Before you change the Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) configuration, back up the configuration by using the `dpadm backup` command. For more information, see *dpadm*.

You can configure Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) by using the Directory Service Control Center (DSCC) or the `dpconf` command-line utility. For more information, see *dpconf*.

Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) configuration can be retrieved as a set of properties. For example, information about the port is returned in the `listen-port` property. This section describes how to map the version 5.2 global configuration attributes to the corresponding properties in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), where applicable. Not all functionality can be mapped directly.

The global Directory Proxy Server 5.2 configuration is specified by two object classes:

- **ids-proxy-sch-LDAPProxy.** Contains the name of the Directory Proxy Server server and the DN of the global configuration object.

- **ids-proxy-sch-GlobalConfiguration.** Contains various global configuration attributes.

Because of the way in which Directory Proxy Server11*g* Release 1 (11.1.1.7.0) is configured, Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) has no equivalent for the `ids-proxy-sch-LDAPProxy` object class or its attributes.

In Directory Proxy Server 5.2, these configuration attributes are stored under `ids-proxy-con-Config-Name=`*`user-defined-name`*`,ou=system,ou=dar-config,o=netscaperoot`.

The functionality of the `ids-proxy-sch-GlobalConfiguration` is provided as properties of various elements in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0). The following table maps the attributes of the `ids-proxy-sch-GlobalConfiguration` object class to the corresponding properties in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0).

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0)) Property
`ids-proxy-con-Config-Name`	No equivalent
	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) has two *listeners*, a non-secure listener and a secure listener. The version 5.2 listen configuration attributes can be mapped to the following four listener properties. To configure listener properties, use the `dpconf` command as follows: `$ dpconf set-ldap-listener-prop` *`PROPERTY`* `$ dpconf set-ldaps-listener-prop` *`PROPERTY`* For more information, see *Configuring Listeners Between Clients and Directory Proxy Server* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.
`ids-proxy-con-listen-port`	`listen-port`
`ids-proxy-con-listen-host`	`listen-address`
`ids-proxy-con-listen-backlog`	`max-connection-queue-size`
`ids-proxy-con-ldaps-port`	`listen-port` (property of the `ldaps-listener`)
`ids-proxy-con-max-conns`	This attribute can be mapped to the `max-client-connections` property of a connection handler resource limit. To configure this property, use the `dpconf` command as follows: `$ dpconf set-resource-limit-policy-prop` *`POLICY-NAME`* `max-client-connections:`*`VALUE`* For more information, see *Creating and Configuring a Resource Limits Policy* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0)) Property
ids-proxy-con-userid	This attribute can be mapped to the user and group names specified when an instance is created by using the following command: `$ dpadm create [-u NAME -g NAME] INSTANCE-PATH` For more information, see *Working With Directory Proxy Server Instances* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.
ids-proxy-con-working-dir	This attribute can be mapped to the *INSTANCE-PATH* specified when an instance is created by using the following command: `$ dpadm create INSTANCE-PATH` For more information, see *Working With Directory Proxy Server Instances* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.
ids-proxy-con-include-logproperty	No equivalent. For information on configuring logging in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), see Chapter 27, *Directory Proxy Server Logging*, in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.1.1 Mapping the Global Security Configuration

In Directory Proxy Server 5.2, security is configured by using attributes of the global configuration object. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), you can configure security when you create the server instance by using the `dpadm` command. For more information, see Chapter 19, *Directory Proxy Server Certificates*, in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

In Directory Proxy Server 5.2, these configuration attributes are stored under `ids-proxy-con-Config-Name=user-defined-name,ou=system,ou=dar-config,o=netscaperoot`.

The following table maps the version 5.2 security attributes to the corresponding properties in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0).

Table 10–1 Mapping of Security Configuration

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-ssl-key	ssl-key-pin
ids-proxy-con-ssl-cert	ssl-certificate-directory ssl-server-cert-alias
ids-proxy-con-send-cert-as-client This attribute enables the proxy server to send its certificate to the LDAP server to allow the LDAP server to authenticate the proxy server as an SSL client.	ssl-client-cert-alias This property enables the proxy server to send a different certificate to the LDAP server, depending on whether it is acting as an SSL Server or an SSL Client.
ids-proxy-con-server-ssl-version ids-proxy-con-client-ssl-version	No equivalent

Table 10–1 (Cont.) Mapping of Security Configuration

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
`ids-proxy-con-ssl-cert-required`	This feature can be achieved by setting the following server property: `$ dpconf set-server-prop linebreakallow-cert-based-auth:require`
`ids-proxy-con-ssl-cafile`	No equivalent

10.1.1.1 Managing Certificates

Directory Proxy Server 5.2 certificates were managed by using the `certreq` utility, or by using the console. In Directory Proxy Server 11*g* 11*g* Release 1 (11.1.1.7.0), certificates are managed by using the `dpadm` command, or by using the DSCC.

Certificates must be installed on each individual data source in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0).

For information about managing certificates in Directory Proxy Server 11*g* 11*g* Release 1 (11.1.1.7.0), see Chapter 19, *Directory Proxy Server Certificates,* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.1.1.2 Access Control on the Proxy Configuration

In Directory Proxy Server 5.2, access control on the proxy configuration is managed by ACIs in the configuration directory server. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), access to the configuration file is restricted to the person who created the proxy instance, or to the proxy manager if the configuration is accessed through Directory Proxy Server. Editing the configuration file directly is not supported.

10.2 Mapping the Connection Pool Configuration

Directory Proxy Server 5.2 can be configured to reuse existing connections to the backend LDAP servers. This can provide a significant performance gain if the backend servers are on a Wide Area Network (WAN). In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is provided with connection pools that are configured in the backend server itself. For more information, see Chapter 18, *LDAP Data Views,* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

In Directory Proxy Server 5.2, these configuration attributes are stored under `ids-proxy-con-Config-Name=`*`user-defined-name`*`,ou=system,ou=dar-config,o=netscaperoot`.

The following table provides a mapping between Directory Proxy Server 5.2 connection configuration attributes and the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) properties.

Table 10–2 Mapping of Connection Pool Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
`ids-proxy-con-connection-pool`	No equivalent

Table 10–2 (Cont.) Mapping of Connection Pool Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-connection-pool-interval	The connection pool grows automatically to a configured maximum. The maximum is configured by setting the following properties of an LDAP data source: num-bind-init num-bin-incr num-bind-limit num-read-init num-read-incr num-read-limit num-write-init num-write-incr num-write-limit For information about setting LDAP data source properties, see *To Configure an LDAP Data Source* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.
ids-proxy-con-connection-pool-timeout	backendMaxReadWaitTimeInMilliSec

10.3 Mapping the Groups Configuration

Directory Proxy Server 5.2 uses groups to define how client connections are identified and what restrictions are placed on the client connections. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is achieved using connection handlers, data views, and listeners.

Connection handlers, data views, and listeners can be configured by using the Directory Service Control Center or by using the `dpconf` command. For more information, see Chapter 25, *Connections Between Clients and Directory Proxy Server* , in *Administrator's Guide for Oracle Directory Server Enterprise Edition* and Chapter 21, *Directory Proxy Server Distribution,* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.3.1 Mapping the Group Object

In Directory Proxy Server 5.2, a group is defined by setting the attributes of the `ids-proxy-sch-Group` object class. Certain attributes of this object class can be mapped to Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) connection handler properties. For a list of all the connection-handler properties, run the following command:

```
$ dpconf help-properties | grep connection-handler
```

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

The following table maps version 5.2 group attributes to the corresponding connection handler properties.

Table 10–3 Mapping Between Group Attributes and Connection Handler Properties

Directory Proxy Server 5.2 Group Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0)) Connection Handler Property
ids-proxy-con-Name	cn
ids-proxy-con-Priority	priority
ids-proxy-sch-Enable	is-enabled
ids-proxy-sch-belongs-to	No equivalent
ids-proxy-con-permit-auth-none:TRUE ids-proxy-con-permit-auth-sasl:TRUE ids-proxy-con-permit-auth-simple:TRUE	allowed-auth-methods:anonymouslinebreak allowed-auth-methods:sasl allowed-auth-methods:simple

10.3.2 Mapping the Network Group Object

Directory Proxy Server 5.2 groups are configured by setting the attributes of the ids-proxy-sch-NetworkGroup object class. These attributes can be mapped to properties of Directory Proxy Server11*g* Release 1 (11.1.1.7.0) connection handlers, data sources and listeners. For a list of all the properties related to these objects, run the dpconf help-properties command, and search for the object. For example, to locate all the properties of a connection handler, run the following command:

```
$ dpconf help-properties | grep connection-handler
```

In Directory Proxy Server 5.2, these configuration attributes are stored under ou=groups,cn=*user-defined-name*,ou=dar-config,o=NetscapeRoot.

The following table maps Directory Proxy Server 5.2 network group attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) properties and describes how to set these properties by using the command line.

Table 10–4 Mapping of Network Group Attributes

Directory Proxy Server 5.2 Network Group Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0)
ids-proxy-con-Client	domain-name-filters and ip-address-filters properties of a connection handler
ids-proxy-con-include-property	No equivalent
ids-proxy-con-include-rule	No equivalent
ids-proxy-con-ssl-policy:ssl_required	Set this as a connection handler property by using the following command: `$ dpconf set-connection-handler-prop CONNECTION-HANDLER-NAME is-ssl-mandatory:true`
ids-proxy-con-ssl-policy:ssl_optional	Set this as an LDAP data source property by using the following command: `$ dpconf set-ldap-data-source-prop ds1 ssl-policy:client`
ids-proxy-con-ssl-policy:ssl_ unavailable	Set this as a connection handler property by using the following command: `$ dpconf set-connection-handler-prop CONNECTION-HANDLER-NAME is-ssl-mandatory:false`

Table 10–4 (Cont.) Mapping of Network Group Attributes

Directory Proxy Server 5.2 Network Group Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0)
ids-proxy-con-tcp-no-delay	Set this as a property for a specific listener port by using the following command: `$ dpconf set-ldap-listener-prop use-tcp-no-delay:true`
ids-proxy-con-allow-multi-ldapv2-bind	No equivalent
ids-proxy-con-reverse-dns-lookup	No equivalent
ids-proxy-con-timeout	This functionality exists but with less granularity than in Directory Proxy Server 5. Set this limit as a property for a specific listener port by using the following command: `$ dpconf set-ldap-listener-prop connection-idle-timeout:`*value*

10.3.3 Mapping Bind Forwarding

Directory Proxy Server 5.2 bind forwarding is used to determine whether to pass a bind request on to an LDAP server or to reject the bind request and close the client's connection. Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) forwards either all bind requests or no bind requests. However, by setting the `allowed-auth-methods` connection handler property, successful binds can be classified into connection handlers, according to the authentication criteria. Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) can be configured to reject all requests from a specific connection handler, providing the same functionality as Directory Proxy Server 5.2 bind forwarding.

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*user-defined-name*`,ou=dar-config,o=NetscapeRoot`

The following table maps the Directory Proxy Server 5.2 bind forwarding attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) connection handler property settings.

Table 10–5 Mapping of Bind Forwarding Attributes to Connection Handler Property Settings

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-bind-name	No equivalent
ids-proxy-con-permit-auth-none	allowed-auth-methods:anonymous
ids-proxy-con-permit-auth-simple	allowed-auth-methods:simple
ids-proxy-con-permit-auth-sasl	allowed-auth-methods:sasl

10.3.4 Mapping Operation Forwarding

Operation forwarding determines how Directory Proxy Server 5.2 handles requests after a successful bind. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is provided by setting the properties of a request filtering policy. For information on configuring a request filtering policy, see *Creating and Configuring Request Filtering Policies and Search Data Hiding Rules* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. For a list of all the properties of a request filtering policy, run the following command:

```
$ dpconf help-properties | grep request-filtering-policy
```

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

The following table maps the Directory Proxy Server 5.2 operation forwarding attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) request filtering properties.

