

IBM Tivoli Directory Server



Installation and Configuration Guide

Version 6.1

IBM Tivoli Directory Server



Installation and Configuration Guide

Version 6.1

Note

Before using this information and the product it supports, read the general information under Appendix S, "Notices," on page 201.

This edition applies to version 6, release 1, of IBM Tivoli Directory Server and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this book

IBM® Tivoli® Directory Server is the IBM implementation of Lightweight Directory Access Protocol for supported Windows®, AIX®, Linux® (xSeries®, zSeries®, pSeries®, and iSeries™), Solaris, and Hewlett-Packard UNIX® (HP-UX) operating systems.

IBM Tivoli Directory Server version 6.1 Installation and Configuration Guide describes how to install, configure, and uninstall IBM Tivoli Directory Server version 6.1, and how to upgrade to the 6.1 version from previous releases of the product. For detailed information about supported operating system versions, as well as other required software and hardware, see *IBM Tivoli Directory Server version 6.1 System Requirements*.

Intended audience for this book

This book is for administrators who will install and configure IBM Tivoli Directory Server version 6.1.

Readers need to know how to use the operating system on which IBM Tivoli Directory Server will be installed.

Publications

This section lists publications in the IBM Tivoli Directory Server version 6.1 library and related documents. The section also describes how to access Tivoli publications online and how to order Tivoli publications.

IBM Tivoli Directory Server version 6.1 library

The following documents are available in the IBM Tivoli Directory Server version 6.1 library:

- *IBM Tivoli Directory Server Version 6.1 What's New for This Release*, SC23-6539-00
Provides information about the new features in the IBM Tivoli Directory Server Version 6.1 release.
- *IBM Tivoli Directory Server Version 6.1 Quick Start Guide*, GI11-8172-00
Provides help for getting started with IBM Tivoli Directory Server 6.1. Includes a short product description and architecture diagram, as well as a pointer to the product Information Center and installation instructions.
- *IBM Tivoli Directory Server Version 6.1 System Requirements*, SC23-7835-00
Contains the minimum hardware and software requirements for installing and using IBM Tivoli Directory Server 6.1 and its related software. Also lists the supported versions of corequisite products such as DB2® and GSKit.
- *IBM Tivoli Directory Server Version 6.1 Installation and Configuration Guide*, GC32-1560-00
Contains complete information for installing, configuring, and uninstalling IBM Tivoli Directory Server. Includes information about upgrading from a previous version of IBM Tivoli Directory Server.
- *IBM Tivoli Directory Server Version 6.1 Administration Guide*, GC32-1564-00
Contains instructions for performing administrator tasks through the Web Administration Tool and the command line.

- *IBM Tivoli Directory Server Version 6.1 Command Reference*, SC23-7834-00
Describes the syntax and usage of the command-line utilities included with IBM Tivoli Directory Server.
- *IBM Tivoli Directory Server Version 6.1 Server Plug-ins Reference*, GC32-1565-00
Contains information about writing server plug-ins.
- *IBM Tivoli Directory Server Version 6.1 Programming Reference*, SC23-7836-00
Contains information about writing Lightweight Directory Access Protocol (LDAP) client applications in C and Java™.
- *IBM Tivoli Directory Server Version 6.1 Performance Tuning and Capacity Planning Guide*, SC23-7836-00
Contains information about tuning the directory server for better performance. Describes disk requirements and other hardware needs for directories of different sizes and with various read and write rates. Describes known working scenarios for each of these levels of directory and the disk and memory used; also suggests rough rules of thumb.
- *IBM Tivoli Directory Server Version 6.1 Problem Determination Guide*, GC32-1568-00
Contains information about possible problems and corrective actions that can be tried before contacting IBM Software Support.
- *IBM Tivoli Directory Server Version 6.1 Messages Guide*, GC32-1567-00
Contains a list of all informational, warning, and error messages associated with IBM Tivoli Directory Server 6.1.
- *IBM Tivoli Directory Server Version 6.1 White Pages*, SC23-7837-00
Describes the Directory White Pages application, which is provided with IBM Tivoli Directory Server 6.1. Contains information about installing, configuring, and using the application for both administrators and users.

Related publications

The following documents also provide useful information:

- *Java Naming and Directory Interface™ 1.2.1 Specification* on the Sun Microsystems Web site at <http://java.sun.com/products/jndi/1.2/javadoc/index.html>.
IBM Tivoli Directory Server Version 6.1 uses the Java Naming and Directory Interface (JNDI) client from Sun Microsystems. See this document for information about the JNDI client.

Accessing terminology online

The *Tivoli Software Glossary* includes definitions for many of the technical terms related to Tivoli software. The *Tivoli Software Glossary* is available at the following Tivoli software library Web site:

<http://publib.boulder.ibm.com/tividd/glossary/tivoliglossarymst.htm>

The IBM Terminology Web site consolidates the terminology from IBM product libraries in one convenient location. You can access the Terminology Web site at the following Web address:

<http://www.ibm.com/software/globalization/terminology>

Accessing publications online

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli Information Center Web site at <http://publib.boulder.ibm.com/tividd/td/link/tdprodlist.html>.

In the Tivoli Information Center window, click **Tivoli product manuals**. Click the letter that matches the first letter of your product name to access your product library. For example, click **M** to access the IBM Tivoli Monitoring library or click **O** to access the IBM Tivoli OMEGAMON® library.

Note: If you print PDF documents on other than letter-sized paper, set the option in the **File → Print** window that allows Adobe® Reader to print letter-sized pages on your local paper.

Ordering publications

You can order many Tivoli publications online at <http://www.elink.ibm.link.ibm.com/public/applications/publications/cgibin/pbi.cgi>.

You can also order by telephone by calling one of these numbers:

- In the United States: 800-879-2755
- In Canada: 800-426-4968

In other countries, contact your software account representative to order Tivoli publications. To locate the telephone number of your local representative, perform the following steps:

1. Go to <http://www.elink.ibm.link.ibm.com/public/applications/publications/cgibin/pbi.cgi>.
2. Select your country from the list and click **Go**.
3. Click **About this site** in the main panel to see an information page that includes the telephone number of your local representative.

Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

For additional information, see Appendix R, “Accessibility features for IBM Tivoli Directory Server,” on page 199.

Tivoli technical training

For Tivoli technical training information, refer to the following IBM Tivoli Education Web site at <http://www.ibm.com/software/tivoli/education>.

Support information

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides the following ways for you to obtain the support you need:

- IBM Support Assistant: You can search across a large collection of known problems and workarounds, Technotes, and other information at <http://www.ibm.com/software/support/isa>.
- Obtaining fixes: You can locate the latest fixes that are already available for your product.

- **Contacting IBM Software Support:** If you still cannot solve your problem, and you need to work with someone from IBM, you can use a variety of ways to contact IBM Software Support.

For more information about resolving problems, see the *IBM Tivoli Directory Server Version 6.1 Problem Determination Guide*.

Conventions used in this book

This book uses several conventions for special terms and actions, operating system-dependent commands and paths, and margin graphics.

