Sun Directory Server Enterprise Edition 7.0 Upgrade and Migration Guide

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Preface

This *Migration Guide* describes how to migrate the components of Directory Server Enterprise Edition to version 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 7.0. The guide might also be useful to business planners who are considering migrating to the new version.

Before You Read This Book

If you are not yet familiar with this version of Directory Server Enterprise Edition, you might want to start by evaluating the new features and capabilities of the product. For more information, see the *Sun Directory Server Enterprise Edition 7.0 Evaluation Guide* and *Sun Directory Server Enterprise Edition 7.0 Release Notes*.

How This Book Is Organized

Part I contains the information that covers how to upgrade version 6 server instances.

Part II contains multiple chapters that cover how to migrate from version 5.2 installations.

Sun Directory Server Enterprise Edition Documentation Set

This documentation set explains how to use Sun™ 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 Directory Server Enterprise Edition documentation set is available at `http://docs.sun.com/coll/1819.1`.

The following table lists all the available documents.

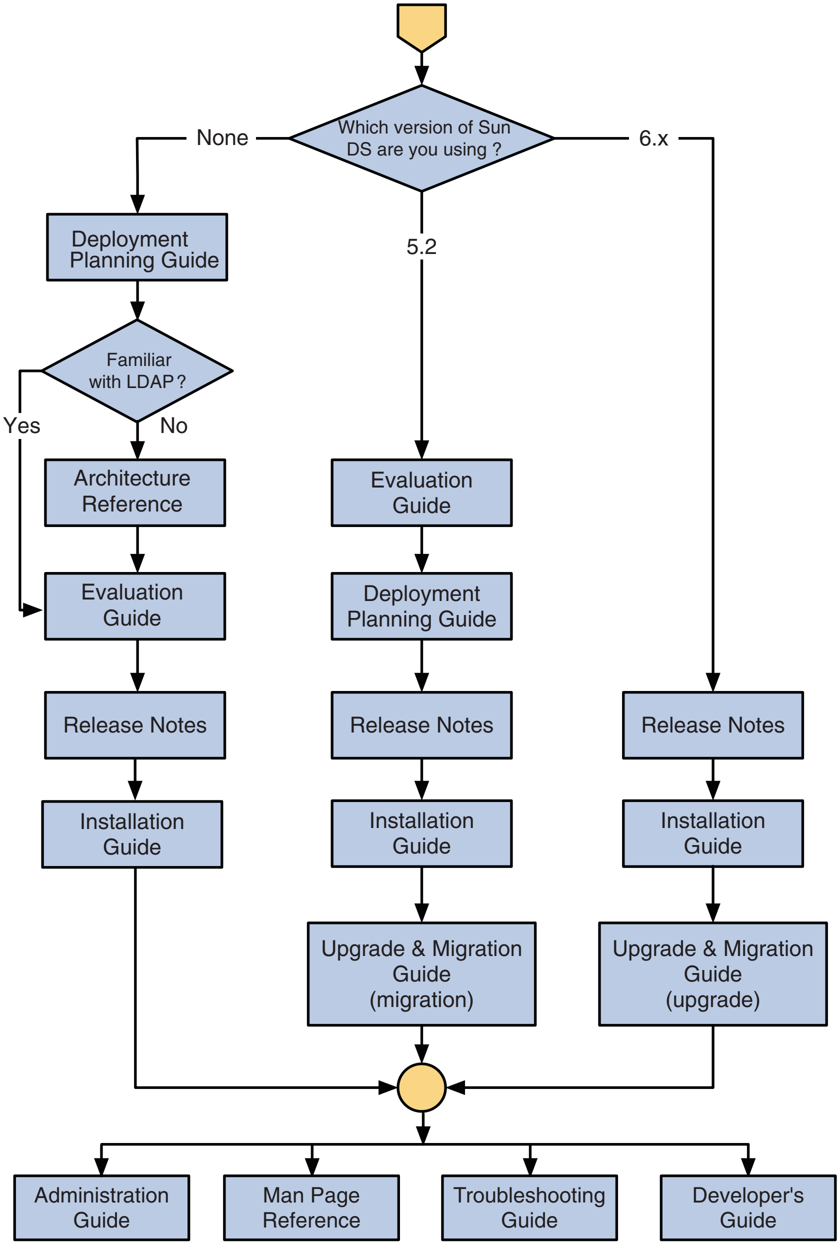
TABLE P–1 Directory Server Enterprise Edition Documentation

Document Title	Contents
Sun Directory Server Enterprise Edition 7.0 Release Notes	Contains the latest information about Directory Server Enterprise Edition, including known problems.
Sun Directory Server Enterprise Edition 7.0 Documentation Center	Contains links to key areas of the documentation set that help you to quickly locate the key information.
Sun Directory Server Enterprise Edition 7.0 Evaluation Guide	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.
Sun Directory Server Enterprise Edition 7.0 Deployment Planning Guide	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.
Sun Directory Server Enterprise Edition 7.0 Installation Guide	Explains how to install the Directory Server Enterprise Edition software. Shows how to configure the installed software and verify the configured software.
Sun Directory Server Enterprise Edition 7.0 Upgrade and Migration Guide	Provides upgrade instructions to upgrade the version 6 installation and migration instructions to migrate version 5.2 installations.
Sun Directory Server Enterprise Edition 7.0 Administration Guide	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.
Sun Directory Server Enterprise Edition 7.0 Developer's Guide	Shows how to develop directory client applications with the tools and APIs that are provided as part of Directory Server Enterprise Edition.
Sun Directory Server Enterprise Edition 7.0 Reference	Introduces technical and conceptual foundations of Directory Server Enterprise Edition. Describes its components, architecture, processes, and features.
Sun Directory Server Enterprise Edition 7.0 Man Page Reference	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.
Sun Directory Server Enterprise Edition 7.0 Troubleshooting Guide	Provides information for defining the scope of the problem, gathering data, and troubleshooting the problem areas by using various tools.
Sun Java System Identity Synchronization for Windows 6.0 Deployment Planning Guide	Provides general guidelines and best practices for planning and deploying Identity Synchronization for Windows.
Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide	Describes how to install and configure Identity Synchronization for Windows.

TABLE P–1 Directory Server Enterprise Edition Documentation *(Continued)*

Document Title	Contents
Additional Installation Instructions for Sun Java System Identity Synchronization for Windows 6.0	Provides additional installation instructions in context of Directory Server Enterprise Edition 7.0.

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



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://java.sun.com/products/jndi/`. The *JNDI Tutorial* contains detailed descriptions and examples of how to use JNDI. This tutorial is at `http://java.sun.com/products/jndi/tutorial/`.

Directory Server Enterprise Edition can be licensed as a standalone product, as part of a suite of Sun products, such as the Sun Java Identity Management Suite, or as an add-on package to other software products from Sun.

Identity Synchronization for Windows uses Message Queue with a restricted license. Message Queue documentation is available at `http://docs.sun.com/coll/1307.2`.

Identity Synchronization for Windows works with Microsoft Windows password policies.

- Information about password policies for Windows 2003, is available in the Microsoft documentation online.
- Information about the Microsoft Certificate Services Enterprise Root certificate authority, is available in the Microsoft support documentation online.
- Information about configuring LDAP over SSL on Microsoft systems, is available in the Microsoft support documentation 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 *Sun Directory Server Enterprise Edition 7.0 Reference*.

TABLE P–2 Default Paths

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`. When you install from a native package distribution, the default *install-path* is `/opt/SUNWdsee7`.
instance-path	Represents the full path to an instance of Directory Server or Directory Proxy Server. Documentation uses `/local/dsInst/` for Directory Server and `/local/dps/` for Directory Proxy Server.	No default path exists. Instance paths must nevertheless always be found on a *local* file system. On Solaris systems, the `/var` directory is recommended:
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*/`logs/`	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*/`logs/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.

TABLE P–3 Command Locations

Command	Native Package Distribution	Zip Distribution
cacaoadm	/usr/sbin/cacaoadm	Solaris, Linux, HP—UX — *install-path*/bin/cacaoadm
		Windows - *install-path*\bin\cacaoadm.bat
certutil	/usr/sfw/bin/certutil	*install-path*/bin/certutil
dpadm(1M)	*install-path*/bin/dpadm	*install-path*/bin/dpadm
dpconf(1M)	*install-path*/bin/dpconf	*install-path*/bin/dpconf
dsadm(1M)	*install-path*/bin/dsadm	*install-path*/bin/dsadm
dsccmon(1M)	*install-path*/bin/dsccmon	*install-path*/bin/dsccmon
dsccreg(1M)	*install-path*/bin/dsccreg	*install-path*/bin/dsccreg
dsccsetup(1M)	*install-path*/bin/dsccsetup	*install-path*/bin/dsccsetup
dsconf(1M)	*install-path*/bin/dsconf	*install-path*/bin/dsconf
dsmig(1M)	*install-path*/bin/dsmig	*install-path*/bin/dsmig
dsutil(1M)	*install-path*/bin/dsutil	*install-path*/bin/dsutil
entrycmp(1)	*install-path*/bin/entrycmp	*install-path*/bin/entrycmp
fildif(1)	*install-path*/bin/fildif	*install-path*/bin/fildif
idsktune(1M)	Not provided	At the root of the unzipped zip distribution
insync(1)	*install-path*/bin/insync	*install-path*/bin/insync
ldapsearch(1)	/opt/SUNWdsee/dsee6/bin	*install-path*/dsrk/bin
repldisc(1)	*install-path*/bin/repldisc	*install-path*/bin/repldisc

Typographic Conventions

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

TABLE P–4 Typographic Conventions

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 the C shell, Bourne shell, and Korn shell.

TABLE P–5 Shell Prompts

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

Shell Prompts in Command Examples

The following table shows default system prompts and superuser prompts.

TABLE P–6 Shell Prompts

Shell	Prompt
C shell on UNIX and Linux systems	`machine_name%`
C shell superuser on UNIX and Linux systems	`machine_name#`
Bourne shell and Korn shell on UNIX and Linux systems	`$`
Bourne shell and Korn shell superuser on UNIX and Linux systems	`#`
Microsoft Windows command line	`C:\`

Symbol Conventions

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

TABLE P–7 Symbol Conventions

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.
-	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

The Sun web site provides information about the following additional resources:

- Documentation (`http://www.sun.com/documentation/`)
- Support (`http://www.sun.com/support/`)
- Training (`http://www.sun.com/training/`)

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. To share your comments, go to `http://docs.sun.com` and click Feedback.