Table 10–6 Mapping of Operation Forwarding Attributes to Request Filtering Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
`ids-proxy-con-permit-op-search`	`allow-search-operations`
`ids-proxy-con-permit-op-compare`	`allow-compare-operations`
`ids-proxy-con-permit-op-add`	`allow-add-operations`
`ids-proxy-con-permit-op-delete`	`allow-delete-operations`
`ids-proxy-con-permit-op-modify`	`allow-modify-operations`
`ids-proxy-con-permit-op-modrdn`	`allow-rename-operations`
`ids-proxy-con-permit-op-extended`	`allow-extended-operations`

10.3.5 Mapping Subtree Hiding

Directory Proxy Server 5.2 uses the `ids-proxy-con-forbidden-subtree` attribute to specify a subtree of entries to be excluded in any client request. Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) provides this functionality with the `allowed-subtrees` and `prohibited-subtrees` properties of a request filtering policy. For information on hiding subtrees in this way, see *Creating and Configuring a Resource Limits Policy* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

If your subtrees are distributed across different backend servers, you can use the `excluded-subtrees` property of a data view to hide subtrees. For more information on hiding subtrees in this way, see *Excluding a Subtree From a Data View* in *Reference for Oracle Directory Server Enterprise Edition* and *To Configure Data Views With Hierarchy and a Distribution Algorithm* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.3.6 Mapping Search Request Controls

In Directory Proxy Server 5.2, search request controls are used to prevent certain kinds of requests from reaching the LDAP server. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is provided by setting properties of a request filtering policy and a resource limits policy.

For information on configuring a request filtering policy, see *Creating and Configuring Request Filtering Policies and Search Data Hiding Rules* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. For information on configuring a resource limits policy, see *Creating and Configuring a Resource Limits Policy* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. For a list of all the properties associated with a request filtering policy, or a resource limits policy, run the `dpadm help-properties` command and search for the object. For example, to locate all properties associated with a resource limits policy, run the following command:

```
$ dpconf help-properties | grep resource-limits-policy
```

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

The following table maps the Directory Proxy Server 5.2 search request control attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0)) properties.

Table 10–7 Mapping of Search Request Control Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
`ids-proxy-con-filter-inequality`	`allow-inequality-search-operations` property of the request filtering policy
`ids-proxy-con-min-substring-size`	`minimum-search-filter-substring-length` property of the resource limits policy

10.3.7 Mapping Compare Request Controls

In Directory Proxy Server 5.2, compare request controls are used to prevent certain kinds of search and compare operations from reaching the LDAP server. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is provided by setting properties of a request filtering policy.

For information on configuring a request filtering policy, see *Creating and Configuring Request Filtering Policies and Search Data Hiding Rules* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

The following table maps the Directory Proxy Server 5.2 compare request control attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) properties.

Table 10–8 Mapping of Compare Request Control Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
`ids-proxy-con-forbidden-compare`	`prohibited-comparable-attrs`
`ids-proxy-con-permitted-compare`	`allowed-comparable-attrs`

10.3.8 Mapping Attributes Modifying Search Requests

In Directory Proxy Server 5.2, these attributes are used to modify the search request before it is forwarded to the server. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is provided by setting properties of a request filtering policy and a resource limits policy.

For information on configuring a request filtering policy, see *Creating and Configuring Request Filtering Policies and Search Data Hiding Rules* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. For information on configuring a resource limits policy, see *Creating and Configuring a Resource Limits Policy* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

The following table maps the Directory Proxy Server 5.2 search request modifying attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) properties.

Table 10–9 Mapping of Search Request Modifying Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server11*g* Release 1 (11.1.1.7.0) Property
`ids-proxy-con-minimum-base`	`allowed-subtrees` property of the request filtering policy
`ids-proxy-con-max-scope`	`allowed-search-scopes` property of the request filtering policy
`ids-proxy-con-max-timelimit`	`search-time-limit` property of the resource limits policy

10.3.9 Mapping Attributes Restricting Search Responses

In Directory Proxy Server 5.2, these attributes describe restrictions that are applied to search results being returned by the server, before they are forwarded to the client. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is provided by setting the properties of a resource limits policy and by configuring search data hiding rules.

For information about configuring a resource limits policy, see *Creating and Configuring a Resource Limits Policy* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. For information about creating search data hiding rules, see *To Create Search Data Hiding Rules* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. For a list of properties associated with a search data hiding rule, run the following command:

```
$ dpconf help-properties | grep search-data-hiding-rule
```

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

The following table maps the Directory Proxy Server 5.2 search response restriction attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) properties.

Table 10–10 Mapping of Search Response Restriction Attributes

Directory Proxy Server 5.2 Attributes	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Properties
`ids-proxy-con-max-result-size`	`search-size-limit` property of the resource limits policy

`ids-proxy-con-forbidden-return`	To hide a subset of attributes:
	`rule-action:hide-attributes`
	`attributes:`*`attribute-name`*
	To hide an entire entry:
	`rule-action:hide-entry`

`ids-proxy-con-permitted-return`	`rule-action:show-attributes` `attributes:`*`attribute-name`*

Table 10–10 (Cont.) Mapping of Search Response Restriction Attributes

Directory Proxy Server 5.2 Attributes	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Properties
ids-proxy-con-search-reference	No direct equivalent. Search continuation references are governed by the referral-policy property of the resource limits policy

10.3.10 Mapping the Referral Configuration Attributes

In Directory Proxy Server 5.2, these attributes determine what Directory Proxy Server should do with referrals. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is provided by setting properties of a resource limits policy.

For information on configuring a resource limits policy, see *Creating and Configuring a Resource Limits Policy* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

In Directory Proxy Server 5.2, these configuration attributes are stored under ou=groups,cn=*user-defined-name*,ou=dar-config,o=NetscapeRoot.

The following table maps the Directory Proxy Server 5.2 referral configuration attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) resource limits properties.

Table 10–11 Mapping of Referral Configuration Attributes to Resource Limits Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-reference	referral-policy
ids-proxy-con-referral-ssl-policy	referral-policy
ids-proxy-con-referral-bind-policy	referral-bind-policy
ids-proxy-con-max-refcount	referral-hop-limit

10.3.11 Mapping the Server Load Configuration

In Directory Proxy Server 5.2, these attributes are used to control the number of simultaneous operations and total number of operations a client can request on one connection. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is provided by setting properties of a resource limits policy.

For information on configuring a resource limits policy, see *Creating and Configuring a Resource Limits Policy* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

In Directory Proxy Server 5.2, these configuration attributes are stored under ou=groups,cn=*user-defined-name*,ou=dar-config,o=NetscapeRoot.

The following table maps the Directory Proxy Server 5.2 server load configuration attributes to the corresponding Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) resource limits properties.

Table 10–12 Mapping of Server Load Configuration Attributes to Resource Limits Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-max-simultaneous-operations-per-connection	max-simultaneous-operations-per-connection
ids-proxy-con-operations-per-connection	max-total-operations-per-connection
ids-proxy-con-max-conns	max-connections
ids-proxy-con-max-simultaneous-conns-from-ip	max-client-connections

10.4 Mapping the Properties Configuration

The Directory Proxy Server 5.2 property objects enable you to specify specialized restrictions that LDAP clients must follow. Most of the functionality of property objects is available in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), although it is supplied by various elements of the new architecture. The following sections describe how to map the Directory Proxy Server 5.2 property objects to the corresponding 11*g* Release 1 (11.1.1.7.0) functionality.

10.4.1 Attribute Renaming Property

In Directory Proxy Server 5.2, attribute renaming is defined by the `ids-proxy-sch-RenameAttribute` object class. This object uses the `ids-proxy-con-server-attr-name` and `ids-proxy-con-client-attr-name` attributes to specify which attributes must be renamed by Directory Proxy Server.

This attribute renaming functionality is replaced by the `attr-name-mappings` property of an LDAP data source. This property is multi-valued, and takes values of the form *`client-attribute-name`*`#`*`server-attribute-name`*. In a client request, Directory Proxy Server renames the `client-attribute-name` to the `server-attribute-name`. In a response, Directory Proxy Server renames the `server-attribute-name` to the `client-attribute-name`.

To configure this property, use the following command:

```
$ dpconf set-ldap-data-source-prop data-source-name \
 attr-name-mappings:client-attribute-name#server-attribute-name
```

10.4.2 Forbidden Entry Property

In Directory Proxy Server 5.2, the `ids-proxy-sch-ForbiddenEntryProperty` object is used to specify a list of entries or attributes that are hidden from client applications. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) this functionality is achieved by creating a `search-data-hiding-rule` for a request filtering policy.

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

The following table maps the attributes of the `ids-proxy-sch-ForbiddenEntryProperty` object to the corresponding properties of a search data hiding rule in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0). For information about creating search data hiding rules, see *To Create Search Data Hiding Rules* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

Table 10–13 Mapping of Server Load Configuration Attributes to Resource Limits Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-dn-exact	target-dns
ids-proxy-con-dn-regexp	target-dn-regular-expressions
ids-proxy-con-ava	target-attr-value-assertions
ids-proxy-con-forbidden-return	To hide a subset of attributes: rule-action:hide-attributes attrs:*attribute-name* To hide an entire entry: rule-action:hide-entry
ids-proxy-con-permitted-return	rule-action:show-attributes attrs:*attribute-name*

10.4.3 LDAP Server Property

In Directory Proxy Server 5.2, the ids-proxy-sch-LDAPServer property is used to define the backend LDAP servers to which Directory Proxy Server sends requests. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), this functionality is achieved by using LDAP data sources. You can set properties for LDAP data sources by using the Directory Service Control Center or by using the command line. For more information, see *Creating and Configuring LDAP Data Sources* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

In Directory Proxy Server 5.2, these configuration attributes are stored under ou=groups,cn=*user-defined-name*,ou=dar-config,o=NetscapeRoot.

The following table maps the attributes of the ids-proxy-sch-LDAPServer object class to the corresponding data source properties in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0). Data sources provide additional functionality that was not provided in Directory Proxy Server 5.2. Not all data source properties are listed here. For a list of all the properties that can be configured for a data source, run the following command:

```
$ dpconf help-properties | grep ldap-data-source
```

Table 10–14 Mapping of ids-proxy-sch-LDAPServer Attributes to Data Source Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-host	ldap-address
ids-proxy-con-port	ldap-port
ids-proxy-con-sport	ldaps-port
ids-proxy-con-supported-version	No equivalent Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) supports LDAP v3 back ends for both version 2 and version 3 clients. Directory Proxy Server 11*g* 11*g* Release 1 (11.1.1.7.0) supports the proxy authorization control version 1 and version 2.

Table 10–14 (Cont.) Mapping of `ids-proxy-sch-LDAPServer` Attributes to Data Source

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
`ids-proxy-con-use-version`	No equivalent Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) supports LDAP v3 back ends for both v2 and v3 clients. Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) supports the proxy authorization control version 1 and version 2.
`ids-proxy-con-tcp-no-delay`	`use-tcp-no-delay`
`ids-proxy-con-link-security-policy`	`ssl-policy`
`ids-proxy-con-x509cert-subject`	No equivalent. Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) does not check the subject of the certificate provided by the backend server.

`ids-proxy-con-keepalive-interval`	This functionality is achieved by setting the following properties of the LDAP data source:
	`monitoring-bind-timeout`
	`monitoring-entry-timeout`
	`monitoring-inactivity-timeout`
	`monitoring-interval`
	For information about setting LDAP data source properties, see *To Configure an LDAP Data Source* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.4.4 Load Balancing Property

In Directory Proxy Server 5.2, the `ids-proxy-sch-LoadBalanceProperty` is used to configure load balancing across multiple LDAP servers. Directory Proxy Server 5.2 supports proportional load balancing only, that is, each LDAP server is allotted a certain percentage of the total load. The `ids-proxy-sch-LoadBalanceProperty` object class has one attribute, `ids-proxy-con-Server`, whose value has the following syntax:

`server-name``[#`*`percentage`*`]`

In Directory Proxy Server 5.2, these configuration attributes are stored under `ids-proxy-con-name=load-balancing-1,ou=properties,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

In Directory Proxy Server 11*g* 11*g* Release 1 (11.1.1.7.0), load balancing is configured as a property of a data source pool. A data source pool is essentially a collection of LDAP servers to which Directory Proxy Server can route requests. For information about setting up a data source pool, see *Creating and Configuring LDAP Data Source Pools* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*. For a list of properties associated with a data source pool, run the following command:

```
$ dpconf help-properties | grep ldap-data-source-pool
```

Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) supports proportional load balancing but also supports additional load balancing algorithms. To configure proportional load balancing, set the property of the data source pool as follows:

```
$ dpconf set-ldap-data-source-pool-prop data-source-pool-name \
  load-balancing-algorithm:proportional
```

The percentage of load allotted to each server is configured by setting various properties of an attached data source. An attached data source is a data source that has been attached to a specific data source pool. To configure proportional load, set the weight properties of the attached data source for each operation type as follows:

```
$ dpconf set-attached-ldap-data-source-prop data-source-pool-name
attached-data-source-name
 add-weight:value
 bind-weight:value
 compare-weight:value
 delete-weight:value
 modify-dn-weight:value
 modify-weight:value
 search-weight:value
```

For more information, see *Configuring Load Balancing* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.4.4.1 Monitoring Backend Servers

To monitor the state of its backend LDAP servers, Directory Proxy Server 5.2 performs an anonymous search operation on the Root DSE of each server every ten seconds. Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) has a number of properties that can be configured to monitor its backend servers. For more information, see *Retrieving Monitored Data About Data Sources* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.4.5 Search Size Limit Property

Directory Proxy Server 5.2 uses the `ids-proxy-sch-SizeLimitProperty` to apply size limits based on the base and scope of search operations. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), the search size limit can be configured by setting a property of the resource limits policy. A resource limits policy defines the maximum resource that Directory Proxy Server can process for a given connection handler. Use the `dpconf`command to set the search size limit for a resource policy, as follows:

```
$ dpconf set-resource-limits-policy-prop policy-name
search-size-limit:number-of-entries
```

Resource limits policies control much more than just search size limit. For information on configuring resource limits policies, see *Creating and Configuring a Resource Limits Policy* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

In Directory Proxy Server 5.2, these configuration attributes are stored under `ou=groups,cn=`*`user-defined-name`*`,ou=dar-config,o=NetscapeRoot`.