Typeface conventions

This book uses the following typeface conventions:

Bold

- Lowercase commands and mixed case commands that are otherwise difficult to distinguish from surrounding text
- Interface controls (check boxes, push buttons, radio buttons, spin buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, containers, menu choices, menu names, tabs, property sheets), labels (such as **Tip:**, and **Operating system considerations:**)
- Keywords and parameters in text

Italic

- Citations (examples: titles of books, diskettes, and CDs)
- Words defined in text (example: a nonswitched line is called a *point-to-point line*)
- Emphasis of words and letters (words as words example: "Use the word *that* to introduce a restrictive clause."; letters as letters example: "The LUN address must start with the letter *L*.")
- New terms in text (except in a definition list): a *view* is a frame in a workspace that contains data.
- Variables and values you must provide: ... where *myname* represents....

Monospace

- Examples and code examples
- File names, programming keywords, and other elements that are difficult to distinguish from surrounding text
- Message text and prompts addressed to the user
- Text that the user must type
- Values for arguments or command options

Operating system-dependent variables and paths

This book uses the UNIX convention for specifying environment variables and for directory notation.

When using the Windows command line, replace *\$variable* with *% variable%* for environment variables and replace each forward slash (*/*) with a backslash (**) in directory paths. The names of environment variables are not always the same in the Windows and UNIX environments. For example, *%TEMP%* in Windows environments is equivalent to *\$TMPDIR* in UNIX environments.

Note: If you are using the bash shell on a Windows system, you can use the UNIX conventions.

Chapter 1. Quick installation path for a server

To follow the simplest path through installation of a server, use the checklist in this chapter. If you are upgrading from a previous release, do not use this checklist. Instead, see Chapter 3, “Upgrading from previous releases,” on page 11 for instructions. This procedure uses the Typical installation path and creates the default directory server instance. If you want more control over the features you install and the directory server instance you create, do not use this procedure.

- ___ 1. Decide what kind of server or servers you want to install on this computer. See Chapter 2, “Installation, instance creation, configuration, and migration overview,” on page 3 for information.
- ___ 2. Be sure that you have the minimum required hardware and software. See *IBM Tivoli Directory Server version 6.1 System Requirements* for information.
- ___ 3. Plan the organization of your database if you want a full server. See Appendix C, “Configuration planning,” on page 159 for information.
- ___ 4. If you want to use a language other than English, install the language pack for your language. See Chapter 4, “Installing language packs using the InstallShield GUI,” on page 17 for instructions.

Note: You can install a language pack after installing IBM Tivoli Directory Server, but the Instance Administration Tool and Configuration Tool panels, as well as server messages, will display in English until you install a language pack.

- ___ 5. Install IBM Tivoli Directory Server using the InstallShield GUI. Select the **Typical** rather than the **Custom** installation path.
For Windows platforms, see “Before you install” on page 25. and “Installing with the Typical installation path on Windows systems” on page 27.
For AIX, Linux, Solaris, and HP-UX platforms, see “Before you install” on page 25 and “Installing with the Typical installation path on AIX, Linux, Solaris, and HP-UX systems” on page 35.
- ___ 6. On Windows systems, if the system restarts, log on as the user you were logged on as during installation.
- ___ 7. When the Instance Administration Tool starts, you have the option to create additional directory server instances. (You have already created the default directory server instance.) In addition, you can use the **Configure** button in the Instance Administration Tool to start the Configuration Tool and view the configuration status of the default instance or change the password for the primary administrator DN. See Chapter 12, “Creating and administering instances,” on page 93 for information about using the Instance Administration Tool.
- ___ 8. Optionally, verify the installation and configuration by loading the sample LDIF file into the database.
See Appendix N, “Loading the sample LDIF file into the database,” on page 187 for information.
- ___ 9. Start the directory server instance and, if you installed the Web Administration Tool, start it.

See Chapter 14, “After you install and configure,” on page 137 for information.

- 10. See the *IBM Tivoli Directory Server Version 6.1 Administration Guide* for information about setting up and using the server and the Web Administration Tool.

Chapter 2. Installation, instance creation, configuration, and migration overview

This chapter briefly describes migration, installation, instance creation, and configuration for IBM Tivoli Directory Server version 6.1.

Before you begin: .zip, .tar, and .iso files

The IBM Tivoli Directory Server product is available in three types of files: .zip, .tar, and .iso. (There are .iso files that can be burned onto CD-ROMs, and there are .zip and .tar files that correspond to each .iso file.)

If you downloaded .zip files, uncompress the files after you download them to your computer. Be sure to uncompress the files into a path that has no spaces in the name. Uncompress all .zip files in the same directory.

If you downloaded .tar (or Tape ARchive) files, uncompress the files after you download them. Uncompress all .tar files in the same directory.

The .iso file versions of the product are used to burn installation CD-ROMs that can then be used in the installation process. The .iso files are images that must be processed through a CD-ROM burner program to create CD-ROMs. When you create the CD-ROMs, be sure that you do not make data CDs of the .iso files. Select the option that unencapsulates the data from the .iso files and burns the files on the CD-ROM.

For information about the directory structure after you uncompress the file on different operating systems, see Appendix A, "Directory structure of downloaded files," on page 147.

After you process the downloaded files, you can install IBM Tivoli Directory Server using the installation instructions in the appropriate installation chapter.

Upgrading from a previous release

If you have a previous version of IBM Tivoli Directory Server, upgrading is necessary to preserve any changes that you have made to the schema definitions and to preserve your directory server configuration. Previous versions include the following:

- IBM Directory Server 4.1, 5.1, or 5.1 for Linux iSeries and pSeries
- IBM Tivoli Directory Server 5.2 or 6.0

In addition, it might be necessary to upgrade your operating system and your DB2 version. See *IBM Tivoli Directory Server Version 6.1 System Requirements* for information about supported operating system and DB2 versions.

If you want to upgrade from an earlier version of IBM Tivoli Directory Server, see Chapter 3, "Upgrading from previous releases," on page 11 for instructions.

Installation

When you install IBM Tivoli Directory Server on a computer, you can install one or more features that allow the computer to function as a client, a proxy server, a full server, or a console for managing servers. In addition, if you want a server to display messages in a language other than English, you must also install a language pack.

IBM Tivoli Directory Server 6.1 has several ways of installing. You can install using an InstallShield graphical user interface (GUI) or you can use installation tools for your operating system. Instructions for using the InstallShield GUI are found in Chapter 6, “Installing IBM Tivoli Directory Server using the InstallShield GUI,” on page 25.

For information about platform-specific installation methods, see the installation chapter for the operating system on which you are installing. For example, see Chapter 7, “Installing IBM Tivoli Directory Server using AIX utilities,” on page 49.

Before you install, see *IBM Tivoli Directory Server version 6.1 System Requirements* for hardware and software requirements.

To help you decide what you want to install, the following sections describe the choices on the InstallShield GUI main panel.

Client

The client Software Development Kit (SDK) provides the tools required to develop C-language LDAP applications. The following are provided:

- Client libraries that provide a set of C-language APIs
- C header files for building and compiling LDAP applications
- Sample programs in source form
- Executable versions of the sample programs

The client can be installed alone, and it must be installed when you install a server. IBM Tivoli Directory Server 6.1 clients can coexist on the same computer with another client that is version 4.1, 5.1, 5.2, or 6.0.