PART I

Upgrading Directory Server Enterprise Edition 6 to Version 7.0

The upgrade procedure is a simplified procedure, which makes use of existing instances with the 7.0 installation. After the instances are upgraded, they cannot be used with the previous version installation. So take a filesystem backup before upgrading server instances (not `dsadm backup` or `dsconf backup`) and restore them whenever required.

This part includes the following chapter:

Chapter 1, "Upgrading Directory Server Enterprise Edition 6 to Version 7.0," explains how to upgrade Directory Server Enterprise Edition 6 to version 7.0.

CHAPTER 1

Upgrading Directory Server Enterprise Edition 6 to Version 7.0

This chapter highlights the procedures to deploy your previous Directory Server Enterprise Edition installation with version 7.0

Based on the platform where you have the version 6 server instances, refer to any of the following procedures. For more information about supported platforms, refer to "Operating System Requirements" in *Sun Directory Server Enterprise Edition 7.0 Release Notes*.

- "Upgrading Directory Server Enterprise Edition 6 " on page 27
- "Upgrading Directory Server Enterprise Edition 6 on Unsupported Platforms" on page 34

Upgrading Directory Server Enterprise Edition 6

To upgrade to version 7.0, you must upgrade Directory Service Control Center, and Directory Server and Directory Proxy Server server instances.

Refer to the following sections to upgrade:

- "To Upgrade Directory Service Control Center 6 " on page 27
- "Upgrading Directory Server and Directory Proxy Server Server Instances" on page 29

▼ To Upgrade Directory Service Control Center 6

To access the Directory Server Enterprise Edition 7.0 instances using DSCC, you must upgrade DSCC 6 to version 7.0.

Using DSCC 7.0, you can access both version 6 and version 7.0 instances.

If you are upgrading DSCC that was installed using native packages, you must perform the following steps as root.

1. **Install Directory Server Enterprise Edition 7.0.**

   For more information, see Chapter 2, "Installing Directory Server Enterprise Edition," in *Sun Directory Server Enterprise Edition 7.0 Installation Guide*.

2. **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 /var/opt/SUNWdsee/dscc6/dcc/ads
   ```

   b. **Record the DSCC 6 registry port numbers.**

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

   c. **Export the DSCC 6 registry content.**

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

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

3. **Create and populate the DSCC 7.0 registry with the version 6 registry content.**

   a. **Create the DSCC 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
   ```

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

   b. **Stop the registry.**

   ```
   # install-path/bin/dsadm stop /var/opt/SUNWdsee7/dcc/ads
   ```

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

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

   d. **Start the registry.**

   ```
   # install-path/bin/dsadm start /var/opt/SUNWdsee7/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. **(Optional) 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.

4 **Deploy the DSCC 7.0 WAR file.**

Refer to Appendix A, "Deploying DSCC WAR File With Supported Application Servers," in *Sun Directory Server Enterprise Edition 7.0 Installation Guide*.

If you have upgraded DSCC that was installed by using native packages, you must access DSCC as *root*.

5 **(Optional) Uninstall Directory Server Enterprise Edition 6.**

For more information, refer to the Directory Server Enterprise Edition 6 Installation Guide.

Upgrading Directory Server and Directory Proxy Server Server Instances

To use the existing Directory Server and Directory Proxy Server instances with the Directory Server Enterprise Edition 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, take a backup of all the instances so that they can be restored in case of any problem. Take a backup of the instance files with a filesystem utility such as `tar` or `cpio`. For example:

```
$ tar cf BACKUP_INSTANCE  INSTANCE_DIRECTORY
```

Note – Upgrading version 6 instances on a platform that is still supported in version 7.0, requires no data migration.

But 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. Follow the procedure specified at "Upgrading Directory Server Enterprise Edition 6 on Unsupported Platforms" on page 34 to upgrade such instances.

Note – If you are upgrading from version 6.2 to 7.0, refer to the following steps and then proceed to upgrade to 7.0:

1. Export database to an LDIF file.

   For more information see the `dsadm export` command in `dsadm`(1M).
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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*

▼ To Upgrade Directory Server Instances

The following procedure is also valid for the following:

- Upgrading the native packages based instances on Solaris operating system to zip distribution based instances on Solaris operating system.
- Upgrading the zip distribution based instances on Solaris operating system to native packages based instances on Solaris operating system. In this case, step 2 is not applicable.
- Upgrading native packages based instances on the platforms that are no more supported for native packages based distribution in this version. On such platforms, the instances must be upgraded to zip distribution instances.

1 **Install Directory Server Enterprise Edition 7.0.**

2 **Before upgrading the version 6 instances created by using native packages, to the 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:

  ```
  $ ./dsadm autostart --off INSTANCE_PATH
  ```
- If your instance is registered as a Windows service, type the following command:

  ```
  $ ./dsadm disable-service --type WIN_SERVICE INSTANCE_PATH
  ```
- If your instance is registered as an SMF service, type the following command:

  ```
  $ ./dsadm disable-service --type SMF INSTANCE_PATH
  ```
- If your instance is registered in a cluster, type the following command:

  ```
  $ ./dsadm disable-service --type CLUSTER INSTANCE_PATH
  ```

3 Type the following command from the version 7.0 installation to upgrade the Directory Server instances.

```
$ ./dsadm upgrade [-i] INSTANCE_PATH
```

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

```
# ./dsadm upgrade /local/example

Directory Server instance '/local/example' will be upgraded to version 7.
It will no longer be usable with DSEE 6 commands.
Do you want to continue [y/n]? y
Moving legacy scripts into '/local/example/bak/2009-08-25-11-23-16' ...
Adding new files to instance ...
Upgrading dse.ldif ...
Old version of dse.ldif has been moved into '/local/example/bak/2009-08-25-11-23-16'.
Directory Server instance '/local/example' is now ready to be used
with DSEE 7 commands.
```

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

Note – After upgrading to version 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`(5dsconf).
- To retain the pattern matching distribution algorithm version 6 behavior, the `compat-flag` Directory Proxy Server configuration property is set to `pattern-matching-also-6`. To check the value of `compat-flag`, refer to the following command:

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

  For more information about the `compat-flag` property, see `compat-flag`(5dpconf).

---

4 Upgrade all the Directory Server instances that you want to use with the version 7.0, by using the `dsadm upgrade` command.

Note – The legacy instances once upgraded cannot be restored to its 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 7.0, you must unregister the Directory Server instances from DSCC 6 and register them with DSCC 7.0. For more information about registration and unregistration, refer `dsccreg`(1M).

5 **(Optional) Remove Directory Server Enterprise Edition 6.**

To Upgrade Directory Proxy Server Instances

The following procedure is also valid for the following:

- Upgrading native packages based instances on Solaris operating system to the zip distribution based instances on Solaris operating system.
- Upgrading zip distribution based instances on Solaris operating system to the native packages based instances on Solaris operating system. In this case, step 2 is not applicable.
- Upgrading native packages based instances on the platforms that are no more supported for native packages based distribution in this version. On such platforms, the instances must be upgraded to zip distribution based instances.

1 **Install Directory Server Enterprise Edition 7.0.**

2 **Before upgrading the version 6 instances created by using native packages, to the 7.0 zip distribution instances, disable features specific to the native packages by using the version 6 native packages installation.**

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

  ```
  $ ./dpadm autostart --off INSTANCE_PATH
  ```

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

  ```
  $ ./dpadm disable-service --type WIN_SERVICE INSTANCE_PATH
  ```

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

  ```
  $ ./dpadm disable-service --type SMF INSTANCE_PATH
  ```

3 **Type the following command from the version 7.0 installation to upgrade the Directory Proxy Server instances.**

```
$ ./dpadm upgrade [-i] INSTANCE_PATH
```

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

```
# ./dpadm upgrade -i /local/example
Directory Proxy Server instance '/local/example' will be upgraded to version 7.
It will no longer be usable with DSEE 6 commands.
Do you want to continue [y/n]? y
Upgrading conf.ldif ...
Old version of conf.ldif has been moved into '/local/example/bak/2009-08-25-11-09-06'.
Directory Proxy Server instance '/local/example' is now ready to be used
with DSEE 7 commands.
```

4 **Upgrade all the Directory Proxy Server instances that you want to use with the version 7.0, by using the `dpadm upgrade` command.**

Note – The legacy instances once upgraded cannot be restored to its previous installation.

The following dpadm 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
    - import-cert
    - list-certs
    - remove-cert
    - renew-cert
    - request-cert
    - show-cert
    - delete
```

5 **(Optional) Remove Directory Server Enterprise Edition 6.**

Upgrading Directory Server Enterprise Edition 6 on Unsupported Platforms

In Directory Server Enterprise Edition 7.0, there are platforms that are no more supported. You must perform the specific operations to use your existing data and instances.

For more information about supported platforms, refer to "Operating System Requirements" in *Sun Directory Server Enterprise Edition 7.0 Release Notes*.

Refer to the following procedure based on your requirements:

- "To Upgrade Directory Server Enterprise Edition From Legacy Operating System" on page 34
- "To Upgrade 32–bit Server Instances " on page 35

▼ To Upgrade Directory Server Enterprise Edition From Legacy Operating System

For more information on supported operating systems, refer to "Operating System Requirements" in *Sun Directory Server Enterprise Edition 7.0 Release Notes*.

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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 7.0.**

Based on your previous installation and platform combination, refer to "Operating System Requirements" in *Sun Directory Server Enterprise Edition 7.0 Release Notes* to find out what type of distribution you can install.