The following table maps the attributes of a version 5.2 size limit property to the corresponding properties in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0).

Table 10–15 Mapping of Search Size Limit Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
`ids-proxy-con-Size-Limit`	`search-size-limit`
`ids-proxy-con-Dn-One`	`one-level-search-base-dn`

Table 10–15 (Cont.) Mapping of Search Size Limit Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-Dn-Sub	No equivalent

10.4.6 Log Property

The logging functionality available in Directory Proxy Server 5.2 differs substantially from the functionality available in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0).

In Directory Proxy Server 5.2, the following logs were maintained:

- **System log.** Includes log records of system events and errors.
- **Audit log.** Includes audit trails for all events and errors.

Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) maintains an errors log file, an access log file, and administrative alerts.

The errors log and administrative alerts are equivalent to the version 5.2 system log. Administrative alerts are events raised by Directory Proxy Server. These events can be sent to the `syslog` daemon or to an administrator through email.

The Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) access log is equivalent to the version 5.2 audit log.

Logs in version 5.2 were configured by using the `ids-proxy-sch-LogProperty` object class. Logs in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) are configured by setting properties for the access and error log, using the `dpconf` command. For example, to set properties for the access log, use the following command:

```
$ dpconf set-access-log-prop PROPERTY:VALUE
```

Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) provides new log features, such as log file rotation, and enables log configuration to be fine tuned. For example, one log level can be set per message category.

In Directory Proxy Server 5.2, log configuration attributes are stored under `ids-proxy-con-Config-Name=`*`user-defined-name`*`,ou=system,ou=dar-config,o=netscaperoot`.

It is not really possible to map the log configuration between Directory Proxy Server 5.2 and Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) because the logging models between these two versions are very different. The Directory Proxy Server 5.2 log model combines what is logged with where it is logged. In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), the model is cleaner. One set of properties describes what is logged, and a separate set of properties describes where log messages are sent.

The following table lists the attributes of the `ids-proxy-sch-LogProperty` object class and describes at a high level how the corresponding functionality is achieved in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0).

Table 10–16 Version 5.2 and Version 11g Release 1 (11.1.1.7.0) Log Functionality

Directory Proxy Server 5.2 Attribute	Purpose	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Equivalent
ids-proxy-con-log-level	Level of logging	Global log level
ids-proxy-con-stat-level	Kinds of statistics logged	Monitoring data

Table 10–16 (Cont.) Version 5.2 and Version 11g Release 1 (11.1.1.7.0) Log Functionality

Directory Proxy Server 5.2 Attribute	Purpose	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Equivalent
ids-proxy-con-log-syslog	Syslog facility code	syslog output for administrative alerts No equivalent for error messages
ids-proxy-con-log-file	Path to log file	log-file-name of the error-log object
ids-proxy-con-audit-syslog	Syslog facility code for audit log	No equivalent
ids-proxy-con-audit-file	Path to audit log file	log-file-name of the access-log object

Because a one to one mapping of log configuration is not possible between the two versions, you need to understand the new logging model and then configure your new logs accordingly, rather than migrating your old log configuration. For more information, see Chapter 27, *Directory Proxy Server Logging,* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.5 Mapping the Events Configuration

Directory Proxy Server 5.2 event objects are used to specify conditions that Directory Proxy Server should evaluate at predetermined states.

Two types of event objects are supported:

- **OnBindSuccess.** Evaluated when a client successfully completes a bind operation.
- **OnSSLEstablished.** Evaluated when a client successfully established an SSL session.

In Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), events are implemented as properties of a connection handler. Use the dpconf command to set these properties. For example, run the following command to set the authentication methods for the connection handler:

```
$ dpconf set-connection-handler-prop connection-handler-name \
 allowed-auth-methods:anonymous allowed-auth-methods:sasl
allowed-auth-methods:simple
```

In Directory Proxy Server 5.2, these configuration attributes are stored under ids-proxy-con-Config-Name=*user-defined-name*,ou=system,ou=dar-config,o=netscaperoot.

The following table maps the version 5.2 event configuration attributes to the corresponding properties in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0).

Table 10–17 Mapping Between Event Attributes and Connection Handler Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-sch-OnBindSuccessRule	bind-dn-filters
ids-proxy-con-ssl-required	is-ssl-mandatory
ids-proxy-con-bind-anonymous	allowed-auth-methods:anonymous
ids-proxy-con-bind-simple	allowed-auth-methods:simple

Table 10–17 (Cont.) Mapping Between Event Attributes and Connection Handler

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) Property
ids-proxy-con-bind-sasl	allowed-auth-methods:sasl

10.6 Mapping the Actions Configuration

Directory Proxy Server 5.2 supports only one action, specified by the `ids-proxy-sch-ChangeGroupAction` object class. This action enables you to configure Directory Proxy Server to change a client from one access group to another based on the evaluation of a rule. The action uses the multi-valued `ids-proxy-con-to-group` attribute to specify the groups to which the client can change.

Directory Proxy Server11*g* Release 1 (11.1.1.7.0) connection handlers provide this functionality. After being classified into a connection handler, a connection can be automatically reclassified into another connection handler. For example, if a client connects anonymously, the connection is allocated to the connection handler configured for anonymous connections. If the client later provides a bind DN on the same connection, the connection can be reallocated to another connection handler.

For information on how to configure this functionality in Directory Proxy Server 11*g* Release 1 (11.1.1.7.0), see *Creating, Configuring, and Deleting Connection Handlers* in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

10.7 Configuring Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) as a Simple Connection-Based Router

It is possible to configure an instance of Directory Proxy Server 11*g* Release 1 (11.1.1.7.0) to behave as a simple connection-based router, with the same functionality as Directory Proxy Server 5.2. To do this, map the configuration attributes described previously and follow the procedure describe in "Configuring Directory Proxy Server as a Connection Based" Router in *Administrator's Guide for Oracle Directory Server Enterprise Edition*.

11

Migrating Identity Synchronization for Windows

This chapter explains how to migrate your system from Identity Synchronization for Windows version 1.1, and 1.1 SP1, to version 6.0 SP1.

In the remainder of this chapter, version 1.1 includes version 1.1 SP1.

> **Note:** When you install Identity Synchronization for Windows version 1.1, Message Queue is also installed on your system. Identity Synchronization for Windows 6.0 SP1 does *not* install Message Queue.
>
> For installation and upgrade information about Message Queue, read the installation instructions for Java Enterprise System software at http://docs.sun.com/coll/1286.2 (`http://docs.sun.com/coll/1286.2`).

This chapter includes the following sections:

11.1 Migration Overview

Migration from Identity Synchronization for Windows version 1.1 to version 6.0 SP1 is accomplished in the following major phases:

1. Preparing your Identity Synchronization for Windows 1.1 installation for migration.
2. Uninstalling Identity Synchronization for Windows 1.1.
3. Installing or upgrading dependent products.
4. Installing Identity Synchronization for Windows 6.0 SP1 by using the configuration and connector states you backed up.

Note: Install Identity Synchronization for Windows 6.0 SP1 on the same platform and architecture where you installed Identity Synchronization for Windows 1.1.

11.2 Before You Migrate Identity Synchronization for Windows

Complete the following tasks before you migrate:

- Familiarize yourself with the new features and functionality provided in Identity Synchronization for Windows 6.0 SP1.
- Read Chapter 1, *Understanding the Product*, in *Installation Guide for Identity Synchronization for Windows 6* for installation and configuration information that you can use to plan your migration process.
- Document your version 1.1 deployment and configuration. Be sure to note any customizations that you have made to the configuration.
- Schedule migration. Because the migration process requires at least four hours, you might want to schedule migration after normal business hours.

If the input password or attribute changes while you are migrating the system, Identity Synchronization for Windows processes these changes as follows:

- **For Active Directory.** Any password changes made on Active Directory during the migration process will be synchronized on demand by the Directory Server Plug-in after the migration process.
- **For Directory Server.** Any password changes made on Directory Server during the migration process will not be synchronized. However, you can identify affected users in the Identity Synchronization for Windows 6.0 SP1 logs after completing the migration process. For more information, see Checking the Logs.
- **For Windows NT.** Any password changes made on NT during the migration process will not be synchronized.

  However, if you use the `forcepwchg` utility, you can identify affected users and force them to change passwords again. For more information, see Forcing Password Changes on Windows NT.
- All other attribute changes made during the migration process (at any directory source) will be synchronized after the migration process.

11.3 Preparing for Identity Synchronization for Windows Migration

Use one or more of the following utilities to migrate from Identity Synchronization for Windows 1.1 to Identity Synchronization for Windows 6.0 SP1:

- **export11cnf.** A stand-alone utility that enables you to create an export configuration file from your Identity Synchronization for Windows 1.1 configuration. For more information , see Exporting Version 1.1 Configuration.

  The exported XML document contains the directory deployment topology and enough information to configure the Identity Synchronization for Windows 6.0 SP1 installation.
- **checktopics.** A utility that checks Message Queue synchronization topics in a 1.1 installation and determines if any undelivered messages remain in the queue.

Updates can remain in Message Queue after you stop 1.1 synchronization. You must verify that no updates exist in the Message Queue before you proceed with the migration. For more information, see Checking for Undelivered Messages.

- **forcepwchg.** A Windows NT tool that enables you to identify users who changed passwords during the migration process and forces them to change passwords again when the version 6.0 SP1 system is ready. Password changes made on Windows NT are not captured during the migration process. For more information, see Forcing Password Changes on Windows NT for detailed information.

Note: These utilities facilitate the migration of Identity Synchronization for Windows version 1.1 to version 6.0 SP1. The migration is performed in the same environment where Identity Synchronization for Windows 1.1 is deployed. Consequently, these utilities are available in the Solaris/SPARC and Windows packages only.

You can find the migration utilities in the installation `migration` directory. No additional installation steps are required.

11.3.1 Exporting Version 1.1 Configuration

You can use the `export11cnf` utility to export an existing version 1.1 configuration file to an XML file and then use the `idsync importcnf` command to import the file into the Identity Synchronization for Windows 6.0 SP1 system before installing the connectors.

> **Tip:** While you can update the 1.1 system configuration manually by using the Identity Synchronization for Windows console, we recommend that you use the `export11cnf` utility. If you do not use `export11cnf`, the state of the connectors is not preserved.

Exporting the version 1.1 configuration enables you to:

- Eliminate most of the initial configuration process to be performed from the management Console.
- Guarantee that the connector IDs assigned in version 6.0 SP1 match the connector IDs used in version 1.1. This simplifies the task of preserving the existing connector states that can be used directly in the version 6.0 SP1 deployment.

  Back up the `persist` and `etc` directories, and then restore them later to avoid confusion about the underlying directory structure.

  You can find the `export11cnf` utility in the installation `migration` directory. No additional installation steps are necessary.

11.3.1.1 Using the export11cnf Utility

To export an Identity Synchronization for Windows configuration to an XML file, execute `export11cnf` from the `migration` directory as follows:

In a terminal window, type the following:

```
java -jar export11cnf.jar -h hostname \
-p port -D bind DN \
-w bind password -s rootsuffix \
-q configuration password -Z -P cert-db-path \
-m secmod-db-path -f filename
```

For example,

```
java -jar export11cnf.jar -D "cn=dirmanager" -w - -q - -s
"dc=example,dc=com" -f exported-configuration
```

The `export11cnf` utility shares the same common arguments as the Identity Synchronization for Windows command-line utilities. For more information, see *Common Arguments to the Idsync Subcommands* in *Installation Guide for Identity Synchronization for Windows 6* . The `export11cnf` utility exports the current configuration into the file specified in the argument of the `-f` option.