Java client

The Java client includes the Java SDK version 1.5, IBM Tivoli Directory Server JNDI Toolkit, and Java client utilities. The Java client is required if you are installing a server.

Server

You can install two types of servers: the directory server and the proxy server. You can install both types of servers on one computer and create one or more instances of the types of servers you have installed. These are called directory server instances. Each directory server instance can function as either a proxy server or a full server, but not both.

An IBM Tivoli Directory Server 6.1 server requires that the version 6.1 client and the Java client also be installed. In addition, the server can coexist on the same computer with another client that is version 4.1, 5.1, 5.2, or 6.0, or with a version 6.0 server.

Proxy server

The *proxy* server is an LDAP server that acts as a front-end to the directory. It authenticates the client with respect to the entire directory and routes requests to certain other directory servers. This improves performance and provides a unified view of the directory to the client. The proxy server can also be used at the front-end of a server cluster or a distributed directory for providing failover and load balancing.

The proxy server is configured with information that allows it to connect to each of the directory servers for which it is the proxy server. It routes each request to one or more target servers. The proxy server can load balance among target servers that are equally capable of handling an operation; it performs transparent failover to alternate servers if a server is busy or down.

To install a proxy server, you do not need to have DB2 installed on the computer.

This book contains information about installing a proxy server and creating and configuring a proxy server instance. For additional information about proxy servers, including information about setting up a proxy server instance as a proxy for other directory server instances, see the *IBM Tivoli Directory Server version 6.1 Administration Guide*.

Note: If you downloaded IBM Tivoli Directory Server 6.1 from Passport Advantage, you are entitled to use the proxy server. If you obtained IBM Tivoli Directory Server 6.1 from another Web site, you are entitled to use the proxy server for evaluation purposes only. To be entitled to full use of the proxy server, download IBM Tivoli Directory Server 6.1 from the Passport Advantage Web site.

Directory server

The directory server is an LDAP server; it is configured with a database instance, and it processes client requests that require accessing entries stored in the database. DB2 is required for a directory server.

Web Administration Tool

You can use the Web Administration Tool as a console to administer LDAP servers, which can be of the following types:

- IBM Tivoli Directory Server 6.1
- IBM Tivoli Directory Server 6.0
- IBM Tivoli Directory Server 5.2
- IBM Directory Server 5.1
- i5/OS® V5 R4
- z/OS® V1 R6 Integrated Security Services
- z/OS V1 R8 Integrated Security Services
- z/OS V1 R8 IBM Tivoli Directory Server

Note: For z/OS, only management of directory data, but not server administration, is supported.

Embedded WebSphere Application Server

A Web application server is required to run the Web Administration Tool. Embedded WebSphere® Application Server 6.1.0.7, is provided with IBM Tivoli

Directory Server. For information about other Web application servers that are supported, see *IBM Tivoli Directory Server version 6.1 System Requirements*.

DB2

IBM DB2 is required for the directory server because directory data is stored in a DB2 database. (DB2 is not required for the proxy server.) IBM DB2 Enterprise Server Edition (ESE) 9.1 is included with IBM Tivoli Directory Server for all operating systems. However, other versions are supported. See *IBM Tivoli Directory Server version 6.1 System Requirements* to find out which versions of DB2 are supported for your operating system.

Note: Remote databases are **not** supported.

Global Security Kit (GSKit)

Tivoli Global Security Kit (GSKit) is an optional software package that is required only if Secure Sockets Layer (SSL) Security or Transport Layer Security (TLS) is required.

IBM Tivoli Directory Server alone does not provide the capability for SSL connections from IBM Tivoli Directory Server clients. You can enable the SSL feature by installing the IBM GSKit package. The GSKit package includes SSL support and associated RSA Security, Inc. technology.

OpenSSL is included in GSKit and may be used for cryptographic operations (as per the OpenSSL license requirements).

The IBM Tivoli Directory Server server can work without the GSKit installed. In this case the server accepts only non-secure connections from directory clients. Similarly, the IBM Tivoli Directory Server client can work without the GSKit installed. Install GSKit on both the server and the client if you want to use secure connections.

Version 7.0.3.30 of GSKit is provided with IBM Tivoli Directory Server 6.1.

IBM Tivoli Directory Integrator

If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:

- Use the **idsupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).

You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.

- Use Simple Network Management Protocol (SNMP).
- Use the Active Directory synchronization feature.

You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

Version 6.1.1 of IBM Tivoli Directory Integrator is provided with IBM Tivoli Directory Server 6.1. The copy of IBM Tivoli Directory Integrator provided includes the IBM Tivoli Directory Integrator Server and the IBM Tivoli Directory Integrator Administration and Monitoring Console. The IBM Tivoli Directory Integrator Configuration Editor, which is used to develop assembly lines and event handlers, is not included as part of IBM Tivoli Directory Server. If you want the full version

of IBM Tivoli Directory Integrator, purchase IBM Tivoli Directory Integrator 6.1.1, which includes all the features of IBM Tivoli Directory Integrator.

Note: IBM Tivoli Directory Integrator is not provided for Solaris X64 or HP-UX Integrity systems.

Instance creation and database configuration

During or after server installation, you must perform the following configuration tasks before you can use the server:

- Create user IDs for the directory server instance owner and, for some installations, the database instance owner and the database owner. This can be done through the Instance Administration Tool, which runs during installation if you use the Typical installation path of the InstallShield GUI or after installation if you use the Custom installation path.
- Create a directory server instance. This can be done during or after installation. When you install IBM Tivoli Directory Server using the Typical path of the InstallShield GUI, you create the default directory server instance, for which most of the settings are predefined. When you install IBM Tivoli Directory Server using some other method (such as the Custom installation path of the InstallShield GUI or operating system utility installation), you can create a directory server instance with settings that you define.
- Set the IBM Tivoli Directory Server primary administrator distinguished name (DN) and password for the directory server instance. This operation can be compared to defining the root user ID and password on a UNIX system.
- If the directory server instance is not a proxy server, configure the database. You do not need a database for a proxy server instance.

You can have multiple directory server instances on one computer, and they can be a mixture of proxy server and full server instances. The files for each directory server instance are stored in a path that includes the directory server instance name.

During or after successful installation of a server, if you used the InstallShield GUI to install, the Instance Administration Tool runs so that you can create a directory server instance. If you did not use the InstallShield GUI to install, you must start the Instance Administration Tool manually or use the **idsicrt** command-line utility.

When you create a non-proxy directory server instance, a database instance is also created if the directory server is installed on the computer. By default, the directory server instance and the database instance have the same name. The name must match the name of an existing user on the system that meets certain qualifications, described in Appendix D, “Setting up users and groups: directory server instance owner, database instance owner, and database owner,” on page 161.