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

- For native packages based distribution: "Installing Directory Server Enterprise Edition" in *Sun Directory Server Enterprise Edition 7.0 Installation Guide*
- For zip distribution: "Installing Directory Server Enterprise Edition Using Zip Distribution" in *Sun Directory Server Enterprise Edition 7.0 Installation Guide*

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
```

▼ 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 respective product documentation to know how to upgrade customized schema.

- 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 version 7 server instance.**

For each suffix:

```
INSTALL_PATH/bin/dsadm import INSTANCE_PATH LDIF_FILE SUFFIX_DN
```

See Also "Migrating User Data Manually" on page 62

PART II

Migrating Directory Server Enterprise Edition 5.2 to Version 7.0

This part includes the information related to migration from version 5.2 and all the later releases of 5.2, to version 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 version 7.0 installation. If required, the original instances can still be used.

This part includes the following chapters:

- Chapter 2, "Overview of the Migration Process for Directory Server," explains the steps involved in migrating Directory Server.
- Chapter 3, "Automated Migration Using the `dsmig` Command," explains how to use the migration tool.
- Chapter 4, "Migrating Directory Server Manually," describes the process for manual migration of each part of the server.
- Chapter 5, "Migrating a Replicated Topology," explains how to migrate a replicated topology and the issues involved in migrating replicated servers.
- Chapter 6, "Architectural Changes in Directory Server Since Version 5.2," explains the architectural changes that affect migration from a previous version.

- Chapter 7, “Migrating Directory Proxy Server,” explains the Directory Proxy Server migration.
- Chapter 8, “Migrating Identity Synchronization for Windows,” explains the Identity Synchronization for Windows migration.

◆ ◆ ◆ CHAPTER 2

Overview of the Migration Process for Directory Server

This chapter describes the steps involved in migrating version 5.2 to Directory Server 7.0. Directory Server 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:

- "Before You Migrate" on page 39
- "Deciding on the New Product Distribution" on page 40
- "Outline of Migration Steps" on page 41
- "Deciding on Automatic or Manual Migration" on page 41

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 Directory Server Enterprise Edition 7.0," in *Sun Directory Server Enterprise Edition 7.0 Release Notes*. For information about the new features that specifically affect migration, see Chapter 6, "Architectural Changes in Directory Server Since Version 5.2."

Prerequisites to Migrate a Single Directory Server Instance

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

- Directory Server 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” on page 41.
- 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 8, “Migrating Identity Synchronization for Windows.”

Deciding on the New Product Distribution

Directory Server 7.0 is provided in two distributions:

- Native Packages distribution. This distribution takes the form of operating system-specific packages, such as pkg for Solaris and rpm for Linux.
- Compressed archive (zip) distribution.

There are two major differences between these two distributions:

1. Installation from zip can be done anywhere on the system and as a non-root user. The native packages distribution requires installation as a super user. It is also more difficult from an automated deployment perspective to install the packages anywhere but in the default location.

2. 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. This is not true for the native packages distribution. The new version of certain shared component packages required by Directory Server are incompatible with the previous version of these packages. When you migrate to the new version of Directory Server using the native packages distribution, the old Directory Server version will no longer run on that machine.

Depending on your environment and the specific requirements of your organization, select the appropriate packaging format.

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.

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 2–1 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
Different	Any	`dsmig`	`dsmig`	`dsmig`	Manual	Manual
Same	Different	`dsmig`	`dsmig`	`dsmig`	Manual	Manual

TABLE 2–1 Migration Matrix Showing Support for Automated Migration *(Continued)*

Migrating To		Migration Step				
Software (32/64–bit)	**OS**	**Schema**	**Config**	**Security**	**Data**	**Plug-Ins**
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 3, "Automated Migration Using the `dsmig` Command." For information on manual migration, see Chapter 4, "Migrating Directory Server Manually."

CHAPTER 3

Automated Migration Using the `dsmig` Command

Directory Server 7.0 provides a command-line migration tool to help you migrate from a Directory Server 5.2 instance to a Directory Server 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" on page 41.

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:

About the Automatic Migration Tool

The migration tool, `dsmig`, is delivered with the Directory Server Enterprise Edition 7.0 packages. When these packages have 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" on page 41. For information about the usage of `dsmig`, see `dsmig`(1M).

Prerequisites for Running dsmig

In this section, *old instance* refers to the 5.2 instance and *new instance* refers to the Directory Server 7.0 instance.

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

- The Directory Server Enterprise Edition 7.0 packages (either zip, or native packages) have been installed.

  The Directory Server Enterprise Edition 7.0 packages 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 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(1M).

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.

Using dsmig to Migrate the Schema

Directory Server 5.2 schema files are located in *serverRoot*/slapd-*instance-path*/config/schema. Directory Server 7.0 schema files are located in *INSTANCE-PATH*/config/schema.

Directory Server 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(1M).

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(1M).

Using dsmig to Migrate Configuration Data

Directory Server 5.2 configuration is specified in the file *serverRoot*/slapd-*instance-path*/config/dse.ldif. Directory Server 7.0 configuration is specified in the file *instance-path*/config/dse.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 (dse.ldif) of the old instance. If these entries exist in the corresponding Directory Server 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(1M). For details of the specific configuration attributes that are migrated, see "Migration of Specific Configuration Attributes" on page 53.

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.

Configuration Data For Suffixes With Multiple Backends

Configuration data for suffixes with multiple backends 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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.

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.

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
```

Using `dsmig` to Migrate User Data

In Directory Server 5.2, data is stored in *serverRoot*/`slapd-`*instance-name*/`db`. Directory Server 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`(1M).

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.

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 `dse .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` objectclass while changing the password using the `ldapmodify` command.

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” on page 66.

CHAPTER 4

Migrating Directory Server Manually

If your deployment does not satisfy the requirements for automatic migration described in "Deciding on Automatic or Manual Migration" on page 41, 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 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 7.0 instance.

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

- Directory Server 7.0 software has been installed.

  Directory Server 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.

Migrating the Schema Manually

Directory Server 5.2 schema files are located in *serverRoot*`/slapd-`*serverID*`/config/schema`. Directory Server 7.0 schema files are located in *instance-path*`/config/schema`.

Directory Server 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 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.

Migrating Configuration Data Manually

Directory Server 5.2 configuration is specified in the file *serverRoot*/slapd-*serverID*/config/dse.ldif. Directory Server 7.0 configuration is specified in the file *instance-path*/config/dse.ldif.

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

Migration of Specific Configuration Attributes

The values of the following attribute types must be migrated.

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 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" on page 86.

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
```

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
```

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.

Mapping Tree Configuration Attributes

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

The Netscape Root database has been deprecated in Directory Server 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.

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:

Change Log Attributes

TABLE 4–1 Change Log Attribute Name Changes

Old Attribute Name	Directory Server 7.0 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).

Fractional Replication Configuration Attributes

If your topology uses fractional replication, the following attribute names must be changed.

TABLE 4–2 Fractional Replication Attribute Name Changes

Old Attribute Name	Directory Server 7.0Attribute Name
`dsFilterSPType == fractional_include`	`dsReplFractionalInclude`
`dsFilterSPType == fractional_exclude`	`dsReplFractionalExclude`

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.

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" on page 67.

There is no ds5PartialReplConfiguration attribute in Directory Server 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.

Password Policy Configuration Attributes

For details on configuration of the Directory Server 7.0 password policy, see Chapter 7, "Directory Server Password Policy," in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. 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, see "Password Policy Compatibility" in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

While Directory Server 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 4–3 Mapping Between 5.2 and 7.0 Password Policy Attributes

Legacy Directory Server Attribute	Directory Server 7.0 Attribute
passwordMinAge	pwdMinAge
passwordMaxAge	pwdMaxAge
passwordExp	pwdMaxAge
passwordInHistory	pwdInHistory
passwordSyntax	pwdCheckQuality
passwordMinLength	pwdMinLength
passwordWarning	pwdExpireWarning
-	pwdGraceLoginLimit

TABLE 4–3 Mapping Between 5.2 and 7.0 Password Policy Attributes (Continued)

Legacy Directory Server Attribute	Directory Server 7.0 Attribute
`passwordMustChange`	`pwdMustChange`
`passwordChange`	`pwdAllowUserChange`
-	`pwdSafeModify`
`passwordStorageScheme`	`passwordStorageScheme`
`passwordExpireWithoutWarning`	-
`passwordLockout`	`pwdLockout`
`passwordLockoutDuration`	`pwdLockoutDuration`
`passwordUnlock`	`pwdLockoutDuration`
`passwordMaxFailure`	`pwdMaxFailure`
`passwordResetFailureCount`	`pwdFailureCountInterval`

SNMP Attributes

The entry `cn=SNMP,cn=config` does not exist in Directory Server 7.0. All attributes under this entry are therefore deprecated. For information about setting up SNMP in Directory Server 7.0, see “Setting Up SNMP for Directory Server” in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

UniqueID Generator Configuration Attributes

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

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.

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 *Sun Directory Server Enterprise Edition 7.0 Developer's Guide*.

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

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
```

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
```

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
```

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.

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
```

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
```

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
```