11.3.1.2 Inserting Clear-Text Passwords

For security reasons, the `export11cnf` utility does not export clear-text passwords from version 1.1. Instead, the utility inserts empty strings in `cleartextPassword` fields wherever applicable. For example,

```
<Credentials
        userName="cn=iswservice,cn=users,dc=example,dc=com"
        cleartextPassword=""/>
        <!-- INSERT PASSWORD BETWEEN THE DOUBLE QUOTES IN THE ABOVE FIELD ->
```

You must enter a password manually, between double quotes, for every `cleartextPassword` field in the exported configuration file, before you can import the file into Identity Synchronization for Windows. `importcnf` validation prevents you from importing a configuration file with empty password values.

For example,

```
<Credentials
        userName="cn=iswservice,cn=users,dc=example,dc=com"
        cleartextPassword="mySecretPassword"/>
        <!-- INSERT PASSWORD BETWEEN THE DOUBLE QUOTES IN THE ABOVE FIELD ->
```

11.3.1.3 Sample Export Configuration File

In the following sample exported configuration file,

- `ad-host.example.com` refers to the Active Directory domain controller.
- `ds-host.example.com` refers to the host running Directory Server.

Example 11–1 Sample Export Configuration File

```
<?xml version="1.0" encoding="UTF-8"?>

<ActiveConfiguration>
    <SunDirectorySource
           parent.attr="DirectorySource"
           onDemandSSLOption="true"
           maxConnections="5"
           displayName="dc=example,dc=com"
           resyncInterval="1000">

            <SynchronizationHost
           hostOrderOfSignificance="1"
           hostname="ds-host.example.com"
           port="389"
           portSSLOption="true"
           securePort="636"/>
```

```
                    <Credentials
                          userName="uid=PSWConnector,
                          dc=example,
                          dc=com"
                   </SynchronizationHost>
                  <SyncScopeDefinitionSet
                          index="0"
                          location="ou=people,dc=example,dc=com"
                          filter=""

creationExpression="uid=%uid%,ou=people,dc=example,dc=com"
                            sulid="SUL1"/>
              </SunDirectorySource>


              <ActiveDirectorySource
                    parent.attr="DirectorySource"
                    displayName="example.com"
                    resyncInterval="1000">
                <SynchronizationHost
                        hostOrderOfSignificance="1"
                        hostname="ad-host.example.com"
                        port="389"
                        portSSLOption="true"
                        securePort="636">
                   <Credentials
                      userName="cn=Administrator,cn=Users,dc=metaqa,dc=com"
                      cleartextPassword=""/>
                      <!-- INSERT PASSWORD BETWEEN THE DOUBLE QUOTES IN THE ABOVE
FIELD ->
                </SynchronizationHost>
                <SyncScopeDefinitionSet
                       index="0"
                       location="cn=users,dc=example,dc=com"
                       filter=""
                       creationExpression="cn=%cn%,cn=users,dc=example,dc=com"
                       sulid="SUL1"/>
              </ActiveDirectorySource>


              <ActiveDirectoryGlobals
                   flowInboundCreates="true"
                   flowInboundModifies="true"
                   flowOutboundCreates="true"
                   flowOutboundModifies="true">
                <TopologyHost
                       parent.attr="SchemaLocation"
                       hostname="ad-host.example.com"
                       port="3268"
                       portSSLOption="true"
                       securePort="3269">
                  <Credentials
                   parent.attr="Credentials"
                   userName="cn=Administrator,cn=Users,dc=example,dc=com"
                   cleartextPassword=""/>
                    <!-- INSERT PASSWORD BETWEEN THE DOUBLE QUOTES IN THE ABOVE
FIELD ->
                </TopologyHost>

                <TopologyHost
```

```
                        parent.attr="HostsTopologyConfiguration"
                        hostname="ad-host.example.com"
                        port="3268"
                        portSSLOption="true"
                        securePort="3269">
                      <Credentials
                        parent.attr="Credentials"
                        userName="cn=Administrator,cn=Users,dc=example,dc=com"
                        cleartextPassword=""/>
                        <!-- INSERT PASSWORD BETWEEN THE DOUBLE QUOTES IN THE ABOVE
FIELD ->
                    </TopologyHost>

                    <AttributeMap>
                      <AttributeDescription
                              parent.attr="WindowsAttribute"
                            name="lockouttime"
                            syntax="1.2.840.113556.1.4.906"/>
                      <AttributeDescription
                            parent.attr="SunAttribute"
                            name="pwdaccountlockedtime"
                            syntax="1.3.6.1.4.1.1466.115.121.1.24"/>
                    </AttributeMap>

                    <AttributeDescription
                              parent.attr="SignificantAttribute"
                            name="lockouttime"
                            syntax="1.2.840.113556.1.4.906"/>
                    <AttributeDescription
                          parent.attr="SignificantAttribute"
                          name="samaccountname"
                               syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
                    <AttributeDescription
                               parent.attr="CreationAttribute"
                               name="samaccountname"
                               syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
                    <AttributeMap>
                      <AttributeDescription
                             parent.attr="WindowsAttribute"
                             name="samaccountname"
                             syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
                      <AttributeDescription
                            parent.attr="SunAttribute"
                             name="uid"
                             syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
                    </AttributeMap>

                    <AttributeMap>
                      <AttributeDescription
                           parent.attr="SunAttribute"
                             name="sn"
                             syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
                      <AttributeDescription
                             parent.attr="WindowsAttribute"
                             name="sn"
                             syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
                    </AttributeMap>

                    <AttributeDescription
                               parent.attr="SignificantAttribute"
```

```
            name="sn"
            syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
  <AttributeDescription
            parent.attr="SignificantAttribute"
          name="cn"
           syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
  <AttributeDescription
            parent.attr="CreationAttribute"
            name="cn"
          syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
  <AttributeMap>
            <AttributeDescription
          parent.attr="SunAttribute"
          name="cn"
          syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
    <AttributeDescription
                parent.attr="WindowsAttribute"
                  name="cn"
                  syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
  </AttributeMap>

  <AttributeMap>
       <AttributeDescription
              parent.attr="SunAttribute"
              name="uniquemember"
              syntax="1.3.6.1.4.1.1466.115.121.1.25"/>
        <AttributeDescription
                  parent.attr="WindowsAttribute"
                name="member"
                syntax="1.2.840.113556.1.4.910"/>
  </AttributeMap>

  <AttributeDescription
                parent.attr="SignificantAttribute"
              name="member"
            syntax="1.2.840.113556.1.4.910"/>
</ActiveDirectoryGlobals>

<SunDirectoryGlobals
          userObjectClass="inetOrgPerson"
          flowInboundCreates="true"
          flowInboundModifies="true"
          flowOutboundCreates="true"
          flowOutboundModifies="true">
  <AttributeDescription
              parent.attr="SignificantAttribute"
                name="uniquemember"
                syntax="1.3.6.1.4.1.1466.115.121.1.25"/>
  <AttributeDescription
                parent.attr="CreationAttribute"
                name="cn"
                syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
  <AttributeDescription
                parent.attr="SignificantAttribute"
                name="cn"
                syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
  <AttributeDescription
                parent.attr="SignificantAttribute"
                name="pwdaccountlockedtime"
                syntax="1.3.6.1.4.1.1466.115.121.1.24"/>
```

```
                <TopologyHost
                              parent.attr="SchemaLocation"
                              hostname="ds-host.example.com"
                              port="389"
                              portSSLOption="false"
                              securePort="636">
                     <Credentials
                       parent.attr="Credentials"
                      userName="cn=directory manager"
                      cleartextPassword=""/>
                    <!-- INSERT PASSWORD BETWEEN THE DOUBLE QUOTES IN THE ABOVE
FIELD ->
                </TopologyHost>
                <AttributeDescription
                               parent.attr="SignificantAttribute"
                              name="uid"
                              syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
                <AttributeDescription
                              parent.attr="CreationAttribute"
                              name="sn"
                              syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
                <AttributeDescription
                              parent.attr="SignificantAttribute"
                              name="sn"
                              syntax="1.3.6.1.4.1.1466.115.121.1.15"/>
              </SunDirectoryGlobals>
            </ActiveConfiguration>
```

After the completion of configuration export, `export11cnf` reports the result of the operation. If the operation fails, an appropriate error message is displayed with an error identifier.

11.3.2 Checking for Undelivered Messages

The migration process minimizes system downtime by preserving the connectors' states in the existing deployment. However, these states reflect only the last change received and acknowledged by the Message Queue. Therefore, you do not know whether the message was actually delivered and applied to the destination connector.

This behavior does not cause problems as long as the Message Queue remains the same. However, you will lose any messages on the Message Queue during the migration process when you install Message Queue 3.6.

You must verify that the synchronization topics on the existing Message Queue do not have any undelivered messages before you proceed with the migration. The Identity Synchronization for Windows `checktopics` utility enables you to verify that all the synchronization topics are empty and the system is not causing any problem.

11.3.2.1 Using the checktopics Utility

The `checktopics` utility is delivered in the `migration` directory of the Solaris/SPARC and the Windows Identity Synchronization for Windows 6.0 SP1 package.

Note: The prerequisite to run `checktopics` is a Java Virtual Machine.

When you run the `checktopics` utility, it connects to the configuration directory, which contains information about Synchronization User Lists (SULs) and current

synchronization topic names used in Message Queue. In addition, when you run `checktopics`, it queries Message Queue to check how many outstanding messages remain on each active synchronization topic and then displays this information for you.

To execute the `checktopics` command line utility:

1. Open a Terminal window and **`cd`** to the `migration` directory.
2. From a command prompt, type the subcommand as follows.

```
java -jar checktopics.jar -h hostname \
 -p port -D bind-DN \
 -w bind-password -s root-suffix \
 -q configuration-password -Z
```

For example,

```
java -jar checktopics.jar -D "cn=directory manager" -w - -s
"dc=example,dc=com" -q -Z
```

Note: For more information about the `checktopics` arguments, see *Common Arguments to the Idsync Subcommands* in *Installation Guide for Identity Synchronization for Windows 6* . For more information about using `checktopics`, see Checking for Undelivered Messages.

After running `checktopics`, check your terminal for the following messages:

- If the operation succeeds, the terminal window displays a message stating that there are no outstanding messages in the logs.
- If the operation fails, an appropriate error message is displayed with an error identifier.

11.3.2.2 To Clear Messages

If any of the active synchronization topics contain outstanding messages, use the following procedure to clear the messages.

1. Restart synchronization.
2. Wait until the messages are applied to the destination connector.
3. Stop synchronization.
4. Rerun `checktopics`.

11.3.3 Forcing Password Changes on Windows NT

On Windows NT, password changes are not monitored and new password values are not captured during the migration process. Consequently, you cannot determine new password values after the migration process.

Instead of requiring all users to change passwords when you finish migrating to 6.0 SP1, you can use the `forcepwchg` command-line utility to require a password change for all the users who changed passwords during the migration process.

Note: The `forcepwchg` utility is available only in the Windows packages.

You can find the `forcepwchg` utility in the Windows `migration` directory. Execute `forcepwchg` directly from that directory. No additional installation steps are necessary.

You must run `forcepwchg` on the Primary Domain Controller (PDC) host where the NT components (connector, Change Detector DLL, and Password Filter DLL) are installed. You cannot run `forcepwchg` remotely.

The `forcepwchg` utility also prints the account names (one name per line) that it is trying to migrate. If an error occurs during the migration process, look into the next entry to the last printed entry.

11.4 Migrating Your System

This section provides instructions for migrating a single-host deployment to version Identity Synchronization for Windows 6.0 SP1.