You can also use the Instance Administration Tool for the following tasks:

- Creating user IDs for the directory server instance owner, database instance owner, and database owner.
- Making a copy of a Tivoli Directory Server 6.1 directory server instance that is on the same computer or on another computer
- Migrating server schema and configuration files from a previous release to an IBM Tivoli Directory Server 6.1 instance
- Editing the TCP/IP settings for an instance
- Viewing all instances on the computer

- Viewing details about a particular instance
- Deleting an instance

If you prefer to use the command line, all the tasks in the list can be done with the following command-line utilities:

- **idsadduser** creates the DB2 and directory server instance owner and groups.
- **idsideploy** creates a directory server instance from an existing directory server instance.
- **idsimigr** migrates the schema and configuration files from a previous release to IBM Tivoli Directory Server 6.1 versions of these files.
- **idssethost** sets the IP addresses the directory server instance binds to.
- **idssetport** sets the ports the directory server instance binds to.
- **idsilist** lists the directory server instances on the computer and can list detailed information about each instance.
- **idsidrop** removes a directory server instance.

Database configuration and server setup

If you do not set the administrator DN and password or configure the database through the Instance Administration Tool, you can use the Configuration Tool (**idsxcfg**) for these and other tasks. (You must create a directory server instance before you can use the Configuration Tool.)

The Configuration Tool has a GUI, and it can be used for the following tasks:

- Setting or changing the IBM Tivoli Directory Server administrator DN and password
- Configuring and unconfiguring the database for a full server instance
- Enabling and disabling the changelog
- Adding or removing suffixes
- Adding schema files to or removing schema files from the list of schema files to be loaded at startup
- Importing and exporting LDAP Data Interchange Format (LDIF) data
- Backing up, restoring, and optimizing the database
- Configuring Active Directory Synchronization
- Setting up and running the Performance Tuning Tool

If you prefer to use the command line, all the tasks in the list can be done with the following command-line utilities.

- **idsdnpw** sets the administrator DN and password for a directory server instance.
- **idscfgdb** configures the database for a directory server instance. (The database is created when you create the directory server instance.)
- **idsucfgdb** unconfigures the database for a directory server instance.
- **idscfgchglg** configures the change log for a directory server instance.
- **idsucfgchglg** unconfigures the change log for a directory server instance.
- **idscfgsuf** configures a suffix for a directory server instance.
- **idsucfgsuf** unconfigures a suffix for a directory server instance.
- **idscfgsch** configures a schema file for a directory server instance.
- **idsucfgsch** unconfigures a schema file for a directory server instance.

- **idsldif2db** or **idsbulkload** imports LDIF data.
- **idsdb2ldif** exports LDIF data.
- **idsdbback** backs up the database.
- **idsdbrestore** restores the database.
- **idsrunstats** optimizes the database.
- **idsadscfg** configures Active Directory Synchronization.
- **idsperftune** tunes directory server performance.

Note: For proxy server instances, only the following tasks are available:

- Managing the administrator DN and password in the Configuration Tool (**idsdnpw** command-line utility)
- Managing schema files in the Configuration Tool (**idscfgsch** and **idsucfgsch** command-line utilities)
- Managing suffixes in the Configuration Tool (**idscfgsuf** and **idsucfgsuf** command-line utilities)

Chapter 3. Upgrading from previous releases

Upgrading refers to the process of installing IBM Tivoli Directory Server version 6.1 to replace an earlier version while preserving the data, changes that were made to the schema definitions, and directory server configuration from the earlier version. Use the procedures in this chapter when you are upgrading an existing directory server on the same physical computer from a version of IBM Directory Server or IBM Tivoli Directory Server.

If you have only a client installed, see “About the client.”

You can upgrade from IBM Directory Server 4.1 or 5.1, or IBM Tivoli Directory Server 5.2 or 6.0. (You cannot upgrade from SecureWay® Directory; the minimum version from which you can upgrade is IBM Directory Server 4.1.)

About the client

If you have only a client installed, migration is not necessary. Clients from releases 4.1, 5.1, 5.2, and 6.0 can coexist with IBM Tivoli Directory Server 6.1 clients and servers.

Before you upgrade

Before you upgrade to Tivoli Directory Server 6.1 from a previous version, do the following steps:

1. Be sure that the server you plan to migrate to IBM Tivoli Directory Server 6.1 can be successfully started. (If the server is not a proxy server, be sure that the database is configured.) If the server cannot be started successfully, whether it is a proxy server or a full directory server, the upgrade is not supported.

Note: You must not remove the directory server instance that you want to upgrade and, for a full directory server instance, you must not unconfigure the database. If you do either of these, upgrade is not supported.

2. Back up the databases and DB2 settings. See the *Administration Guide* for your release of IBM Directory Server or IBM Tivoli Directory Server for information about backing up databases using DB2 commands, the **dbback** or **idsdbback** command, or the Configuration Tool. Take an offline database backup for each local database on the server. (You can do this step now or after step 3.)
3. Back up the configuration files and schema files by using the **migbkup** utility. (This step is optional if you use the InstallShield GUI to upgrade.)

Note: You can find this utility in one of the following locations:

For Windows systems:

If you created a CD: the \tools subdirectory on the CD

If you downloaded a .zip file, the itdsV61\tools subdirectory of the directory where you unzipped the file

For AIX, Linux, Solaris, and HP-UX systems:

If you created a CD for InstallShield GUI installation: the /tools subdirectory on the CD

If you created a CD for installation with operating system utilities: the /tools subdirectory on the CD

If you downloaded a .tar file for InstallShield GUI installation: the itdsV61ismp/tools subdirectory of the directory where you untarred the file

If you downloaded a .tar file for installation with operating system utilities: the itdsV61/tools subdirectory of the directory where you untarred the file

Type the following at a command prompt:

- For Windows systems:
`migbkup.bat install_location backup_directory`
- For AIX, Linux, Solaris, and HP-UX systems:
`migbkup install_location backup_directory`

This utility backs up the server configuration file (slapd32.conf on 4.1 systems and ibmslapd.conf on 5.1, 5.2, and 6.0 systems) and all standard schema files that are supplied with IBM Tivoli Directory Server from the *install_location*\etc directory to a temporary directory, specified by *<backup_directory>*.

<install_location> is one of the following:

- For the 4.1, 5.1, and 5.2 releases of IBM Tivoli Directory Server: the directory where IBM Directory Server or IBM Tivoli Directory Server is installed (for example, C:\Program Files\LDAP).
- For the 6.0 version, the location of the directory server instance (for example, idsslapd*<instance_name>*).

For example:

- On a Windows system, to back up files from IBM Directory Server 5.1, installed in the C:\Program Files\IBM\LDAP directory, to a directory named d:\ldap\savefiles, type the following:
`migbkup.bat "C:\Program Files\IBM\LDAP" d:\ldap\savefiles`

Be sure to enclose the path in quotation marks if there is a space in the path.

- On a Linux system, to back up files from IBM Tivoli Directory Server 5.2, installed in the /usr/ldap directory, to a directory named /usr/savefiles, type the following:
`migbkup /usr/ldap /usr/savefiles`

The command backs up the following files:

- slapd32.conf (only on IBM Directory Server 4.1 systems) or ibmslapd.conf
- V3.ibm.at
- V3.ibm.oc
- V3.system.at
- V3.system.oc
- V3.user.at
- V3.user.oc
- V3.modifiedschema

In addition, for backups on version 6.0, the command backs up the following files:

- V3.config.at
- V3.config.oc
- V3.ldapsyntaxes

- V3.matchingrules
- ibmslapdcfg.ksf
- ibmslapddir.ksf
- ibmdiradmService.cmd
- ibmslapdService.cmd

The command also creates the db2info file.