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
```

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 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.

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 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.

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 7.0 instance manually. For a detailed list of plug-in API changes, see Chapter 2, “Changes to the Plug-In API Since Directory Server 5.2,” in *Sun Directory Server Enterprise Edition 7.0 Developer’s Guide*.

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 5, “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.

◆ ◆ ◆ CHAPTER 5

Migrating a Replicated Topology

Directory Server Enterprise Edition 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:

Overview of Migrating Replicated Servers

Directory Server 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 *Sun Directory Server Enterprise Edition 7.0 Deployment Planning Guide* 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.

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.

Issues With the Password Policy

If you are migrating a multi-master replicated topology, a situation will arise where a 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 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 7.0 password policy schema file (`00ds6pwp.ldif`) *must* be copied to every version 5.2 server that will be supplied by a 7.0 master. When the password policy schema file has been copied, restart the version 5.2 server.

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.

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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.
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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. 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.

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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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.

Replication Recommendations

Directory Server 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.

Migration Scenarios

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

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.

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 2, “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.

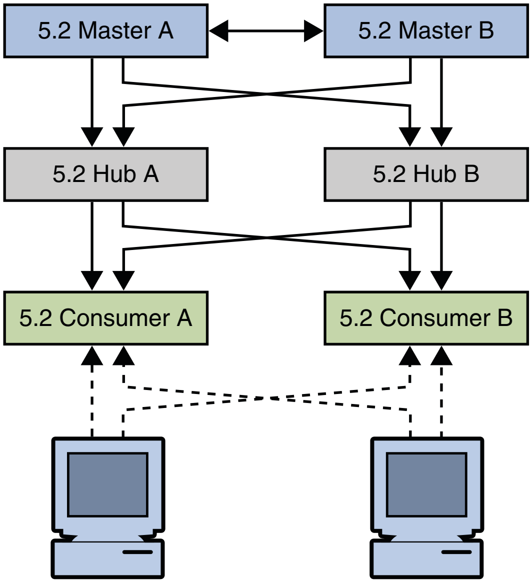


FIGURE 5–1 Legacy Topology

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

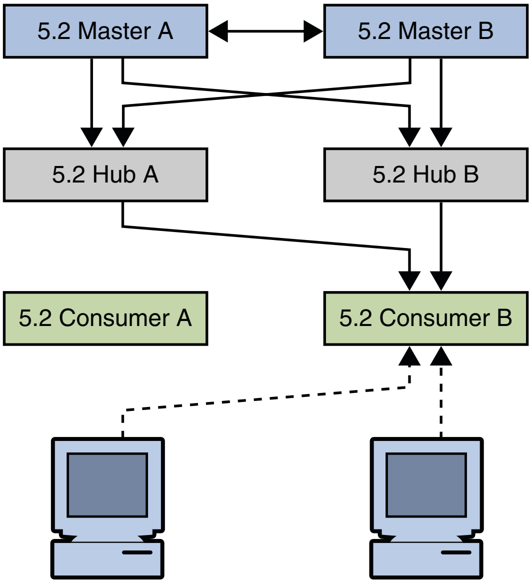


FIGURE 5–2 Isolating the Consumer From the Topology

The next step involves migrating the consumer.

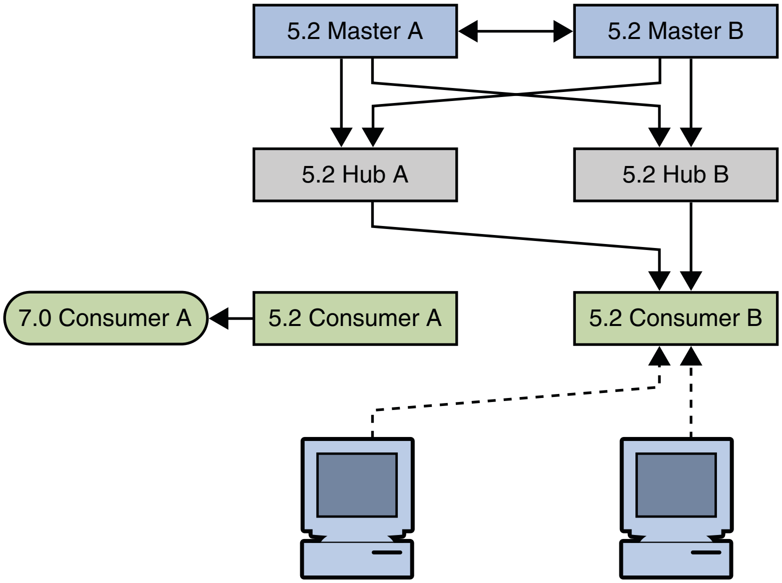


FIGURE 5–3 Migrating Consumer

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.

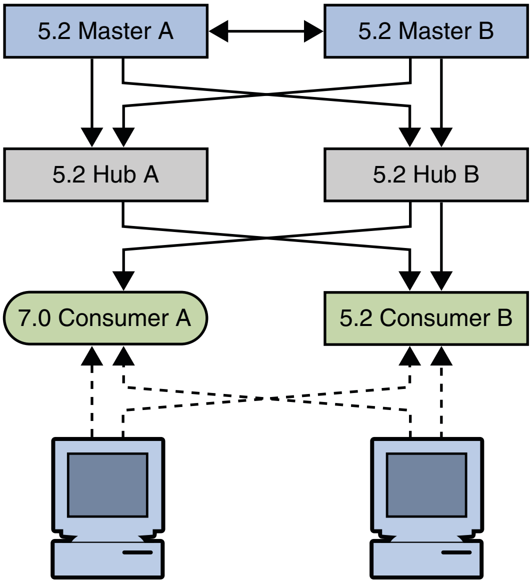


FIGURE 5–4 Placing the 7.0 Consumer Into the Topology

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 2, "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.

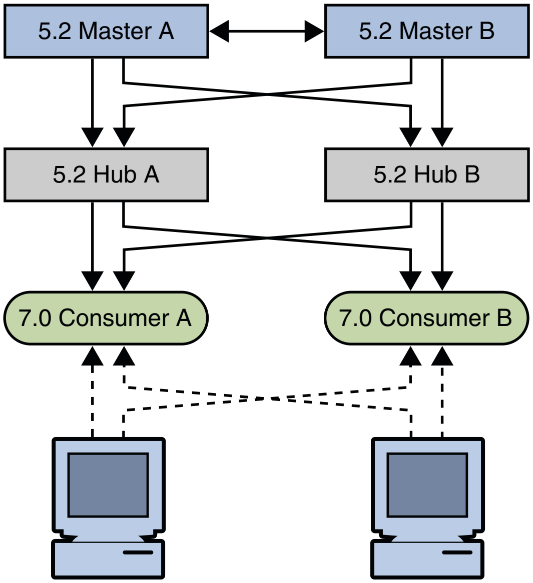


FIGURE 5–5 Topology With Migrated Consumers

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

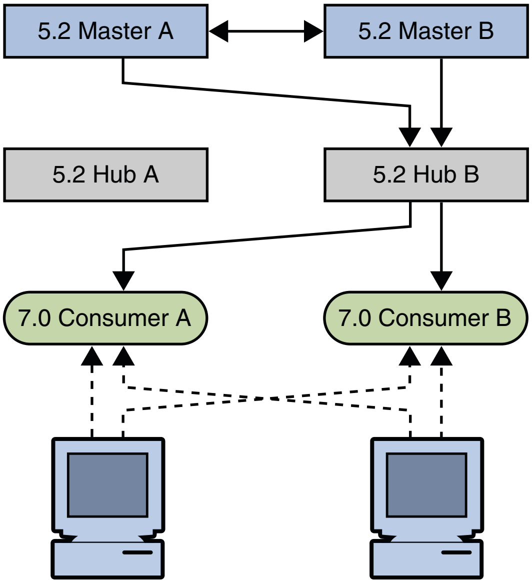


FIGURE 5–6 Isolating the Hub From the Topology

The next step involves migrating the legacy hub.

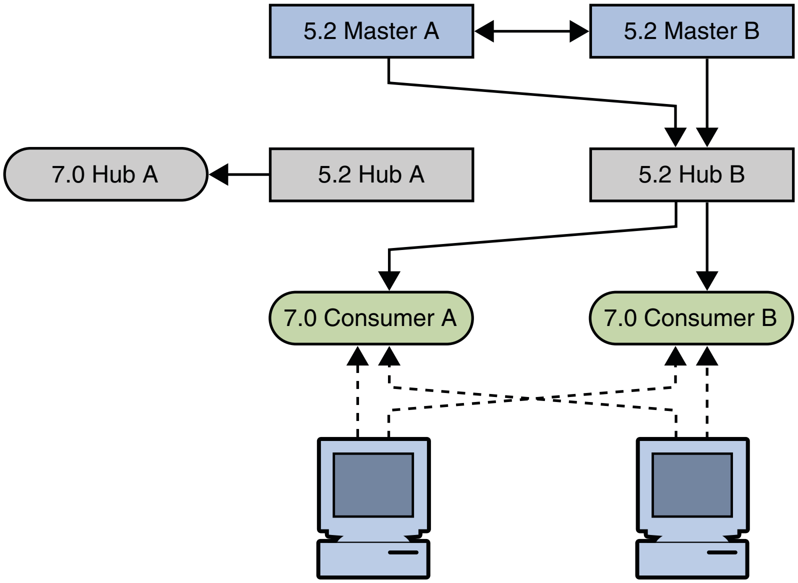


FIGURE 5–7 Migrating Hub

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

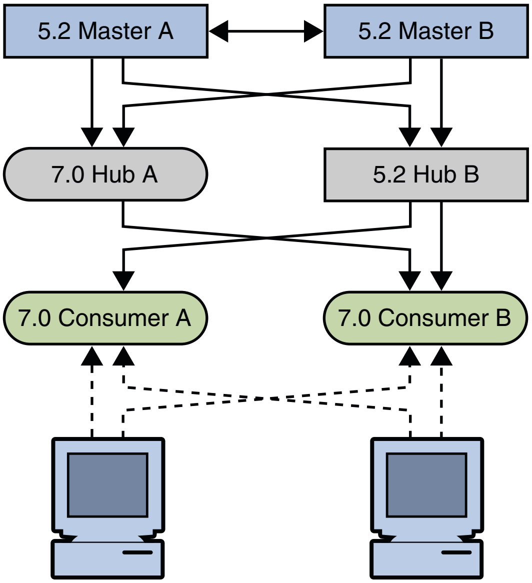


FIGURE 5–8 Placing the 7.0 Hub Into the Topology

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.

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 2, “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.

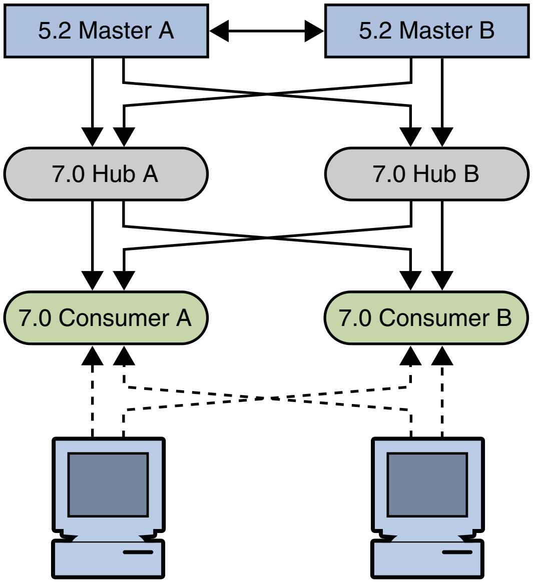


FIGURE 5–9 Topology With Consumers and Hubs Migrated

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

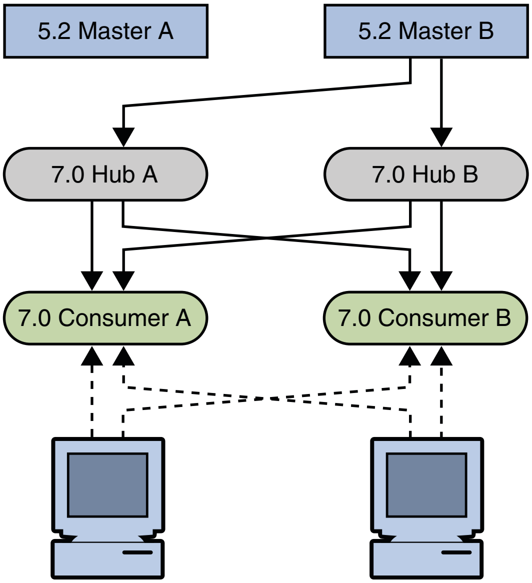


FIGURE 5–10 Isolating the Master From the Topology

The next step involves migrating a master.