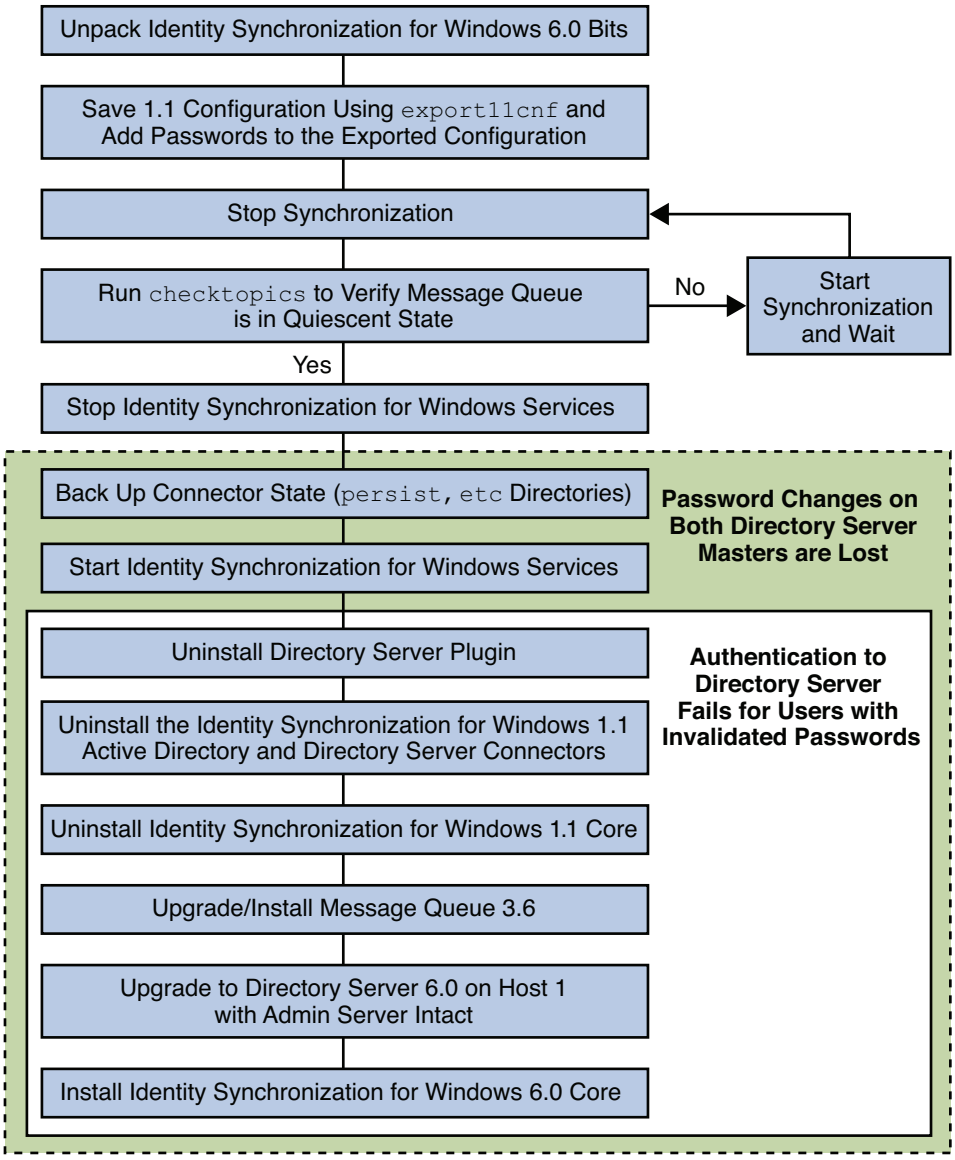
In a single-host deployment, all Identity Synchronization for Windows components are installed on a single host (Windows 2000 Server, Solaris version 8 or 9, or SPARC), as follows:

- Directory Server (one instance)
- Core (Message Queue, Central Logger, System Manager, and Console)
- Active Directory Connector
- Directory Server Connector
- Directory Server Plug-in

Note: If you are using Solaris as your installation host, then a Windows 2000 machine with Active Directory is required for synchronization purposes only. (No components would be installed on the Windows 2000 machine.)

The following figure illustrates the migration process and serves as a checklist to supplement the migration instructions that follow.

Figure 11–1 Migrating a Single-Host Deployment



11.4.1 Preparing for Migration

Use the following procedure to prepare for migration to version 6.0 SP1.

11.4.1.1 Preparing to migrate from version 1.1, and 1.1 SP1, to version 6.0 SP1

1. Open a terminal window or command prompt.

   - **On Solaris** type the following command.

     ```
     uncompress -c filename | tar xf -
     ```

   - **On Windows** type the following command or use any archive program for Windows, such as WinZip.

     ```
     %JAVA_HOME%\bin\jar -xf filename
     ```

   When the binaries are unpacked, the following subdirectories contain the required migration tools:

- installer/
- lib/
- migration/

Solaris	Windows
export11cnf.jar	export11cnf.jar
	forcepwchg.exe
checktopics.jar	checktopics.jar

2. Export your version 1.1 configuration settings to an XML file.

   From the migration directory, execute export11cnf as described in Using the export11cnf Utility.

   ```
   java -jar export11cnf.jar -D "cn=directory manager" -w - \
    -s "dc=example,dc=com" -q - -f export.cfg
   ```

3. Add passwords to the exported XML file.

   Enter a password between the double quotes for each cleartextPassword field in the exported configuration file. For more information, see Inserting Clear-Text Passwords.

4. Stop synchronization as described in *Starting and Stopping Synchronization* in *Installation Guide for Identity Synchronization for Windows 6* .

5. Verify that your system is in a stable state.

   From the migration directory, execute checktopics as described in Using the checktopics Utility. The following example shows the execution of the checktopics command.

   ```
   java -jar checktopics.jar -D "cn=directory manager" -w - \
    -s "dc=example,dc=com" -q -Z
   ```

6. Stop Identity Synchronization for Windows services (daemons) as described in *Starting and Stopping Services* in *Installation Guide for Identity Synchronization for Windows 6* .

   Note: Do not stop the Sun ONE Message Queue service.

7. *On Windows NT only*, perform the following steps.

   a. Stop the Sun One NT Change Detector Service by typing the following command.

      ```
      net stop "Sun One NT ChangeDetector Service"
      ```

   b. Save the NT Change Detector Service counters.

      a. Open the Registry Editor by executing regedt32.exe.

      b. Select the HKEY_LOCAL_MACHINE window.

      c. Navigate to the SOFTWARE\Sun Microsystems\PSW\1.1 node.

      d. Save the following registry values.

         HighestChangeNumber

```
LastProcessedSecLogRecordNumber

LastProcessedSecLogTimeStamp

QueueSize
```

8. Save the connector states by backing up the `persist` and `etc` directories from the existing 1.1 installation tree.

   - **On Solaris,** type the following command.

     ```
     cd serverRoot/isw-hostname
     tar cf /var/tmp/connector-state.tar persist etc
     ```

   - **On Windows,** type the following command.

     ```
     cd serverRoot\isw-hostname
     zip -r C:\WINNT\Temp\connector-state.zip persist etc
     %JAVA_HOME%\bin\jar -cfM %TEMP%\connector-state.jar persist etc
     ```

     Alternatively, use any archive program for Windows, such as WinZip.

9. Start the Identity Synchronization for Windows services. For more information, see *Starting and Stopping Services* in *Installation Guide for Identity Synchronization for Windows 6* .

11.4.2 Uninstalling Identity Synchronization for Windows

Note: The Identity Synchronization for Windows 1.1 uninstall program removes the `SUNWjss` package if it is not registered for use by another application. In particular, this situation may occur on a Solaris machine if you installed a zip version of Directory Server 5.2, where the uninstall program removes the `jss3.jar` file from `/usr/share/lib/mps/secv1`.

If you encounter this situation as you migrate to Identity Synchronization for Windows 6.0 SP1, the installer reports that a required file is missing, and logs the file name to the installation log. When this happens, you must reinstall the required patches and restart the installation process. For a list of required patches, see (see *Software Dependency Requirements* in *Release Notes for Oracle Directory Server Enterprise Edition*.

11.4.2.1 To Uninstall Identity Synchronization for Windows Version 1.1

1. Uninstall the Directory Server plug-in manually and restart each Directory Server where the plug-in was installed.

   Execute the following steps on each Directory Server where the plug-in was installed:

   a. Remove the following entries from the Directory Server:

      ```
      cn=config,cn=pswsync,cn=plugins,cn=configcn=pswsync,cn=plugins,cn=c
      onfig
      ```

      For example:

      ```
      ldapdelete -D "cn=directory manager" -w - -p <port> \
      -c cn=config,\
      cn=pswsync,cn=plugins,cn=configcn=pswsync,cn=plugins,cn=config
      ```

b. Restart the Directory Server.

On *Solaris*: Type **<** *serverRoot* **>/slapd-<***hostname* **>/restart-slapd**

On Windows: Type **<** *serverRoot***>\slapd-<** *hostname***>\restart-slapd.bat**

c. Remove the Plug-in binaries from the system.

On *Solaris*: Type **rm <** *serverRoot* **>/lib/psw-plugin.sorm <** *serverRoot* **>/lib/64/psw-plugin.so**

On Windows: Type **del <***serverRoot***>\lib\psw-plugin.dll**

2. Change directory (**cd**) to **<** *ServerRoot* **>\isw-<** *hostname***>** and then use the Identity Synchronization for Windows 1.1 (or 1.1 SP1) uninstallation program to uninstall the version 1.1, and 1.1 SP1, Connectors and Core components.

Note: You must uninstall Connectors before uninstalling Core components.

- **On** *Solaris or SPARC*: Type **./runUninstaller.sh**
- **On Windows**: Type **\runUninstaller.bat**

3. Back up the product registry file and remove Identity Synchronization for Windows related entries from the file.

   The location of the file is as follows:

   - **On Solaris**: `/var/sadm/install/productregistry`
   - **On Windows**: `C:\WINNT\System32\productregistry`

   To remove the Identity Synchronization for Windows related entries from the product registry file, follow the instructions provided in Manually Uninstalling 1.1 Core and Instances from Solaris.

4. *On Windows only.* After uninstalling Core, restart your machine.

Note: If the uninstall fails, you might have to manually uninstall the Identity Synchronization for Windows components. Instructions are provided in What to Do if the 1.1 Uninstallation Fails

---

5. *On Windows only.* Verify that Identity Synchronization for Windows is not running. If necessary, you can stop the service from the command line by typing the following command.

```
net stop "Sun ONE Identity Synchronization for Windows"
```

   If this service continues running after uninstallation, it causes a sharing violation that prevents you from deleting the instance directory.

6. Remove the Identity Synchronization for Windows instance directory (`isw-<` *hostname* `>`).

11.4.3 Installing or Upgrading the Dependent Products

Use the following steps to upgrade the Java Run Environment, install Message Queue, and upgrade Directory Server.

1. Upgrade the Java 2 Runtime Environment (or Java 2 SDK) on each host (except on Windows NT) where Identity Synchronization for Windows components are installed. The minimum required version is 1.5.0.

   - **Java 2 SDK**: http://java.sun.com/j2se/1.5.0/install.html (http://java.sun.com/j2se/1.4.2/install.html)
   - **Java 2 Runtime Environment**: http://java.sun.com/j2se/1.5.0/jre/install.html (http://java.sun.com/j2se/1.4.2/jre/install.html)

2. Install Message Queue 3.6 by using the instructions provided in *Sun Java System Message Queue 3.6 Installation Guide*.

3. Upgrade Directory Server to version 11*g* Release 1 (11.1.1.7.0). For more information, see Chapter 5, "Overview of the Migration Process for Directory Server".

   Note: To keep the Administration Server intact, use the `-N` option while migrating Directory Server (configuration and data) to version 11*g* Release 1 (11.1.1.7.0). For more information on migrating configuration data and user data, see Using `dsmig` to Migrate Configuration Data and Using `dsmig` to Migrate User Data respectively.

   The Directory Server upgrade preserves your current Directory Server configuration and database.

11.4.4 Installing Identity Synchronization for Windows 6.0 SP1

Use the following steps to install the Identity Synchronization for Windows 6.0 SP1 components.

11.4.4.1 To install the Identity Synchronization for Windows 6.0 SP1 components:

1. Install Identity Synchronization for Windows Core. For more information, see *Installing Core* in *Installation Guide for Identity Synchronization for Windows 6* .

2. Execute `idsync prepds` against Directory Server to update the schema.

   - **On Solaris** type the following commands.

     ```
     cd /opt/SUNWisw/bin
     idsync prepds arguments\
     ```

   - **On Windows** type the following commands.

     ```
     cd serverRoot\isw-hostname\bin
     idsync prepds arguments\
     ```

   For more information about `idsync prepds`, see Appendix A, *Using the Identity Synchronization for Windows Command Line Utilities*, in *Installation Guide for Identity Synchronization for Windows 6* .

3. Import your version 1.1, and 1.1 SP1, configuration XML file by typing the following command.

   ```
   idsync importcnf arguments\
   ```

   Note: If the program detects errors in your input configuration file, an error results. Identity Synchronization for Windows aborts the `importcnf` process and provides the necessary information to correct errors.

   For more information about using `idsync importcnf` , see *Using importcnf* in *Installation Guide for Identity Synchronization for Windows 6*

4. Install the Identity Synchronization for Windows 6.0 SP1 Connectors. For more information, see *Installing Connectors* in *Installation Guide for Identity Synchronization for Windows 6* .