If you have additional schema files that you used in your previous release, copy them manually to the *backup_directory* also. When you migrate the configuration and schema files during instance creation, these files will not be migrated, but they will be copied to the new directory server instance location for use by the directory server instance.

4. Be sure that the operating system on which you will install Tivoli Directory Server 6.1 is supported. See *IBM Tivoli Directory Server Version 6.1 System Requirements* for information about supported levels. If the operating system is not supported, install a supported version.
5. If your current version of DB2 is a version not supported for IBM Tivoli Directory Server 6.1 such as DB2 version 7 or v8.1 ESE (32-bit) , you must first upgrade your DB2 version or FixPack level to a level supported by IBM Tivoli Directory Server 6.1. See *IBM Tivoli Directory Server Version 6.1 System Requirements* for information about supported DB2 versions. See <http://www-1.ibm.com/support/docview.wss?uid=swg21200005> for information about upgrading your DB2 version. You might also need to upgrade the bit-width of the database using DB2 commands.
6. Use one of the following procedures to upgrade to Tivoli Directory Server 6.1:
 - If you want to upgrade using the InstallShield GUI, see “Before you install” on page 25, and then use the information in “Using the InstallShield GUI to install and upgrade to Tivoli Directory Server 6.1” on page 41 to upgrade to Tivoli Directory Server 6.1.
 - If you want to upgrade on an AIX, Linux, Solaris, or HP-UX system using operating system utilities and commands, use the information in “Upgrading using the command line and operating system utilities.”

Upgrading using the command line and operating system utilities

To upgrade to Tivoli Directory Server 6.1 using operating system utilities on AIX, Linux, Solaris, or HP-UX systems:

1. Be sure that you have followed the instructions in “Before you upgrade” on page 11.
2. Read and understand Chapter 5, “Considerations before you install on AIX, Linux, Solaris, and HP-UX systems,” on page 21.
3. Stop the previous version server and the administration server.
4. If the version of IBM Tivoli Directory Server you are upgrading is **before** 6.0, uninstall IBM Tivoli Directory Server or IBM Directory Server. Leave the database configured, however, unless the server is a proxy server.

If the version is 6.0, do **not** uninstall IBM Tivoli Directory Server 6.0 or the upgrade will fail. If you want to uninstall IBM Tivoli Directory Server 6.0, you can do it after step 6 on page 14.

5. Install Tivoli Directory Server 6.1 using operating system utilities for your operating system. See one of the following chapters for information:
 - Chapter 7, “Installing IBM Tivoli Directory Server using AIX utilities,” on page 49

- Chapter 8, “Installing IBM Tivoli Directory Server using Linux utilities,” on page 61
- Chapter 9, “Installing IBM Tivoli Directory Server using Solaris utilities,” on page 67
- Chapter 10, “Installing IBM Tivoli Directory Server using HP-UX utilities,” on page 75

Note: If you are upgrading from IBM Directory Server 5.1 or IBM Tivoli Directory Server 5.2 on a Solaris system, recreate the operating system group **ldap**, which is deleted when you uninstall IBM Directory Server 5.1 or IBM Tivoli Directory Server 5.2. If you do not create this group before running the **idsimigr** command, the command fails.

6. Use the **idsimigr** command to migrate the schema and configuration files from the earlier release to IBM Tivoli Directory Server 6.1 versions of these files and to create a Tivoli Directory Server 6.1 directory server instance with the migrated information. This directory server instance is the upgraded version of your previous server. In the process, the **idsdbmigr** command is called and DB2 can be upgraded, or the database might be converted from a 32-bit to a 64-bit database if needed. (Database internal data migration occurs when the Tivoli Directory Server 6.1 directory server instance is started for the first time.) For example, you want to migrate from IBM Tivoli Directory Server 5.2 to IBM Tivoli Directory Server 6.1 and:
 - You saved the configuration and schema files in a directory named `/tmp/ITDS52`
 - You want to create an instance called **myinst** with an encryption seed of **my_secret_key!** and an encryption salt of **mysecretsalt**.

Use the following command:

```
idsimigr -I myinst -u /tmp/ITDS52 -e my_secret_key! -g mysecretsalt
```

Attention: When you create a new directory server instance, be aware of the information that follows.

- a. If you want to use replication, use a distributed directory, or import and export LDIF data between server instances, you must cryptographically synchronize the server instances to obtain the best performance.

If you are creating a directory server instance that must be cryptographically synchronized with an existing directory server instance, you must synchronize the server instances *before* you do either of the following:

- Start the second server instance
- Run the **idsbulkload** or **idsldif2db** command from the second server instance

See Appendix E, “Synchronizing two-way cryptography between server instances,” on page 165 for information about synchronizing directory server instances.

- b. After you create a directory server instance and configure the database, use the **idsdbback** utility to create a backup of the directory server instance. The configuration and directory key stash files are archived along with the associated configuration and directory data. You can then use the **idsdbrestore** utility to restore the key stash files if necessary. (You can also use the **idsdbback** utility after you load data into the database. See “Backing up the database” on page 128 for information about backing up the database.)

Note: If you upgraded from IBM Directory Server 5.1 to IBM Tivoli Directory Server 6.1, the server will take longer than usual to start the very first time. After the server has been started for the first time, it will start more quickly.

Migrating the Web Administration Tool and upgrading Embedded WebSphere Application Server

If you have the Web Administration Tool from IBM Directory Server 5.1 or IBM Tivoli Directory Server 5.2 or 6.0 installed into Embedded WebSphere Application Server, the InstallShield GUI can upgrade Embedded WebSphere Application Server to the 6.1.0.7 version and deploy the Web Administration Tool into it, migrating your previous Web Administration Tool configuration.

If you want to upgrade manually because you are not using the InstallShield GUI to install, use the information in the following section.

Migrating Embedded WebSphere Application Server and the Web Administration Tool

You can use the **idswmigr** command-line utility to migrate an earlier version of Embedded WebSphere Application Server to the 6.1.0.7 version and deploy the 6.1 version of the Web Administration Tool into it.

The **idswmigr** tool does the following:

- Saves the configuration files for the previous version of the Web Administration Tool
- Undeploys the previous version of the Web Administration Tool from the earlier version of Embedded WebSphere Application Server

- Backs up the configuration for the earlier version of Embedded WebSphere Application Server to a temporary location that you specify
- Restores the configuration for the earlier version of Embedded WebSphere Application Server to the new location
- Installs the 6.1 version of the Web Administration Tool into Embedded WebSphere Application Server 6.1.0.7
- Migrates the previous Web Administration Tool configuration files and restores these files into the new Embedded WebSphere Application Server

Before you use the **idswmigr** command, do the following:

1. Uninstall the version of the Web Administration Tool that you have installed. (This is the IDWebApp.war file in the idstools directory.) However, leave Embedded WebSphere Application Server installed, and leave the Web Administration Tool deployed into it.
2. Install the new version of the Web Administration Tool.
3. Install the new version of Embedded WebSphere Application Server. (Do not deploy the Web Administration Tool into Embedded WebSphere Application Server. The **idswmigr** command will do this.)