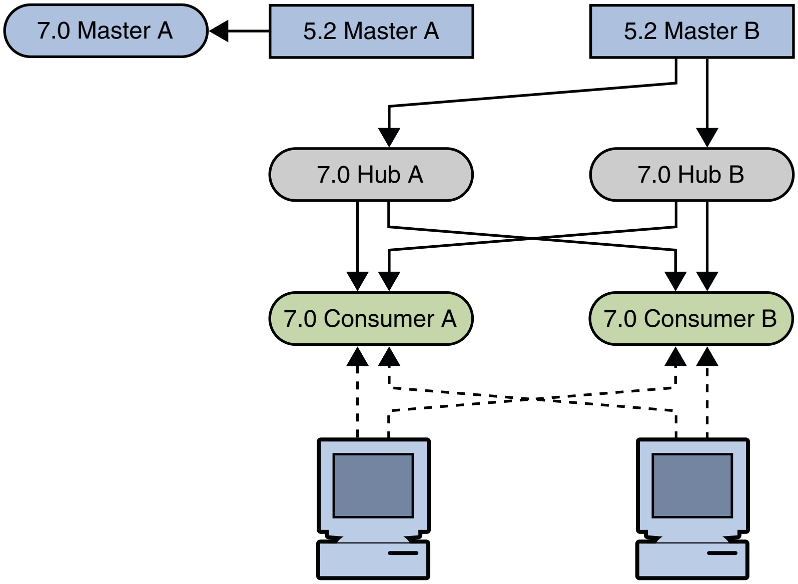


FIGURE 5–11 Migrating Master

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

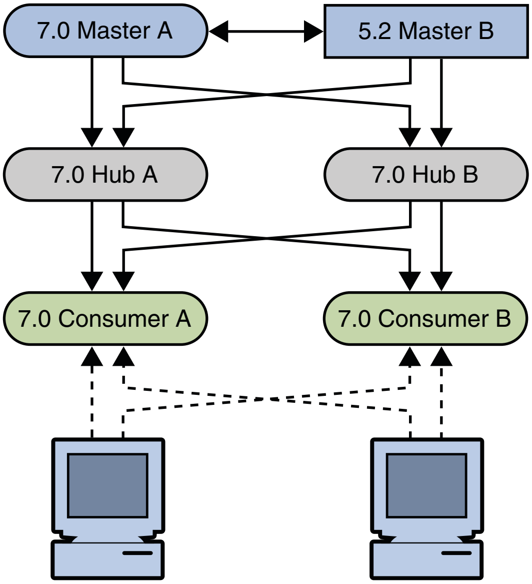


FIGURE 5–12 Placing the 7.0 Master Into the Topology

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.

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.

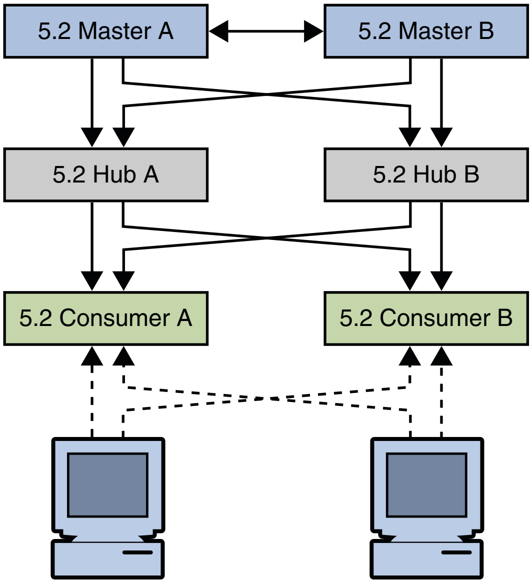


FIGURE 5–13 Legacy Topology

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" on page 68. The resulting topology is illustrated in the following figure.

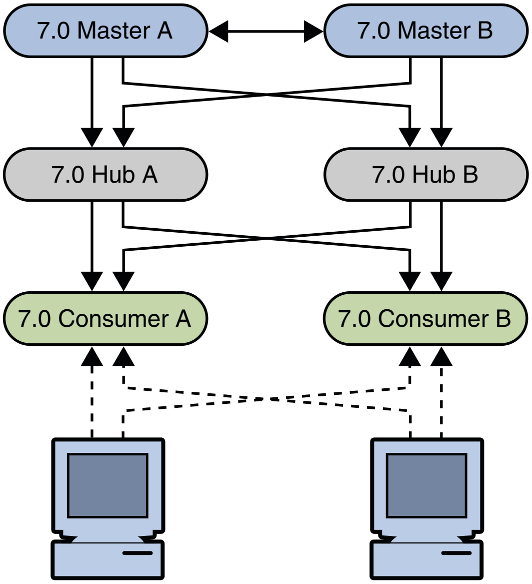


FIGURE 5–14 Topology With Migrated Servers

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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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

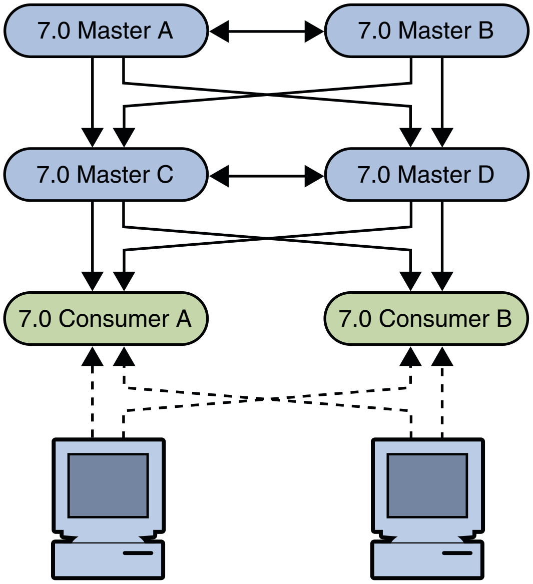


FIGURE 5–15 Migrated Topology With Promoted Hub Replicas

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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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

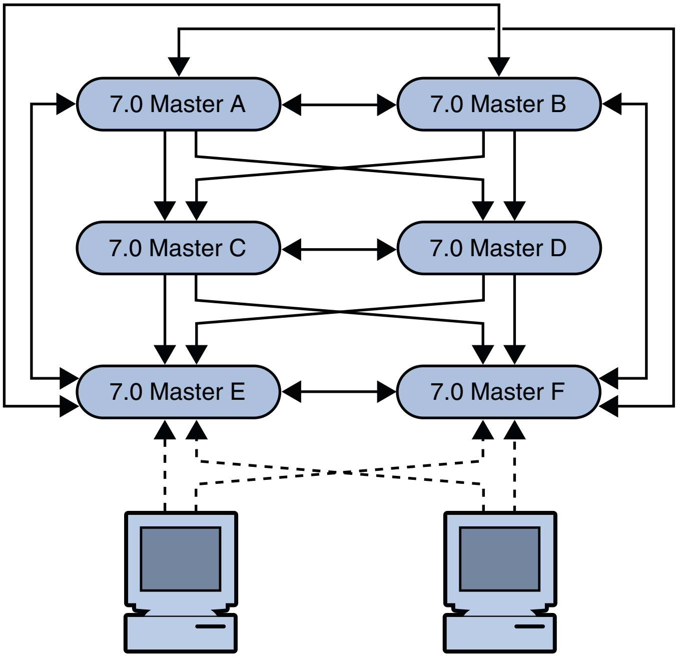


FIGURE 5–16 New Fully-Meshed All-Master Topology

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" on page 68 for each data center. To migrate to a new topology, follow the examples in "Migrating a Replicated Topology to a New Topology" on page 80 for each data center.

CHAPTER 6

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 Directory Server Enterprise Edition 7.0,” in *Sun Directory Server Enterprise Edition 7.0 Release Notes*.

This chapter covers the following topics:

Changes in the Administration Framework

Directory Server 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:

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

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.

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.

Changes to ACIs

The following changes have been made to ACIs in Directory Server 7.0.

Changes in the ACI Scope

In Directory Server 5.2 ACIs on the root DSE had base scope. In Directory Server 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.

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 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 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 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.

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 7.0. In version 7.0, the default path of these commands when installed from native packages is `/opt/SUNWdsee7/bin`. When installed from the zip installation, the default path is *install-path*`/dsee7/bin`.

TABLE 6–1 Directory Server 5, 6, and 7 commands

Version 5.2 Command	Version 6 Command	Version 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)

TABLE 6–1 Directory Server 5, 6, and 7 commands *(Continued)*

Version 5.2 Command	Version 6 Command	Version 7.0 Command	Description
`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)
`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

TABLE 6–1 Directory Server 5, 6, and 7 commands *(Continued)*

Version 5.2 Command	Version 6 Command	Version 7.0 Command	Description
`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 6–2 Directory Server 5.2, 6, and 7 Commands (Subcommands of the `directoryserver` Command)

Version 5.2 Command	Version 6 Command	Version 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

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 *Sun Directory Server Enterprise Edition 7.0 Reference*.

Password Policy

Directory Server7.0 implements a password policy that uses the standard object class and attributes described in the "Password Policy for LDAP Directories" Internet-Draft.

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.

To know about password policy compatibility issues, refer to “Password Policy Compatibility” in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*

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.

New Plug-Ins

The following plug-ins have been added:

```
cn=example,cn=ldbm database,cn=plugins,cn=config
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.

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 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 *Sun Directory Server Enterprise Edition 7.0 Developer's Guide*.

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.

Administration Utilities Previously Under *ServerRoot*

In Directory Server 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`

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`.

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 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`.

Online Help Previously Under *ServerRoot*/manual

Console online help files were previously located under *ServerRoot*`/manual`. The console online help files for Directory Server 7.0 are located under `/opt/SUNWdsee7/resources/dcc7app/html`.

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 6–3 Support for Plug-Ins

Directory Server 5.2 Plug-In Directory	Directory Server 7.0 Plug-In Directory	Remarks
ServerRoot/plugins/slapd/slapi/examples	*install-path*/examples	Sample plug-ins
ServerRoot/plugins/slapd/slapi/include	*install-path*/include	Plug-in header files

SNMP support is no longer handled within Directory Server. SNMP monitoring is now handled by the Java Enterprise System Monitoring Framework (Java ES MF). 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 monitoring Java ES MF monitoring, see "Enabling Java ES MF Monitoring" in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 6–4 Tools Previously Under *ServerRoot*/shared/bin

5.2 File	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	/opt/SUNWdsee/dsee6/bin/ldapcompare	Compare attribute value In Directory Server 7.0, you must install the SUNWldapcsdk-tools package to get this utility

TABLE 6–4 Tools Previously Under *ServerRoot*/shared/bin (Continued)

5.2 File	7.0 File	Purpose
ServerRoot/shared/bin/ldapdelete	/opt/SUNWdsee/dsee6/bin/ldapdelete	Delete directory entry In Directory Server 7.0, you must install the SUNWldapcsdk-tools package to get this utility
ServerRoot/shared/bin/ldapmodify	/opt/SUNWdsee/dsee6/bin/ldapmodify	Modify directory entry In Directory Server 7.0, you must install the SUNWldapcsdk-tools package to get this utility
ServerRoot/shared/bin/ldapsearch	/opt/SUNWdsee/dsee6/bin/ldapsearch	Find directory entries In Directory Server 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*/bin/repldisc	Discover replication topology

Note – The paths for ldapcompare, ldapdelete, ldapmodify, and ldapsearch are from the SUNWldapcsdk-tools package.

Certificate and Key Files

The following table shows the new locations of the certificate and key files in Directory Server 7.0.

TABLE 6–5 Location of Certificate and Key Files

5.2 File	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

TABLE 6–5 Location of Certificate and Key Files *(Continued)*

5.2 File	7.0 File	Remarks
ServerRoot/alias/secmod.db	*instance-path*/alias/secmod.db	Database file containing security modules such as PKCS#11

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 7.0 and these files have therefore been deprecated.

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 7.0 equivalents are described in "Command Line Changes" on page 87.

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 6–6 Instance-Specific Subdirectories

Version 5.2 Directory	Version 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

TABLE 6–6 Instance-Specific Subdirectories *(Continued)*

Version 5.2 Directory	Version 7.0 Directory	Remarks
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

◆ ◆ ◆ CHAPTER 7

Migrating Directory Proxy Server

There is no automatic migration path to move from a Directory Proxy Server 5.2 to Directory Proxy Server 7.0. Directory Proxy Server 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 7.0 to behave like a version 5.2 server for compatibility.

This chapter describes how the configuration properties in Directory Proxy Server 7.0 can be used to simulate a version 5.2 configuration.

The chapter covers the following topics:

- "Mapping the Global Configuration" on page 99
- "Mapping the Connection Pool Configuration" on page 103
- "Mapping the Groups Configuration" on page 104
- "Mapping the Properties Configuration" on page 112
- "Mapping the Events Configuration" on page 118
- "Mapping the Actions Configuration" on page 118
- "Configuring Directory Proxy Server 7.0 as a Simple Connection-Based Router" on page 119

Mapping the Global Configuration

Before you change the Directory Proxy Server 7.0 configuration, back up the configuration by using the `dpadm backup` command. For more information, see `dpadm`(1M).

You can configure Directory Proxy Server 7.0 by using the Directory Service Control Center (DSCC) or the `dpconf` command-line utility. For more information, see `dpconf`(1M).

Directory Proxy Server 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 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 Server 7.0 is configured, Directory Proxy Server 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 7.0. The following table maps the attributes of the `ids-proxy-sch-GlobalConfiguration` object class to the corresponding properties in Directory Proxy Server 7.0.

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 7.0 Property
`ids-proxy-con-Config-Name`	No equivalent
	Directory Proxy Server 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.
`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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.
`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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.
`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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.
`ids-proxy-con-include-logproperty`	No equivalent. For information on configuring logging in Directory Proxy Server 7.0, see Chapter 27, "Directory Proxy Server Logging," in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 7.0.

TABLE 7–1 Mapping of Security Configuration

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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
`ids-proxy-con-ssl-cert-required`	This feature can be achieved by setting the following server property: `$ dpconf set-server-prop allow-cert-based-auth:require`
`ids-proxy-con-ssl-cafile`	No equivalent

Managing Certificates

Directory Proxy Server 5.2 certificates were managed by using the `certreq` utility, or by using the console. In Directory Proxy Server 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 7.0.

For information about managing certificates in Directory Proxy Server 7.0, see Chapter 19, "Directory Proxy Server Certificates," in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 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.

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 7.0 properties.

TABLE 7–2 Mapping of Connection Pool Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 7.0 Property
`ids-proxy-con-connection-pool`	No equivalent

`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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

`ids-proxy-con-connection-pool-timeout`	`backendMaxReadWaitTimeInMilliSec`

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide* and Chapter 21, "Directory Proxy Server Distribution," in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 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 7–3 Mapping Between Group Attributes and Connection Handler Properties

Directory Proxy Server 5.2 Group Attribute	Directory Proxy Server 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:anonymous`
	`allowed-auth-methods:sasl`
	`allowed-auth-methods:simple`

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 Server 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 7.0 properties and describes how to set these properties by using the command line.

TABLE 7–4 Mapping of Network Group Attributes

Directory Proxy Server 5.2 Network Group Attribute	Directory Proxy Server 7.0 Property
`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 7–4 Mapping of Network Group Attributes *(Continued)*

Directory Proxy Server 5.2 Network Group Attribute	Directory Proxy Server 7.0 Property
`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*

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 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 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 7.0 connection handler property settings.

TABLE 7–5 Mapping of Bind Forwarding Attributes to Connection Handler Property Settings

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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`

Mapping Operation Forwarding

Operation forwarding determines how Directory Proxy Server 5.2 handles requests after a successful bind. In Directory Proxy Server 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. 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 7.0 request filtering properties.

TABLE 7–6 Mapping of Operation Forwarding Attributes to Request Filtering Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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`

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 *Sun Directory Server Enterprise Edition 7.0 Reference* and "To Configure Data Views With Hierarchy and a Distribution Algorithm" in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. For information on configuring a resource limits policy, see "Creating and Configuring a Resource Limits Policy" in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. 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 7.0 properties.

TABLE 7–7 Mapping of Search Request Control Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 7.0 properties.

TABLE 7–8 Mapping of Compare Request Control Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 7.0 Property
`ids-proxy-con-forbidden-compare`	`prohibited-comparable-attrs`
`ids-proxy-con-permitted-compare`	`allowed-comparable-attrs`

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. For information on configuring a resource limits policy, see “Creating and Configuring a Resource Limits Policy” in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 7.0 properties.

TABLE 7–9 Mapping of Search Request Modifying Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. For information about creating search data hiding rules, see "To Create Search Data Hiding Rules" in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. 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 7.0 properties.

TABLE 7–10 Mapping of Search Response Restriction Attributes

Directory Proxy Server 5.2 Attributes	Directory Proxy Server 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*
`ids-proxy-con-search-reference`	No direct equivalent. Search continuation references are governed by the `referral-policy` property of the resource limits policy

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 7.0 resource limits properties.

TABLE 7–11 Mapping of Referral Configuration Attributes to Resource Limits Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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`

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 7.0 resource limits properties.

TABLE 7–12 Mapping of Server Load Configuration Attributes to Resource Limits Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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`

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 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 7.0 functionality.

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
```

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 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 7.0. For information about creating search data hiding rules, see "To Create Search Data Hiding Rules" in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

TABLE 7–13 Mapping of Server Load Configuration Attributes to Resource Limits Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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*

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 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 7–14 Mapping of `ids-proxy-sch-LDAPServer` Attributes to Data Source Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 7.0 Property
`ids-proxy-con-host`	`ldap-address`

TABLE 7–14 Mapping of `ids-proxy-sch-LDAPServer` Attributes to Data Source Properties *(Continued)*

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 7.0 Property
`ids-proxy-con-port`	`ldap-port`
`ids-proxy-con-sport`	`ldaps-port`
`ids-proxy-con-supported-version`	No equivalent Directory Proxy Server 7.0 supports LDAP v3 backends for both version 2 and version 3 clients. Directory Proxy Server 7.0 supports the proxy authorization control version 1 and version 2.
`ids-proxy-con-use-version`	No equivalent Directory Proxy Server 7.0 supports LDAP v3 backends for both v2 and v3 clients. Directory Proxy Server 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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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=`

In Directory Proxy Server 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*. 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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

Monitoring Backend Servers

To monitor the state of its backend LDAP servers, Directory Proxy Server 5.2 performs an anonymous search operation on the RootDSE of each server every ten seconds. Directory Proxy Server 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 7.0.

TABLE 7–15 Mapping of Search Size Limit Attributes

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 7.0 Property
`ids-proxy-con-Size-Limit`	`search-size-limit`
`ids-proxy-con-Dn-One`	`one-level-search-base-dn`
`ids-proxy-con-Dn-Sub`	No equivalent

Log Property

The logging functionality available in Directory Proxy Server 5.2 differs substantially from the functionality available in Directory Proxy Server 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 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 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 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 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 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 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 7.0.

TABLE 7–16 Version 5.2 and Version 7.0 Log Functionality

Directory Proxy Server 5.2 Attribute	Purpose	Directory Proxy Server 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
`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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

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 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 7.0.

TABLE 7–17 Mapping Between Event Attributes and Connection Handler Properties

Directory Proxy Server 5.2 Attribute	Directory Proxy Server 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`
`ids-proxy-con-bind-sasl`	`allowed-auth-methods:sasl`

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 Server 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 7.0, see "Creating, Configuring, and Deleting Connection Handlers" in *Sun Directory Server Enterprise Edition 7.0 Administration Guide*.

Configuring Directory Proxy Server 7.0 as a Simple Connection-Based Router

It is possible to configure an instance of Directory Proxy Server 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 *Sun Directory Server Enterprise Edition 7.0 Administration Guide*

◆ ◆ ◆ CHAPTER 8

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.

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 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:

Migration Overview

Migration from Identity Synchronization for Windows version 1.1 to version 6.0 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 by using the configuration and connector states you backed up.

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

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.
- Read Chapter 1, “Understanding the Product,” in *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide* 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 logs after completing the migration process. For more information, see “Checking the Logs” on page 160.
- **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" on page 132.

- All other attribute changes made during the migration process (at any directory source) will be synchronized after the migration process.

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:

- **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" on page 123.

  The exported XML document contains the directory deployment topology and enough information to configure the Identity Synchronization for Windows 6.0 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" on page 130.
- **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 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" on page 132 for detailed information.

Note – These utilities facilitate the migration of Identity Synchronization for Windows version 1.1 to version 6.0. 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.

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 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 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 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.

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 *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*. The `export11cnf` utility exports the current configuration into the file specified in the argument of the `-f` option.

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 -->
```

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 8–1 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
```

EXAMPLE 8–1 Sample Export Configuration File *(Continued)*

```
            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"
```

EXAMPLE 8–1 Sample Export Configuration File *(Continued)*

```
   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
```

EXAMPLE 8–1 Sample Export Configuration File *(Continued)*

```
        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"
```

EXAMPLE 8–1 Sample Export Configuration File *(Continued)*

```
                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"
```

EXAMPLE 8–1 Sample Export Configuration File *(Continued)*

```
                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.