5. If you did not select the Configure Identity Synchronization for Windows 6.0 SP1 Directory Server Plug-in option while installing Directory Server connector, configure it now. For more information, see Appendix A, *Using the Identity Synchronization for Windows Command Line Utilities,* in *Installation Guide for Identity Synchronization for Windows 6* .

6. Stop Identity Synchronization for Windows services (daemons) as described in "Starting and Stopping Services" in *Installation Guide for Identity Synchronization for Windows 6* .

7. *On Windows NT only*, complete the following steps.

   a. Stop the NT Change Detector service by typing the following command.

      ```
      net stop "Sun Java(TM) System NT Change Detector"
      ```

   b. Restore the NT Change Detector Service counters.

      a. Open the Registry Editor by executing `regedt32.exe`.

      b. Select the `HKEY_LOCAL_MACHINE` window.

      c. Navigate to the `SOFTWARE\Sun Microsystems\Sun Java(TM) System name="PN_IdSyncForWindows" content="Identity Synchronization for Windows"\1.1` node.

      d. Double-click on each of the following entries to restore their values (which you saved prior to uninstalling version 1.1).

         `HighestChangeNumber`

         `LastProcessedSecLogRecordNumber`

         `LastProcessedSecLogTimeStamp`

         `QueueSize`

   c. Start the NT Change Detector service by typing the following command.

      ```
      net start "Sun Java(TM) System NT Change Detector"
      ```

8. Remove the version 6.0 SP1 `persist` and `etc` directories (and all their contents) from the instance directory and restore the version 1.1, and 1.1 SP1, `persist` and `etc` directories you backed up in Preparing for Migration.

- **On Solaris,** type the following command.

  ```
  cd /var/opt/SUNWisw
  rm -rf etc persisttar xf /var/tmp/connector-state.tar
  ```

- **On Windows,** type the following command.

  ```
  cd serverRoot\isw-hostname
  rd /s etc persist%JAVA_HOME%\bin\jar -xf %TEMP%\ connector-state.jar
  ```

  Alternatively, use any archive program for Windows, such as WinZip.

9. Start the service and the synchronization.
   a. Start the Identity Synchronization for Windows service as described in *Starting and Stopping Services* in *Installation Guide for Identity Synchronization for Windows 6* .
   b. Start synchronization as described in *Starting and Stopping Synchronization* in *Installation Guide for Identity Synchronization for Windows 6* .
10. Check the central audit log to verify that there are no warning messages.

> **Note:** If you have customized the version 1.1 log settings, you must manually apply those customizations to your version Identity Synchronization for Windows 6.0 SP1 installation. Use the Identity Synchronization for Windows Console to configure your log settings.

11.5 What to Do if the 1.1 Uninstallation Fails

If the version 6.0 SP1 installation program finds remnants of the version 1.1 system, the installation will fail. Verify that all of the 1.1 components are completely removed from the system before starting the new installation.

If the uninstallation program does not uninstall all of the version 1.1 components, you must manually clean up the Identity Synchronization for Windows product registry and Solaris packages.

Detailed instructions for uninstalling Identity Synchronization for Windows version 1.1 manually are provided in the following sections:

- Manually Uninstalling 1.1 Core and Instances from Solaris
- Manually Uninstalling 1.1 Core and Instances from Windows 2000
- Manually Uninstalling a 1.1 Instance from Windows NT

> **Note:** The instructions provided in this section are for uninstalling Identity Synchronization for Windows *version 1.1, and 1.1 SP1,* only.
>
> *Do not* use the manual uninstallation procedures provided in the following sections unless the Identity Synchronization for Windows uninstallation program fails.

11.5.1 Manually Uninstalling 1.1 Core and Instances from Solaris

Use the instructions provided in this section to manually uninstall Core from a Solaris machine.

Note: In this section, Identity Synchronization for Windows locations are described in the following manner:

<*serverRoot* >/ isw-<*hostname* >

where <*serverRoot* > represents the parent directory of the Identity Synchronization for Windows installation location.

For example, if you installed Identity Synchronization for Windows in /var/Sun/mps/isw-< *example*>, the < *serverRoot*> would be /var/Sun/mps.

11.5.1.1 To Manually Uninstall Core From a Solaris Machine:

1. Stop all Identity Synchronization for Windows Java processes by typing **/etc/init.d/isw stop** into a terminal window.

   If the preceding command does not stop all of the Java processes, type the following commands.

   ```
   /usr/ucb/ps -gauxwww | grep java
   kill -s SIGTERM process IDs from preceding command
   ```

2. Stop Message Queue.

   a. Type the following command to stop the Message Queue broker.

      /etc/init.d/imq stop

   b. Type the following commands to stop any remaining imq processes.

      ```
      * ps -ef | grep imqbroker
      * kill -s SIGTERM process IDs from preceding command
      ```

   c. Use one of the following methods to uninstall the broker packages and directories.

      Use the Message Queue broker uninstall script to uninstall the broker. This script is located in the Identity Synchronization for Windows instance directory on the host where you installed Core.

      serverRoot/isw-*hostname*/imq_uninstall

      Manually uninstall the packages and directories.

      Use the pkgrm command to remove the following packages.

      ```
      SUNWaclg
      SUNWiqum
      SUNWiqjx
      SUNWiqlen
      SUNWxsrt
      SUNWiqu
      SUNWjaf
      SUNWiqfs
      SUNWjhrt
      SUNWiqdoc
      SUNWiquc
      SUNWiqsup
      SUNWiqr
      SUNWjmail
      ```

      Use the rm -rf command to remove the following directories.

```
/etc/imq
/var/imq
/usr/bin/imq*
```

3. To remove the Identity Synchronization for Windows 1.1 Solaris packages, run `pkgrm` *`package-name`* for each of the packages listed in Manually Uninstalling 1.1 Core and Instances from Solaris.

   The following example shows the use of pkgrm to uninstall packages.

   ```
   pkgrm SUNWidscm SUNWidscn SUNWidscr SUNWidsct SUNWidsoc
   ```

Package Name	Description
SUNWidscm	Sun ONE Directory Server Identity Synchronization package for Core components and Connectors.
SUNWidscn	Sun ONE Directory Server Identity Synchronization package for Console help files.
SUNWidscr	Sun ONE Directory Server Identity Synchronization package for Core Components.
SUNWidsct	Sun ONE Directory Server Identity Synchronization package for Connectors.
SUNWidsoc	Sun ONE Directory Server Identity Synchronization package for Object Cache.

   Type the following command to verify that all of the packages were removed.

   ```
   pkginfo | grep -i "Identity Synchronization"
   ```

   Note: Run the `pkgrm` *`package-name`* command again to check if there are still existing packages due to dependencies.

4. Remove the Directory Server Plug-in.
   a. Open the Directory Server Console and select the Configuration tab.
   b. In the left pane, expand the Plugins node and select the pswsync node.
   c. In the right pane, clear the Enable plug-in check box.
   d. Click Save.
   e. From the Directory Server Console, locate and remove the following entry from the Configuration Directory:

      ```
      cn=pswsync,cn=plugins,cn=config
      ```

   f. Stop Directory Server.
   g. Remove the Plugin binary by typing the following command.

      `rm -f` *`serverRoot`***`/lib/psw-plugin.so`**

   h. Restart Directory Server.

5. Backup (copy and rename) the current `productregistry` file located in `/var/sadm/install/productregistry`.
6. Manually edit the `productregistry` file in `/var/sadm/install/` to remove the following entries, *if present*:

Note: ■For best results, use an XML editor. Alternatively, you can use a standard text editor.

- Some of the following components may not be included in your file.
- You must delete the beginning tag (`<compid\>`), ending tag (`</compid\>`), and all contents in-between both tags). Ellipses are used in the following list to represent any additional text, or tags that are included as part of these tags. See the example on Manually Uninstalling 1.1 Core and Instances from Solaris.

- `<compid\>name="PN_IdSyncForWindows" content="Identity Synchronization for Windows" . . . </compid\>`
- `<compid\>Core . . . </compid\>`
- `<compid\>uninstaller . . . </compid\>`
- `<compid\>wpsyncwatchdog . . . </compid\>`
- `<compid\>setenv . . . </compid\>`
- `<compid\>Create DIT . . . </compid\>`
- `<compid\>Extend Schema . . . </compid\>`
- `<compid\>resources . . . </compid\>`
- `<compid\>CoreComponents . . . </compid\>`
- `<compid\>Connector . . . </compid\>`
- `<compid\>DSConnector . . . </compid\>`
- `<compid\>Directory Server Plugin . . . </compid\>`
- `<compid\>DSSubcomponents . . . </compid\>`
- `<compid\>ObjectCache . . . </compid\>`
- `<compid\>ObjectCacheDLLs . . . </compid\>`
- `<compid\>SUNWidscr . . . </compid\>`
- `<compid\>SUNWidscm . . . </compid\>`
- `<compid\>SUNWidsct . . . </compid\>`
- `<compid\>SUNWidscn . . . </compid\>`
- `<compid\>SUNWidsoc . . . </compid\>`
- `<compid\>ADConnector . . . </compid\>`

The following is an example `<compid\>` tag. Remove `<compid\>`, `</compid\>`, and all the text and tags in-between.

```
<compid\>Identity Synchronization for Windows
    <compversion\>1.1
          <uniquename\>Identity Synchronization for Windows</uniquename\>
```

```
            <compinstance\>1
                    <children\>
                        <compref\>ADConnector
                            <instance\>1
                                <version\>1.1</version\>
                            </instance\>
                        </compref\>
                        <compref\>DSSubcomponents
                        . . .

        </compinstance\>
    </compversion\>
</compid\>
```

7. Remove the following Identity Synchronization for Windows directories and files.

   a. From the installation location, type the following command.

      ```
      rm -rf serverRoot/isw-hostname
      ```

   b. To remove the bootstrap files, type the following command.

      ```
      rm -rf /etc/init.d/isw
      ```

8. Clean up the configuration directory as follows:

   a. Run the following `ldapsearch` command against the configuration directory where Identity Synchronization for Windows Core is installed to locate the Identity Synchronization for Windows Console subtree:

      ```
      ldapsearch -D "cn=directory manager" -w < password > -b
      o=netscaperoot "(nsnickname=isw)" dn
      ```

      Note: `ldapsearch` is located in Directory Server's < *serverRoot*>`/shared/bin/ldapsearch`. For example, `/var/Sun/mps/shared/bin/ldapsearch`

      The resulting entry should be similar to the following. Note that the entry always ends with *o=NetscapeRoot*.

      ```
      "cn=Sun ONE name="PN_IdSyncForWindows" content="Identity
      Synchronization for Windows",cn=server group,
      cn=myhost.mydomain.com,ou=mydomain.com,o=NetscapeRoot"
      ```

   b. Use the Directory Server Console to remove the Identity Synchronization for Windows Console subtree and all of the subtrees below it.

9. Clean up the Identity Synchronization for Windows configuration registry as follows:

   a. Run the following `ldapsearch` command to locate the Identity Synchronization for Windows configuration registry in Directory Server:

      ```
      ldapsearch -D "cn=directory manager" -w < password > -b
      "dc=my,dc=domain"
      "(&(objectclass=iplanetservice)(ou=IdentitySynchronization))" dn
      ```

      The resulting entry should be similar to the following:

      ```
      "ou=IdentitySynchronization,ou=Services,dc=my,dc=domain"
      ```

b. Use the Directory Server Console to remove the Identity Synchronization for Windows configuration registry and all of the subtrees below it.

10. Clean up all other Console-related files as follows:

a. Remove all the Console jar files by typing:

`rm -rf <`*`serverRoot`***`>/java/jars/isw*`** For example, `/var/Sun/mps/java/jars/isw*`

b. Remove all the Console servlet jar files by typing:

`rm -rf <`*`serverRoot`***`>/bin/isw/`** For example, `/var/Sun/mps/bin/isw/`

11.5.2 Manually Uninstalling 1.1 Core and Instances from Windows 2000

Use the instructions provided in this section to manually uninstall Core from a Windows 2000 machine.

Note: In this section, Identity Synchronization for Windows locations are described in the following manner:

`serverRoot``\isw-`*`hostname`*`\`

where *serverRoot* represents the parent directory of the Identity Synchronization for Windows installation location.

For example, if you installed Identity Synchronization for Windows in `C:\Program Files\Sun\mps\isw-`*`example`*, the *serverRoot* would be `C:\Program Files\Sun\mps`.