To use the **idswmigr** command-line utility to upgrade Embedded WebSphere Application Server and the Web Administration Tool and deploy the Web Administration Tool into Embedded WebSphere Application Server, type the following at a command prompt:

```
idswmigr [-l temp_path] [-s source_path -t target_path -r profile_name
-a app_name -v -i prev_dir -o ports_path]
```

where:

- s *source_path*
Specifies the source location for the previous version of Embedded WebSphere Application Server.
- t *target_path*
Specifies the target location where the new Embedded WebSphere Application Server has been installed.
- r *profile_name*
Specifies the profile name associated with the application. Defaults to TDSWebAdminProfile if not specified.
- l *temp_path*
Specifies a location for the temporary files.
- v
Displays the command syntax.
- i *prev_dir*
On Windows systems only, specifies the directory where the previous version of IBM Directory Server or IBM Tivoli Directory Server is installed.
- a *app_name*
-a is the application name. Defaults to IDWebApp.war if not specified.
- o *ports_path*
Specifies the fully qualified path of the ports definition file. If not specified, defaults to C:\Program Files\IBM\LDAP\V6.1\idstools\TDSWEBPortDef.props on Windows systems or /opt/ibm/ldap/V6.1/idstools/TDSWEBPortDef.props on AIX, Linux, Solaris, and HP-UX systems.

Chapter 4. Installing language packs using the InstallShield GUI

If you want to use the server in languages other than English, you must install language packs for the languages you want to use.

Note: You do not need to install language packs for the client, unless you want to use the **idslink** and **idsrmlink** commands and you want messages from the commands displayed in a language other than English. For information about the **idslink** and **idsrmlink** commands, see the *IBM Tivoli Directory Server version 6.1 Command Reference*.

You can install language packs with the InstallShield GUI or with operating system utilities on AIX, Linux, Solaris SPARC, and HP-UX PA-RISC systems. (InstallShield GUI for language packs is not provided for Solaris X64 or HP-UX Integrity systems.) To install language packs using the InstallShield GUI, use the information in this chapter. To install using operating system utilities, see the appropriate chapter; choose from one of the following:

- For AIX systems, see Chapter 7, “Installing IBM Tivoli Directory Server using AIX utilities,” on page 49.
- For Linux systems, see Chapter 8, “Installing IBM Tivoli Directory Server using Linux utilities,” on page 61.
- For Solaris systems, see Chapter 9, “Installing IBM Tivoli Directory Server using Solaris utilities,” on page 67.
- For HP-UX systems, see Chapter 10, “Installing IBM Tivoli Directory Server using HP-UX utilities,” on page 75.

To install language packs using the InstallShield GUI:

1. Do one of the following:

On Windows systems:

- a. Be sure that you are logged on as any member of the Administrators group.
- b. If you are installing from a CD, insert CD 1 in the CD-ROM drive. Go to the drive for your CD-ROM, and then change to the \tdsLangpack directory of the CD.

If you downloaded a zipped file, go to the directory where you unzipped the downloaded .zip files, and then to the tdsV6.1\tdsLangpack subdirectory.

- c. If you are using Intel® 32-bit Windows, double-click the **idslp_setup_win32** icon, or type `idslp_setup_win32.exe` at the command prompt.

If you are using AMD/EM64T Windows, double-click the **idslp_setup_win64** icon, or type `idslp_setup_win64.exe` at the command prompt.

On AIX, Linux, Solaris, and HP-UX systems:

- a. Log in as root.

- b. If you are installing from a CD, insert CD 1 in the CD-ROM drive and mount the CD, and then change to the /tdsLangpack directory of the CD.

If you downloaded .tar files, go to the directory where you untarred the files, and then change to the tdsV6.1\tdsLangpack subdirectory.

- c. Type one of the following:
 - On AIX systems: `idslp_setup_aix.bin`
 - On xSeries and AMD64/EM64T Linux systems:
`idslp_setup_linux86.bin`
 - On zSeries Linux systems: `idslp_setup_linux390.bin`
 - On iSeries and pSeries Linux systems: `idslp_setup_linuxppc.bin`
 - On Solaris SPARC systems: `idslp_setup_solaris.bin`. (You must use operating system utilities to install language packs on Solaris X64 systems.)
 - On HP-UX PA-RISC systems: `idslp_setup_hp.bin`. (You must use operating system utilities to install language packs on HP-UX Integrity systems.)

2. The Welcome window is displayed. Click **Next**.
3. On Windows systems only, if you have not yet installed IBM Tivoli Directory Server, a window is displayed asking where you want to install the language packs. This path will also be the path where IBM Tivoli Directory Server is installed. Click **Next** to install in the default directory. You can specify a different directory by clicking **Browse** or typing the path you want. The directory will be created if it does not exist.

Note: Be sure that the installation location is not the same as the path where another version of the client is installed.

4. A window showing the languages is displayed. The languages you can choose are:
 - German
 - French
 - Italian
 - Spanish
 - Japanese
 - Korean
 - Portuguese (not supported on HP-UX systems)
 - Simplified Chinese
 - Traditional Chinese

On AIX systems, the following additional languages are available:

- Czechoslovakian
- Hungarian
- Polish
- Russian
- Slovakian

Select the languages you want to install, and then click **Next**.

5. A summary window displays the languages you want installed, the path where these language packs will be installed, and the amount of disk space required. Click **Back** to change any of your selections. Click **Next** to begin installation.

6. After installation is complete, click **Finish** on the confirmation window.

Language packs are installed in the LangPack subdirectory of the directory where IBM Tivoli Directory Server is installed.

Chapter 5. Considerations before you install on AIX, Linux, Solaris, and HP-UX systems

For AIX, Linux, Solaris, and HP-UX systems, there are some environments that might require special setup.

Mounting and unmounting the CD during installation

On AIX, Linux, Solaris, and HP-UX systems, if you are installing from CD-ROMs created from the downloaded .iso files, you must mount the CD before you begin installing. The following sections discuss special considerations on Solaris 9 and HP-UX systems.

Mounting and unmounting the CD on Solaris 9 systems

On Solaris 9 systems, if you are installing from a CD, the first CD is automounted to /cdrom/directoryv6.1 when you insert it into the CD-ROM drive. During installation, each time you are prompted for another CD, you must unmount and eject the currently mounted CD, restart the volume management daemon, and mount the next CD so that the volume management daemon does not increment the mount point. Use the following instructions whenever you are prompted to insert another CD:

1. Unmount the CD:
`umount /cdrom/directoryV6.1`
2. Eject the CD:
`eject`
3. Stop the volume management daemon:
`/etc/init.d/volmgt stop`
4. Restart the volume management daemon:
`/etc/init.d/volmgt start`

When you insert the next CD and it is automounted, it is mounted at /cdrom/directoryv6.1.

Mounting and unmounting the CD on HP-UX systems

To be sure that you install IBM Tivoli Directory Server correctly on HP-UX systems, use the following procedures to mount and unmount the CD if you are installing from CD-ROMs created from the downloaded .iso files.