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.

▼ 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 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 *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*. For more information about using `checktopics`, see "Checking for Undelivered Messages" on page 130.

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.

▼ 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`.**

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, 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.

Migrating Your System

This section provides instructions for migrating a single-host deployment to version Identity Synchronization for Windows 6.0.

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.

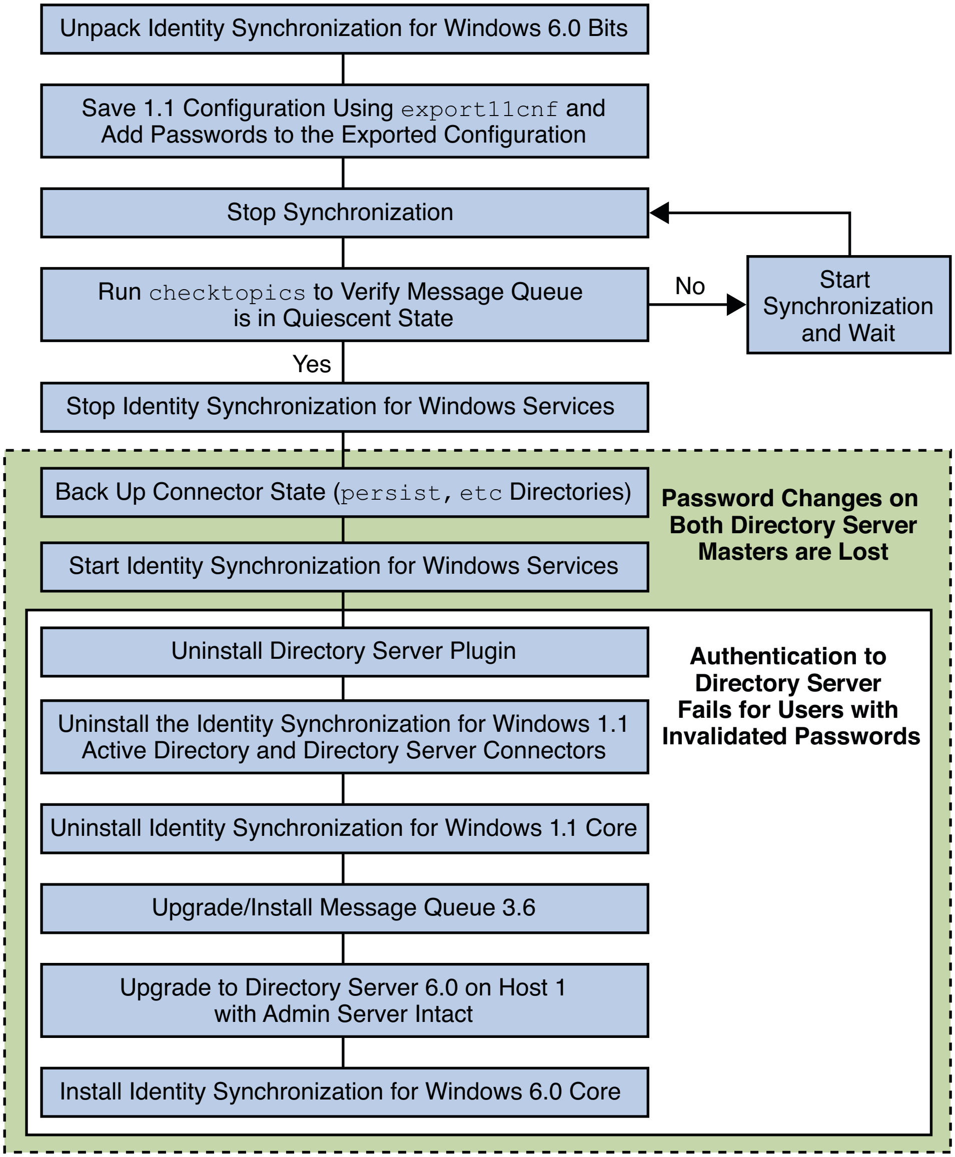

Unpack Identity Synchronization for Windows 6.0 Bits
Save 1.1 Configuration Using export11cnf and Add Passwords to the Exported Configuration
Stop Synchronization
Run checktopics to Verify Message Queue is in Quiescent State
No
Start Synchronization and Wait
Yes
Stop Identity Synchronization for Windows Services
Back Up Connector State (persist, etc Directories)
Start Identity Synchronization for Windows Services
Password Changes on Both Directory Server Masters are Lost
Uninstall Directory Server Plugin
Uninstall the Identity Synchronization for Windows 1.1 Active Directory and Directory Server Connectors
Uninstall Identity Synchronization for Windows 1.1 Core
Upgrade/Install Message Queue 3.6
Upgrade to Directory Server 6.0 on Host 1 with Admin Server Intact
Install Identity Synchronization for Windows 6.0 Core
Authentication to Directory Server Fails for Users with Invalidated Passwords

FIGURE 8–1 Migrating a Single-Host Deployment

Preparing for Migration

Use the following procedure to prepare for migration to version 6.0.

▼ Preparing to migrate from version 1.1, and 1.1 SP1, to version 6.0

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" on page 124.

   ```
   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" on page 124.

4. **Stop synchronization as described in "Starting and Stopping Synchronization" in** ***Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*****.**

5 **Verify that your system is in a stable state.**

From the `migration` directory, execute `checktopics` as described in "Using the checktopics Utility" on page 130. 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 *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.**

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.**

i. **Open the Registry Editor by executing** `regedt32.exe`**.**

ii. **Select the** `HKEY_LOCAL_MACHINE` **window.**

iii. **Navigate to the** `SOFTWARE\\Sun Microsystems\\PSW\\1.1` **node.**

iv. **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 *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.**

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, 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 *Sun Directory Server Enterprise Edition 7.0 Release Notes*.

▼ 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=config
```

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" on page 141.

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" on page 141

---

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*`\>`**).**

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 7.0. For more information, see Chapter 2, "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 7.0. For more information on migrating configuration data and user data, see "Using `dsmig` to Migrate Configuration Data" on page 46 and "Using `dsmig` to Migrate User Data" on page 49 respectively.

   The Directory Server upgrade preserves your current Directory Server configuration and database.

Installing Identity Synchronization for Windows 6.0

Use the following steps to install the Identity Synchronization for Windows 6.0 components.

▼ To install the Identity Synchronization for Windows 6.0 components:

1. **Install Identity Synchronization for Windows Core. For more information, see "Installing Core" in *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.**

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 *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.

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 *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*

---

4 **Install the Identity Synchronization for Windows 6.0 Connectors. For more information, see "Installing Connectors" in *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.**

5 **If you did not select the Configure Identity Synchronization for Windows 6.0 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 *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.**

6 **Stop Identity Synchronization for Windows services (daemons) as described in "Starting and Stopping Services" in *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.**

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.**

i. **Open the Registry Editor by executing** `regedt32.exe`**.**

ii. **Select the** `HKEY_LOCAL_MACHINE` **window.**

iii. **Navigate to the** `SOFTWARE\\Sun Microsystems\\Sun Java(TM) System Identity Synchronization for Windows\\1.1` **node.**

iv. **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** `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 page 133.**

- **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 *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.**

b. **Start synchronization as described in “Starting and Stopping Synchronization” in *Sun Java System Identity Synchronization for Windows 6.0 Installation and Configuration Guide*.**

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 installation. Use the Identity Synchronization for Windows Console to configure your log settings.

What to Do if the 1.1 Uninstallation Fails

If the version 6.0 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" on page 141
- "Manually Uninstalling 1.1 Core and Instances from Windows 2000" on page 146
- "Manually Uninstalling a 1.1 Instance from Windows NT" on page 151

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.

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`.

▼ 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" on page 141.**

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” on page 141.

- `<compid\>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\>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 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/`

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`.

To uninstall Core from a Windows 2000 machine:

1 **Stop all Identity Synchronization for Windows Java processes using one of the following methods:**

- **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.**
- **Open a Command Prompt window and type the following command.**

```
net stop "Sun ONE Identity Synchronization for Windows"
```

- **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:**

- **In the Services window, right-click on iMQ Broker in the right pane and select Stop.**

- **From a Command Prompt, type the following command.**

  ```
  net stop "iMQ Broker"
  ```

- **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.
     - 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” on page 146.

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\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 Identity Synchronization for Windows`
  - `...\Services\Sun ONE 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” on page 146.

- `<compid\>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 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.

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:**

   - **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.**
   - **Open a Command Prompt window and type the following command:**

     ```
     net stop “Sun ONE Identity Synchronization for Windows”
     ```

   - **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:**

   - **In the Services window, right-click on Sun ONE NT Change Detector Service in the right pane and select Stop.**
   - **Open a Command Prompt window and type the following command:**

     ```
     net stop “Sun ONE NT Change Detector Service”
     ```

- **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" on page 151.