11.5.2.1 To uninstall Core from a Windows 2000 machine:

1. Stop all Identity Synchronization for Windows Java processes using one of the following methods:

a. Select Start > Settings > Control Panel > Administrative Tools > Services to open the Services window. In the right pane, right-click on Identity Synchronization for Windows and select Stop.

b. Open a Command Prompt window and type the following command.

```
net stop "Sun ONE Identity Synchronization for Windows"
```

c. If the preceding methods do not work, use the following steps to stop the Java processes manually.

a. Open the Services window, right-click on Identity Synchronization for Windows, and select Properties.

b. From the General tab in the Properties window, select Manual from the Startup type drop-down list.

Note: Although you can view Java processes (such as `pswwatchdog.exe`) from the Windows Task Manager, you cannot determine which processes are specifically related to Identity Synchronization for Windows. For this reason, do not stop processes from the Windows Task Manager.

---

2. For a Core uninstallation only, stop the Message Queue using one of the following methods:

   a. In the Services window, right-click on iMQ Broker in the right pane and select Stop.

   b. From a Command Prompt, type the following command.

      ```
      net stop "iMQ Broker"
      ```

   c. If the preceding methods do not work, use the following steps to stop Message Queue manually.

      a. Open the Services window, right-click on iMQ Broker and select Properties.

      b. From the General tab in the Properties window, select Manual from the Startup type drop-down list.

      c. Open the Directory Server Console and select the Configuration tab.

      d. In the left pane, expand the Plugins node and select the pswsync node.

      e. In the right pane, uncheck the Enable plug-in check box.

      f. Click Save.

      g. From the Console, locate and remove the following entry from the Configuration Directory:

         ```
         cn=pswsync,cn=plugins,cn=config
         ```

      h. Stop Directory Server.

         You can stop the server using one of the following methods:

         In the Services window, right-click on Sun ONE Directory Server 5.2 in the right pane and select Stop, or

         Open a Command Prompt window and type the following command.

         ```
         net stop slapd-myhostname
         ```

      i. Open Windows Explorer to locate and remove the Plugin binary:

         < *ServerRoot*>\lib\psw-plugin.so

      j. Restart Directory Server.

3. Open a Command Prompt window and type **`regedit`** to open the Registry Editor window.

   Caution: Back up your current registry file before proceeding to Manually Uninstalling 1.1 Core and Instances from Windows 2000.

   a. In the Registry Editor, select My Computer in the left pane.

   b. Select Registry > Export Registry File from the menu bar.

   c. When the Export Registry File dialog box is displayed, specify a name for the file and select a location to save the backup registry.

4. In the Registry Editor, select Edit > Delete from the menu bar.

   Remove the following Identity Synchronization for Windows keys from the Windows Registry:

All entries under `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\name="PN_IdSyncForWindows" content="Identity Synchronization for Windows"`.

All `CurrentControlSet` and `ControlSet` (such as `ControlSet001`, `ControlSet002`, and so forth) entries under `HKEY_LOCAL_MACHINE\SYSTEM\*`, which includes the following entries (if they exist).

- `...\Control\Session Manager\Environment\<` *isw-installation directory*`\>`
- `...\Services\Eventlog\Application\Sun ONE name="PN_IdSyncForWindows" content="Identity Synchronization for Windows"`
- `...\Services\Sun ONE name="PN_IdSyncForWindows" content="Identity Synchronization for Windows"`
- `...\Services\iMQBroker`

5. Backup (copy and rename) the current `productregistry` file located in `C:\WINNT\system32`.
6. Edit the `C:\WINNT\system32\productregistry` file to remove the following tags:

Note: ■For best results, use an XML editor. Alternatively, you can use a standard text editor.

- Some of the following components may not be included in your file.
- You must delete the beginning tag (`<compid\>`), ending tag (`</compid\>`), and all contents in-between both tags). Ellipses are used in the following list to represent any additional text and/or tags that are included as part of these tags. See the example Manually Uninstalling 1.1 Core and Instances from Windows 2000.

- `<compid\>name="PN_IdSyncForWindows" content="Identity Synchronization for Windows" . . . </compid\>`
- `<compid\>Core . . . </compid\>`
- `<compid\>unistaller . . . </compid\>`
- `<compid\>wpsyncwatchdog . . . </compid\>`
- `<compid\>setenv . . . </compid\>`
- `<compid\>Create DIT . . . </compid\>`
- `<compid\>Extend Schema . . . </compid\>`
- `<compid\>resources . . . </compid\>`
- `<compid\>CoreComponents . . . </compid\>`
- `<compid\>Connector . . . </compid\>`
- `<compid\>DSConnector . . . </compid\>`
- `<compid\>Directory Server Plugin . . . </compid\>`
- `<compid\>DSSubcomponents . . . </compid\>`
- `<compid\>ObjectCache . . . </compid\>`

- <compid\>ObjectCacheDLLs . . . </compid\>
- <compid\>ADConnector . . . </compid\>

The following is a <compid\> tag sample. Remove <compid\>, </compid\>, and all the text and tags in-between.

```
<compid\>Identity Synchronization for Windows
    <compversion\>1.1
          <uniquename\>Identity Synchronization for Windows</uniquename\>
           <compinstance\>1
                    <children\>
                        <compref\>ADConnector
                            <instance\>1
                                <version\>1.1</version\>
                            </instance\>
                        </compref\>
                        <compref\>DSSubcomponents
                        . . .
        </compinstance\>
    </compversion\>
</compid\>
```

7. Remove the Identity Synchronization for Windows installation folder located at *serverRoot*\isw-*hostname*.

   For example, C:\Program Files\Sun\mps\isw-example

8. Clean up the configuration directory as follows:

   a. From a Command Prompt window, run the ldapsearch command against the configuration directory where Identity Synchronization for Windows Core is installed to locate the Identity Synchronization for Windows Console subtree.

   Note: ldapsearch is located in <*serverRoot*>\shared\bin\ldapsearch.

   For example, C:\Program Files\Sun\mps\shared\bin\ldapsearch

   ```
   ldapsearch -D "cn=directory manager" -w <password\> -b
   o=netscaperoot "(nsnickname=isw)" dn
   ```

   The resulting entry should be similar to the following (note that the entry will always end with *o=NetscapeRoot*):

   ```
   "cn=Sun ONE name="PN_IdSyncForWindows" content="Identity
   Synchronization for Windows",cn=server group,
   cn=myhost.mydomain.com,ou=mydomain.com,o=NetscapeRoot"
   ```

   b. Use the Directory Server Console to remove the Identity Synchronization for Windows Console subtree that you found and all subtrees under it.

9. Clean up the Identity Synchronization for Windows configuration directory (*also know as the configuration registry*) as follows:

   a. From a Command Prompt window, run the following ldapsearch command to locate the Identity Synchronization for Windows configuration directory in Directory Server:

   ```
   ldapsearch -D "cn=directory manager" -w <password \> -b
   "dc=my,dc=domain"
   "(&(objectclass=iplanetservice)(ou=IdentitySynchronization))" dn
   ```

The resulting entry should be similar to the following:

```
"ou=IdentitySynchronization,ou=Services,dc=my,dc=domain"
```

b. Use the Directory Server Console to remove the configuration directory subtree that you found, including all subtrees under it.

10. Clean up all other Console-related files as follows:

a. Remove all Console jar files located in < *serverRoot* >\java\jars\isw*For example, `C:\Program Files\Sun\mps\java\jars\isw*`

b. Remove all Console servlet jar files located in < *directory-server-install-root* >\bin\isw\For example, `C:\SunOne\Servers\bin\isw\`

Next Steps

Restart your machine for all changes to take effect.

11.5.3 Manually Uninstalling a 1.1 Instance from Windows NT

Use the instructions provided in this section to manually uninstall an instance from a Windows NT machine.

Note: In this section, Identity Synchronization for Windows locations are described as follows:

<serverRoot>\isw-*<hostname>*

where *<serverRoot* > represents the parent directory of the Identity Synchronization for Windows installation location. For example, if you installed Identity Synchronization for Windows in `C:\Program Files\Sun\mps\isw-` *example*, the < *serverRoot* > would be `C:\Program Files\Sun\mps`.

---

1. Stop all the Identity Synchronization for Windows Java processes (Core and instance installations) using one of the following methods:

a. Select Start > Settings > Control Panel > Administrative Tools > Services to open the Services window. In the right pane, right-click on Identity Synchronization for Windows and select Stop.

b. Open a Command Prompt window and type the following command:

```
net stop "Sun ONE name="PN_IdSyncForWindows"
content="Identity Synchronization for Windows"
```

c. If the preceding methods do not work, use the following steps to stop the Java processes manually:

a. Open the Services window, right-click on Identity Synchronization for Windows, and select Properties.

b. From the General tab in the Properties window, select Manual from the Startup type drop-down list.

Note: Although you can view Java processes (such as `pswwatchdog.exe`) from the Windows Task Manager, you cannot determine which processes are specifically related to Identity Synchronization for Windows. For this reason, do not stop processes from the Windows Task Manager.

2. Stop the Change Detector service using one of the following methods:
   a. In the Services window, right-click on Sun ONE NT Change Detector Service in the right pane and select Stop.
   b. Open a Command Prompt window and type the following command:

      ```
      net stop "Sun ONE NT Change Detector Service"
      ```

   c. If the preceding methods do not work, use the following steps to stop the Change Detector Service manually:
      a. Open the Services window, right-click on Change Detector Service and select Properties.
      b. From the General tab in the Properties window, select Manual from the Startup type drop-down list.
      c. Restart your Windows NT computer.
3. You must remove Identity Synchronization for Windows registry keys. Open a Command Prompt window and type **`regedt32`** to open the Registry Editor window.

   Caution: *Do not* use `regedit` because the program does not allow you to edit multi-value strings.

   Backup your current Windows registry file before proceeding to Manually Uninstalling a 1.1 Instance from Windows NT.

   a. In the Registry Editor, select the top node (My Computer) in the left pane.
   b. Select Registry > Export Registry File from the menu bar.
   c. When the Export Registry File dialog box is displayed, specify a name for the file and select a location to save the backup registry.
4. In the Registry Editor, select Edit > Delete from the menu bar.

   Remove the following Identity Synchronization for Windows keys from the Registry:

   All entries under `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\name="PN_IdSyncForWindows" content="Identity Synchronization for Windows"`

   All `CurrentControlSet` and `ControlSet` (such as `ControlSet001`, `ControlSet002`) entries under `HKEY_LOCAL_MACHINE\SYSTEM\*`.

   These entries include the following:

   - `...\Control\Session Manager\Environment\` <*isw-installation directory*>
   - `...\Services\Eventlog\Application\Sun ONE name="PN_IdSyncForWindows" content="Identity Synchronization for Windows"`

- `...\Services\Sun ONE name="PN_IdSyncForWindows" content="Identity Synchronization for Windows"`
- `...\Services\iMQBroker`

The `HKEY_LOCAL_MACHINE\SOFTWARE\Sun Microsystems\PSW`

5. Use **`regedt32`** (*do not use* `regedit`) to modify (**do not delete**) the following registry key:
   a. Select the registry key entry in the left pane:

      `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\CONTROL\LSA`

      The registry value type must be `REG_MULTI_SZ`.
   b. In the right pane, right-click on the Notification Packages value and select Modify.
   c. Change the `PASSFLT` value to `FPNWCLNT`.
6. Backup (copy and rename) the current `productregistry` file located in `C:\WINNT\system32` .
7. Edit the `C:\WINNT\system32 productregistry` file to remove the following tags:

Note: ■For best results, use an XML editor. Alternatively, you can use a standard text editor.

- Some of these components might not be included in your file.
- You must delete the beginning tag (`<compid\>`), ending tag (`<\compid\>`), and all contents in-between both tags). Ellipses are used in the following list to represent any additional text and/or tags that are included as part of these tags. See the example on Manually Uninstalling 1.1 Core and Instances from Windows 2000.