Mounting the CD on an HP-UX system

1. To verify that the Portable File Systems (PFS) daemons are enabled and active, type the following at a command prompt:

```
ps -aef | grep pfs
```

If the output of the command shows pfs_mountd, pfsd and the corresponding rpc processes as in the following example, go to step 3 on page 22.

```
ps -aef | grep pfs
root 20381 17407 0 14:04:51 pts/tb 0:00 /usr/sbin/pfs_mountd
root 20388 20387 0 14:05:20 pts/tb 1:06 pfsd.rpc
root 20382 20381 0 14:04:51 pts/tb 0:00 pfs_mountd.rpc
root 20387 17407 0 14:05:20 pts/tb 0:00 /usr/sbin/pfsd
```

Otherwise, continue to step 2 to start the PFS daemons.

2. To start the PFS processes on an HP-UX system, issue the commands:

```
nohup /usr/sbin/pfs_mountd &  
nohup /usr/sbin/pfsd &
```
3. Mount the CD to /SD_CDRROM or any other directory that can act as mount point. This directory must exist before you run the **pfs_mount** command. To create this directory, type the following command:

```
mkdir /SD_CDRROM
```

To mount the CD, type the following command:

```
/usr/sbin/pfs_mount <CD_device_name> <mount_point_dir>
```

where <CD_device_name> is the device name of the CD drive on the computer, and <mount_point_dir> is the directory that is acting as the mount point. For example:

```
/usr/sbin/pfs_mount /dev/dsk/c0t0d0 /SD_CDRROM
```

The CD is now mounted and you can install IBM Tivoli Directory Server.

Unmounting the CD

To unmount and eject the CD:

1. Be sure that no processes are using the CD.
2. Unmount the CD. Type the following command:

```
/usr/sbin/pfs_umount /SD_CDRROM
```

Where /SD_CDRROM is the mount point.

3. Eject the CD.

Note: If the CD fails to eject, type the following command:

```
/usr/sbin/pfs_umount -c <CD_device_name>
```

For example:

```
/usr/sbin/pfs_umount -c /dev/dsk/c0t0d0
```

Then eject the CD.

The idslldap user and group

During installation of a server, the idslldap user and group are created if they do not already exist. If your environment requires that you have more control over this user and group, you can create them before you install. Requirements are:

- The idslldap user must be a member of the idslldap group.
- The root user must be a member of the idslldap group.
- The idslldap user must have a home directory.
- The default shell for the idslldap user must be the Korn shell.
- The idslldap user can have a password, but is not required to.
- The idslldap user can be the owner of the director server instance.

You can use the Instance Administration Tool to create users and groups as you are creating a directory server instance, or you can use the following commands to create the user idslldap and the group idslldap and set them up correctly:

On AIX systems:

Use the following commands.

To create the `idsldap` group:

```
mkgroup idsldap
```

To create user ID `idsldap`, which is a member of group `idsldap`, and set the korn shell as the default shell:

```
mkuser pgrp=idsldap home=/home/idsldap shell=/bin/ksh idsldap
```

To set the password for user `idsldap`:

```
passwd idsldap
```

To modify the root user ID so that root is a member of the group `idsldap`:

```
/usr/bin/chgrpmem -m + root idsldap
```

On Linux systems:

Use the following commands.

To create the `idsldap` group:

```
groupadd idsldap
```

To create user ID `idsldap`, which is a member of group `idsldap`, and set the korn shell as the default shell:

```
useradd -g idsldap -d /home/idsldap -m -s /bin/ksh idsldap
```

To set the password for user `idsldap`:

```
passwd idsldap
```

To modify the root user ID so that root is a member of the group `idsldap`:

```
usermod -G idsldap,rootgroups root
```

where `rootgroups` can be obtained by using the command: `groups root`

On Solaris systems:

Use the following commands.

To create the `idsldap` group:

```
groupadd idsldap
```

To create user ID `idsldap`, which is a member of group `idsldap`, and set the korn shell as the default shell:

```
useradd -g idsldap -d /export/home/idsldap -m -s /bin/ksh idsldap
```

To set the password for user `idsldap`:

```
passwd idsldap
```

To modify the root user ID so that root is a member of the group `idsldap`, use the AdminTool or another appropriate tool.

On HP-UX systems:

Use the following commands.

To create the `idsldap` group:

```
groupadd idsldap
```

To create user ID `idsldap`, which is a member of group `idsldap`, and set the korn shell as the default shell:

```
useradd -g idsldap -d /home/idsldap -m -s /bin/ksh idsldap
```

To set the password for user idsldap:

```
passwd idsldap
```

To modify the root user ID so that root is a member of the group idsldap, use the **sam** tool or another appropriate tool.

Be sure that all these requirements are met before you install. The proxy server does not install correctly if the idsldap user exists but does not meet the requirements.

Note: For information about requirements for other user IDs you must create, see Appendix D, “Setting up users and groups: directory server instance owner, database instance owner, and database owner,” on page 161.

Installation path on AIX, Linux, Solaris, and HP-UX platforms

IBM Tivoli Directory Server is installed in the following path:

On AIX, Solaris, and HP-UX systems:

```
/opt/IBM/ldap/V6.1
```

On Linux systems:

```
/opt/ibm/ldap/V6.1
```

Using commands to set and remove links

Links for client and server utilities are not set automatically during installation. However, if you are upgrading from Tivoli Directory Server 6.0 and you have links set to the utilities, these links will remain unless you change them.

You can use the **idslink** utility to set the links to Tivoli Directory Server 6.1 command-line utilities such as **idsldapmodify** and **idsldapadd** and libraries such as **libibmldap.so**. These links point to the location where the IBM Tivoli Directory Server 6.1 utilities and libraries reside: *installpath/bin*, *installpath/sbin*, and *installpath/lib*. (*installpath* is the directory where IBM Tivoli Directory Server 6.1 is installed. To remove the links set by the **idslink** utility, you can use the **idsrmlink** utility.

For more information about these commands, see the *IBM Tivoli Directory Server version 6.1 Command Reference*.

Chapter 6. Installing IBM Tivoli Directory Server using the InstallShield GUI

You can use the InstallShield GUI to install IBM Tivoli Directory Server. If you do not want to use the InstallShield GUI to install, this book contains a manual installation procedure for each operating system in separate chapters. For example, see Chapter 7, “Installing IBM Tivoli Directory Server using AIX utilities,” on page 49.

If you install IBM Tivoli Directory Server using the InstallShield GUI, you must also uninstall using the InstallShield GUI. This is also true for installation of corequisite products such as DB2, Embedded WebSphere Application Server, and GSKit. See “Uninstalling IBM Tivoli Directory Server using the InstallShield GUI” on page 141 for instructions for removing IBM Tivoli Directory Server using the InstallShield GUI.

Before you install

Be sure that the requirements for your operating system are met before you begin installation. See *IBM Tivoli Directory Server version 6.1 System Requirements* for information.

Before installing, be sure that the following conditions are met. If these conditions are not met, the installation program will exit.

- **If you are upgrading from a previous release (IBM Directory Server 4.1 or 5.1, or IBM Tivoli Directory Server 5.2 or 6.0):**

Use the instructions in Chapter 3, “Upgrading from previous releases,” on page 11 to migrate your data and install IBM Tivoli Directory Server 6.1.