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\\Ident 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 Identity Synchronization for Windows`
  - `...\\Services\\Sun ONE 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" on page 146.

- `<compid\>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" on page 151 before proceeding to "Manually Uninstalling a 1.1 Instance from Windows NT" on page 151.

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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.**

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" on page 156
- "Multi-Host Deployment with Windows NT" on page 157

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 8–1 and Figure 8–2 illustrate how the Identity Synchronization for Windows components are distributed between the two hosts.

TABLE 8–1 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.

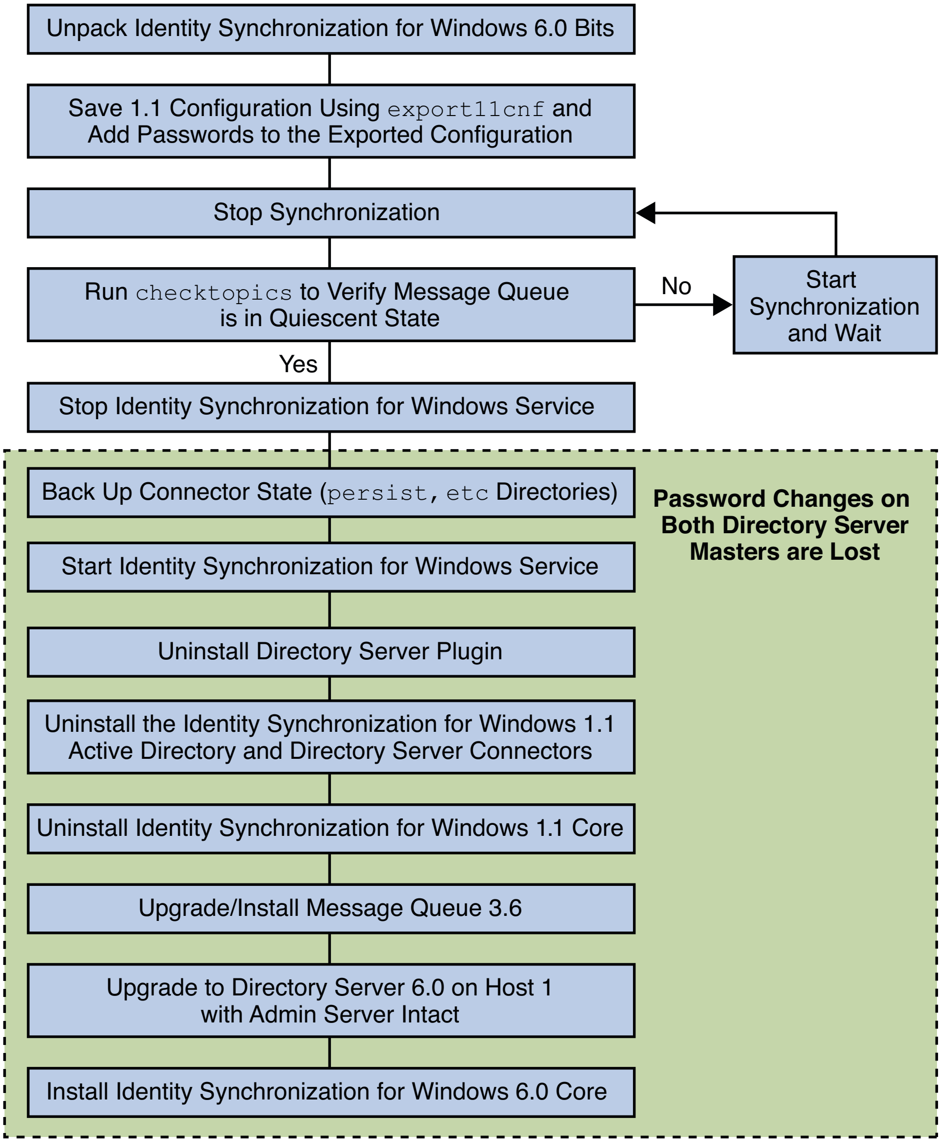
Unpack Identity Synchronization for Windows 6.0 Bits
Save 1.1 Configuration Using export11cnf and Add Passwords to the Exported Configuration
Stop Synchronization
Run checktopics to Verify Message Queue is in Quiescent State
No
Start Synchronization and Wait
Yes
Stop Identity Synchronization for Windows Service
Back Up Connector State (persist, etc Directories)
Password Changes on Both Directory Server Masters are Lost
Start Identity Synchronization for Windows Service
Uninstall Directory Server Plugin
Uninstall the Identity Synchronization for Windows 1.1 Active Directory and Directory Server Connectors
Uninstall Identity Synchronization for Windows 1.1 Core
Upgrade/Install Message Queue 3.6
Upgrade to Directory Server 6.0 on Host 1 with Admin Server Intact
Install Identity Synchronization for Windows 6.0 Core

FIGURE 8–2 Migrating a Multi-Master Replication Deployment

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 8–2 and Figure 8–3 illustrate how the Identity Synchronization for Windows components are distributed between the three hosts.

TABLE 8–2 Multi-Host Deployment

Host 1	Host 2	Host 3
Directory Server with configuration repository	Directory Server for synchronized users	Windows NT Connector
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 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" on page 46 and "Using `dsmig` to Migrate User Data" on page 49 respectively.

Directory Server at host2 contains the data and the Directory Server plugin. When you migrate Directory Server to 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 8–3 illustrates the process for migrating Identity Synchronization for Windows for a multi-host deployment

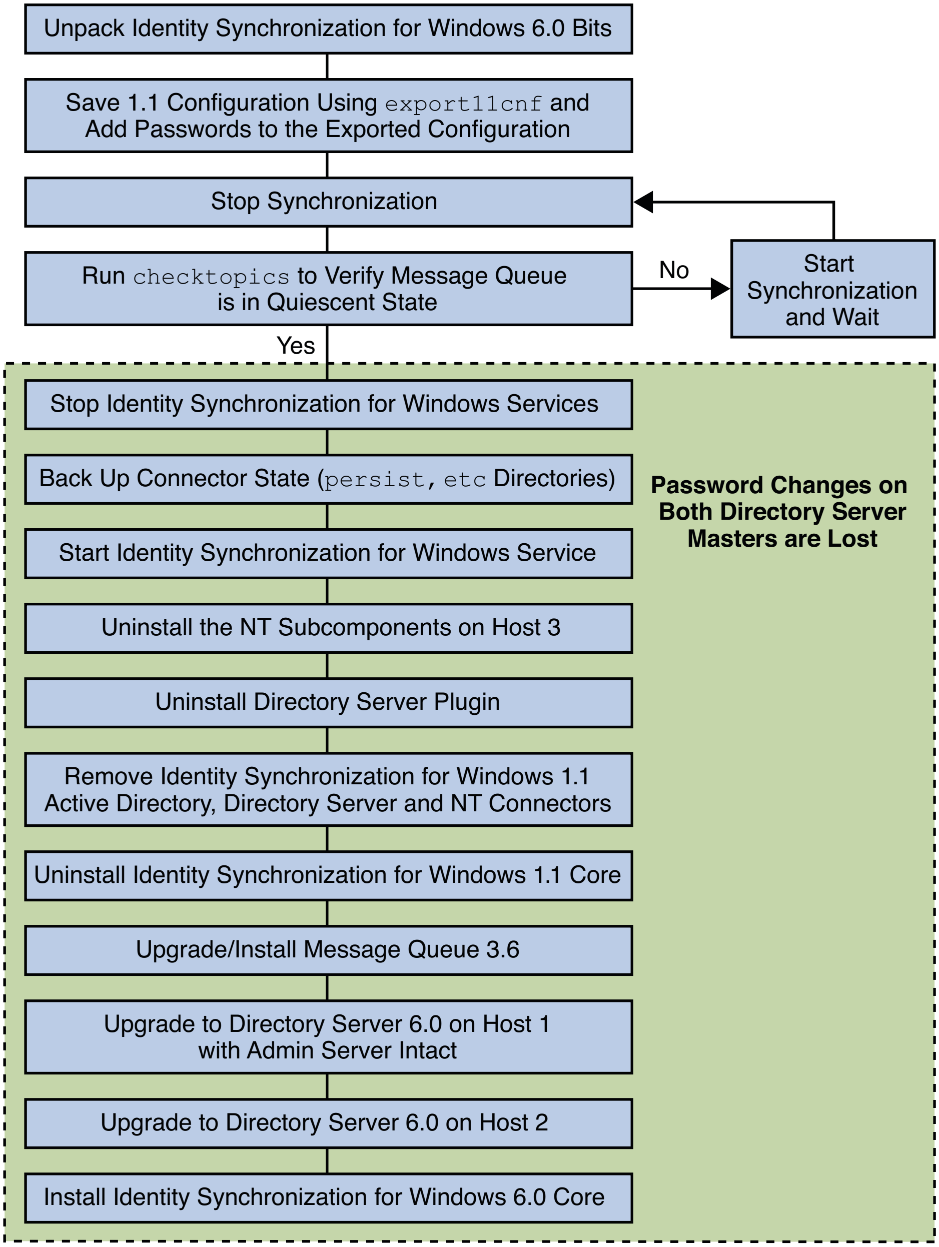
Unpack Identity Synchronization for Windows 6.0 Bits
Save 1.1 Configuration Using export11cnf and Add Passwords to the Exported Configuration
Stop Synchronization
Run checktopics to Verify Message Queue is in Quiescent State
No
Start Synchronization and Wait
Yes
Stop Identity Synchronization for Windows Services
Back Up Connector State (persist, etc Directories)
Start Identity Synchronization for Windows Service
Uninstall the NT Subcomponents on Host 3
Uninstall Directory Server Plugin
Remove Identity Synchronization for Windows 1.1 Active Directory, Directory Server and NT Connectors
Uninstall Identity Synchronization for Windows 1.1 Core
Upgrade/Install Message Queue 3.6
Upgrade to Directory Server 6.0 on Host 1 with Admin Server Intact
Upgrade to Directory Server 6.0 on Host 2
Install Identity Synchronization for Windows 6.0 Core
Password Changes on Both Directory Server Masters are Lost

FIGURE 8–3 Migrating a Multi-Host Deployment with Windows NT

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. This is why checking the logs is the last step of the migration procedure.

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