- `<compid\>name="PN_IdSyncForWindows" content="Identity Synchronization for Windows" . . . </compid\>`
- `<compid\>Core . . . </compid\>`
- `<compid\>uninstaller . . . </compid\>`
- `<compid\>wpsyncwatchdog . . . </compid\>`
- `<compid\>setenv . . . </compid\>`
- `<compid\>Create DIT . . . </compid\>`
- `<compid\>Extend Schema . . . </compid\>`
- `<compid\>resources . . . </compid\>`
- `<compid\>CoreComponents . . . </compid\>`
- `<compid\>Connector . . . </compid\>`
- `<compid\>DSConnector . . . </compid\>`
- `<compid\>Directory Server Plugin . . . </compid\>`
- `<compid\>DSSubcomponents . . . </compid\>`
- `<compid\>ObjectCache . . . </compid\>`

- `<compid\>ObjectCacheDLLs . . . </compid\>`
- `<compid\>ADConnector . . . </compid\>`

The following is a example `<compid\>` tag. Remove `<compid\>`, `</compid\>`, and all the text and tags in-between.

```
<compid\>Identity Synchronization for Windows
    <compversion\>1.1
       <uniquename\>Identity Synchronization for Windows</uniquename\>
           <compinstance\>1
                    <children\>
                        <compref\>ADConnector
                            <instance\>1
                                <version\>1.1</version\>
                            </instance\>
                        </compref\>
                        <compref\>DSSubcomponents
                        . . .

         </compinstance\>
    </compversion\>
</compid\>
```

8. Remove the Identity Synchronization for Windows installation folder located at `<` *serverRoot* `>\isw-<` *hostname* `>`.

   For example, `C:\Program Files\Sun\mps\isw-example`

   Note: You must edit the Windows registry as described in Manually Uninstalling a 1.1 Instance from Windows NT before proceeding to Manually Uninstalling a 1.1 Instance from Windows NT.

9. Remove the Password Filter DLL.

   Locate the `passflt.dll` file in the `C:\winnt\system32` folder, and rename the file to **`passflt.dll.old`**.

10. Restart your machine for all changes to take effect.

11.6 Other Migration Scenarios

Because other deployment topologies are possible, your migration process may differ from the process described for a single-host deployment.

This section describes two alternative deployment scenarios and explains how to migrate in each case.

The sample deployment scenarios include:

- Multi-Master Replication Deployment
- Multi-Host Deployment with Windows NT

11.6.1 Multi-Master Replication Deployment

In a multi-master replication (MMR) deployment, two Directory Server instances are installed on different hosts. It is possible to run the hosts on different operating systems, but in this scenario, both hosts are running on the same operating system.

Table 11–1 and Figure 11–2 illustrate how the Identity Synchronization for Windows components are distributed between the two hosts.

Table 11–1 Component Distribution in a Multi-Master Replication Deployment

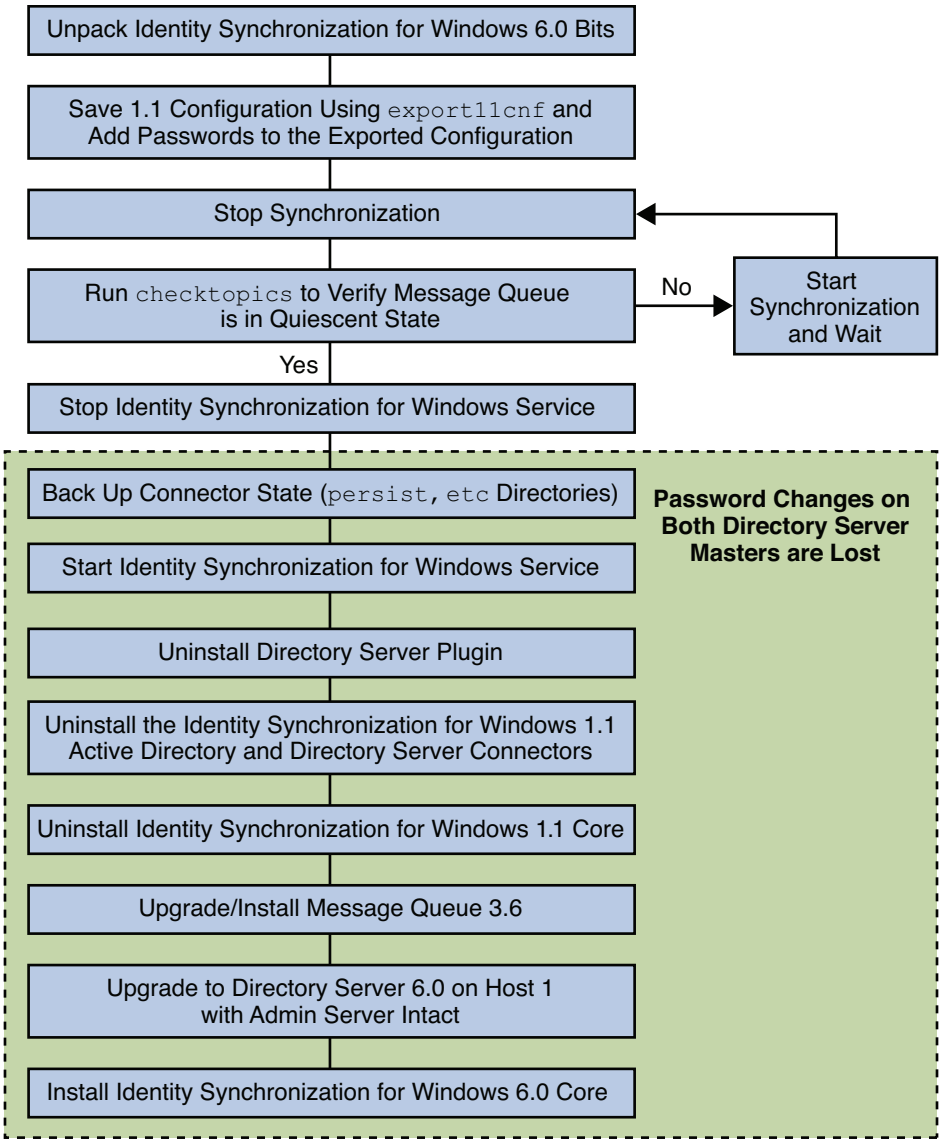
Host 1	Host 2
Directory Server (one instance) as the secondary master for synchronized users	Directory Server (one instance) as the preferred master for synchronized users
Core (Message Queue, Central Logger, System Manager, and Console)	Directory Server Plugin
Active Directory Connector	
Directory Server Connector	
Directory Server Plugin	

The migration process keeps on-demand password synchronization running continuously on the preferred master or on the secondary master.

> **Note:** If both hosts are running on a Solaris operating system, then a third host running Windows 2000 with Active Directory is required for synchronization purposes only. (No components would be installed on the third host.)

The following figure illustrates the process for migrating Identity Synchronization for Windows in a MMR deployment.

Figure 11–2 Migrating a Multi-Master Replication Deployment



11.6.2 Multi-Host Deployment with Windows NT

Three hosts are used in this deployment scenario:

- A Windows NT system
- A host for Directory Server with the synchronized users and the Directory Server Connector
- A host for all other components

Table 11–2 and Figure 11–3 illustrate how the Identity Synchronization for Windows components are distributed between the three hosts.

Table 11–2 Multi-Host Deployment

Host 1	Host 2	Host 3
Directory Server with configuration repository	Directory Server for synchronized users	Windows NT Connector

Table 11–2 (Cont.) Multi-Host Deployment

Host 1	Host 2	Host 3
Core (Message Queue, Central Logger, System Manager, and Console)	Directory Server Connector	Windows NT Subcomponents (Password Filter DLL and Change Detector Service)
Active Directory Connector	Directory Server Plugin	

In the previous scenario, hosts 1 and 2 are running on the same operating system.

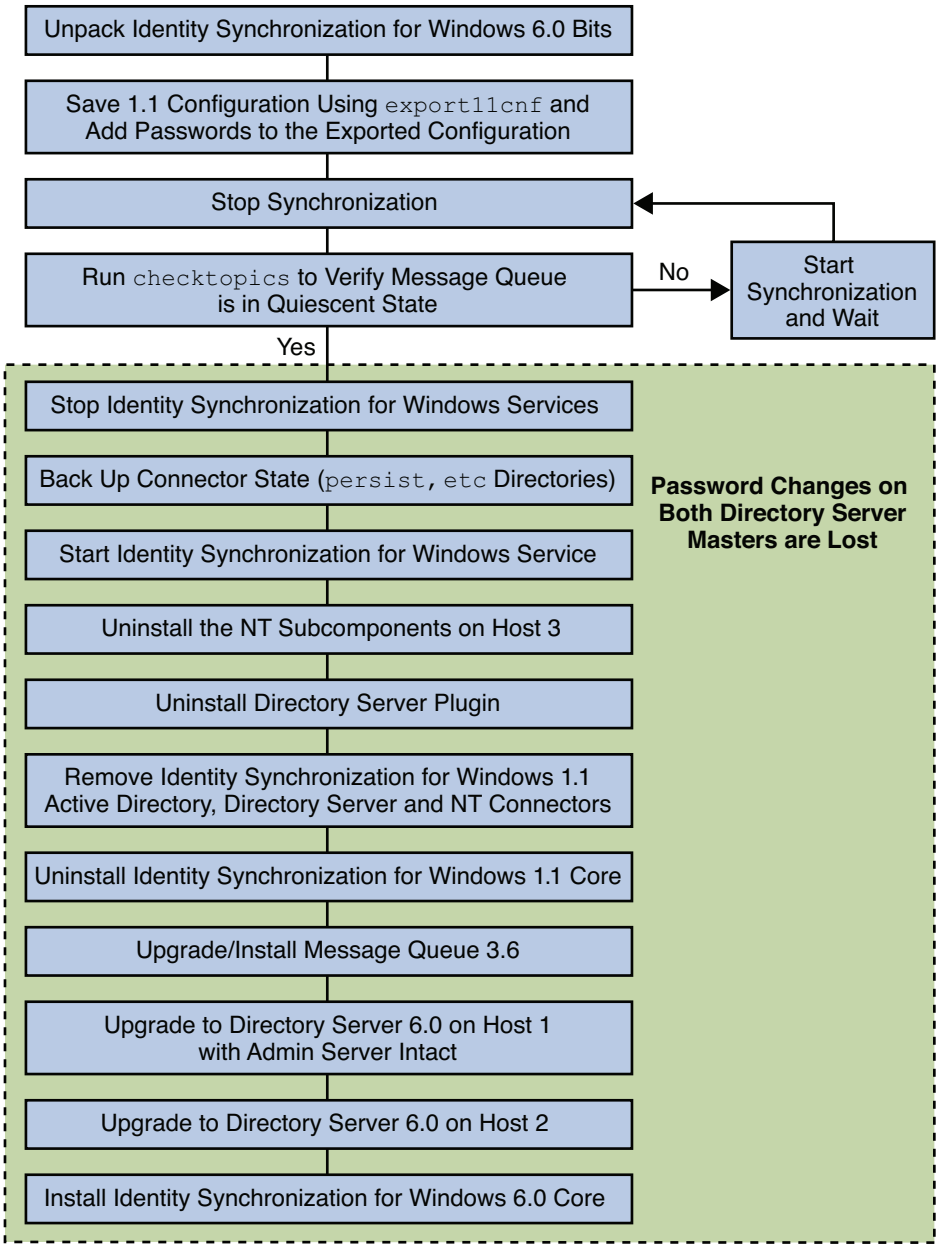
Note: Directory Server at host1 contains the configuration registry and the Admin Server console. Ensure you migrate to Directory Server 11*g* Release 1 (11.1.1.7.0) using the `-N` option to keep the Admin Server intact. For more information on migrating configuration data and user data, see Using `dsmig` to Migrate Configuration Data and Using `dsmig` to Migrate User Data respectively.

Directory Server at host2 contains the data and the Directory Server plugin. When you migrate Directory Server to 11*g* Release 1 (11.1.1.7.0), the plugin configuration is lost. But it does not cause any problem as Identity Synchronization for Windows migration requires the connectors to be reinstalled and plugin to be reconfigured. Therefore, Directory Server at host2 should be migrated after Identity Synchronization for Windows uninstallation.

If both hosts are running a Solaris operating system, then a fourth host running Windows 2000 with Active Directory is required for synchronization purposes only. (No components would be installed on the fourth host.)

Figure 11–3 illustrates the process for migrating Identity Synchronization for Windows for a multi-host deployment

Figure 11–3 Migrating a Multi-Host Deployment with Windows NT



11.7 Checking the Logs

After migration, check the central audit log for messages indicating a problem. In particular, check for Directory Server users whose password changes may have been missed during the migration process. Such errors would be similar to the following:

```
[16/Apr/2004:14:23:41.029 -0500] WARNING
                    14  CNN101 ds-connector-host.example.com
                  "Unable to obtain password of user
cn=JohnSmith,ou=people,dc=example,dc=com,
                    because the password was encoded by a previous installation of
                    Identity Synchronization for Windows Directory Server Plugin.
                    The password of this user cannot be synchronized at this time.
                    Update the password of    this user again in the Directory
Server."
```

You will not see this log message until after you start synchronization in Identity Synchronization for Windows 6.0 SP1. This is why checking the logs is the last step of the migration procedure.