- **If you have a version of DB2 that is not supported installed on your computer and you are not upgrading from a previous release of IBM Tivoli Directory Server:**

Upgrade your DB2 version to a supported version, or remove DB2. DB2 9 Fix Pack 2 (or DB2 9 Fix Pack 1 for Solaris Opteron only) is included with IBM Tivoli Directory Server. If you do not have a version of DB2 on your system, the InstallShield GUI installs it if you choose to install the full server.

- The server and the client from IBM Tivoli Directory Server 6.1 can coexist with the following clients and servers:

- A client from any of the following:
 - IBM Directory Server 4.1
 - IBM Directory Server 5.1
 - IBM Tivoli Directory Server 5.2
 - IBM Tivoli Directory Server 6.0
- A server from IBM Tivoli Directory Server 6.0

If any of these are installed, you can leave them installed.

However, links on AIX, Linux, Solaris, and HP-UX systems for Tivoli Directory Server 6.1 libraries and commands are not set. If you want to set links to Tivoli Directory Server libraries and commands, use the **idslink** command. See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for information about the command.

On Windows systems, the path is not set to include the directories where the Tivoli Directory Server 6.1 libraries and commands reside. This means that when using the command line, you must type the full path to the command or go to the subdirectory where the command resides before typing the command. Otherwise, the command will not be found. As an alternative, you can update your PATH environment variable to include the following Tivoli Directory Server 6.1 subdirectories:

- `<installpath>\sbin`
- `<installpath>\bin`
- `<installpath>\lib`

(By default, `<installpath>` on Windows systems is `C:\Program Files\IBM\LDAP\V6.1`.)

If you have more than one version of Tivoli Directory Server installed and you set the path to find commands for one version of Tivoli Directory Server, you must type the full path or go to the subdirectory where the command resides if you want to issue a command for another version of Tivoli Directory Server.

- If you have the Web Administration Tool from IBM Directory Server 5.1 or IBM Tivoli Directory Server 5.2 or 6.0 installed and you want to migrate it, leave the embedded version of WebSphere Application Server - Express installed with the Web Administration Tool deployed into it. The IBM Tivoli Directory Server 6.1 Web Administration Tool does not work with earlier versions of Embedded WebSphere Application Server. (You can uninstall the old version of embedded version of WebSphere Application Server - Express later.)
- On Windows systems, if you are installing the proxy server or the full server, the Administrators group provided with the Windows operating system must exist.
- On Windows systems, be sure that you have at least 255 MB of free space in the directory specified by the TEMP environment variable or the directory you want to use as a temporary directory. If you use a temporary directory and you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you have 150 MB in the directory specified by the TEMP environment variable.
- On AIX and Linux systems, be sure that you have at least 300 MB of free space in the /tmp directory or the directory you want to use as a temporary directory. If you use a temporary directory and you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you have 150 MB in the /tmp directory.
- On Solaris and HP-UX systems, be sure that you have at least 400 MB of free space in the /tmp directory or the directory you want to use as a temporary directory. If you use a temporary directory and you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you have 150 MB in the /tmp directory.
- On AIX, Linux, Solaris, and HP-UX systems, if you install IBM Tivoli Directory Integrator, the InstallShield GUI installation program incorrectly assumes the Deployment Engine necessary for IBM Tivoli Directory Integrator will be installed into the /opt directory, when it will actually be installed into the /usr directory. If /opt is in a different partition than /usr, the space calculation might not be correct. Be sure that the /usr directory has at least 200 MB of free space on AIX and Linux systems, and 300 MB of free space on Solaris and HP-UX systems if you are installing IBM Tivoli Directory Integrator.

Installing IBM Tivoli Directory Server on a Windows system

There are two installation paths in the InstallShield GUI: Typical and Custom.

- Use the Typical installation path if you want to accept default settings, install all the IBM Tivoli Directory Server components that are not already installed, and create a default directory server instance.
- Use the Custom installation path if you want to select components for installation and create a directory server instance using the Instance Administration Tool. When you use this tool you can customize the directory server instance.

Installing with the Typical installation path on Windows systems

To install IBM Tivoli Directory Server 6.1 using the Typical installation path:

1. Be sure that you are logged on as any member of the Administrators group.
2. On the computer where you are installing IBM Tivoli Directory Server, stop any programs that are running and close all windows. If you have open windows, the initial IBM Tivoli Directory Server installation window might be hidden behind other windows.
3. If you are installing from a CD:
 - a. Insert CD 1 in your CD-ROM drive.
 - b. Go to the drive for your CD-ROM, and then go to the \tds folder.
If you are installing from downloaded .zip files, go to the folder where you unzipped the downloaded .zip files, and then go to the tdsV6.1\tds folder.
4. Double-click the **install_tds.bat** icon.

If you prefer, you can use the command line to begin installation and specify a temporary directory other than the one specified by the TEMP environment variable. To use this option, go to the appropriate directory (from step 3) and type the following at a command prompt:

```
install_tds.bat -is:tempdir directory
```

where *directory* is the directory you want to use for temporary space. Be sure that you have at least 255 MB of free space in this directory. If you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you also have 150 MB in the directory specified by the TEMP environment variable.

For example:

```
install_tds.bat -is:tempdir "c:\My Documents\temp"
```

The language window is displayed.

Note: If the installation program exits without displaying the language window, it might be because there is not enough space in the directory specified by the TEMP environment variable or the directory you specified for temporary space. Be sure that you have at least 255 MB of free space in this directory.

5. Select the language you want to use during IBM Tivoli Directory Server installation. Click **OK**.

Note: This is the language used in the installation program, not in IBM Tivoli Directory Server. The language used in IBM Tivoli Directory Server is determined by the language pack you install.

6. On the Welcome window, click **Next**.
7. After reading the Software license agreement, select **I accept both the IBM and the non-IBM terms**. Click **Next**.

8. If you have any components already installed, they are displayed with their corresponding version levels. Click **Next**.
9. To install in the default directory, click **Next**. You can specify a different directory by clicking **Browse** or typing the directory path you want. The directory will be created if it does not exist. (The default installation directory is C:\Program Files\IBM\LDAP\V6.1.)

Notes:

- a. If you have already installed one or more language packs, the installation location is set to the path where you installed the language packs, and you are not asked where you want to install.
 - b. Be sure that the installation location is not the same as the path where another version of the client or the server is installed.
 - c. Do not use special characters, such as hyphen (-) and period (.) in the name of the installation directory. For example, use **ldapdir** rather than **ldap-dir** or **ldap.dir**.
10. Click **Typical**.
 11. If DB2 is being installed, a window is displayed prompting you to enter a Windows user ID and password for the DB2 system ID. On the window:
 - a. Type the user ID. This user ID must **not** be the user ID you intend to use as the owner of the directory server instance.
If you are not using an existing user ID, DB2 creates the user ID you specify with the password you type. This is the preferred method.

Note: If you are creating a new user ID and your system has "Password must meet complexity requirements" enabled, be sure that the password you supply meets the complexity requirements. If it does not, installation will fail. See the Windows documentation for information about complexity requirements.

If you are using an existing Windows user ID, it must be a member of the Administrators group.

- b. Type the password, and then type the password again for verification. (If you are using an existing Windows user ID, be sure that your password is correct. Otherwise, DB2 does not install correctly.)
 - c. Click **Next**.
12. The installation program now has enough information to begin installing. A summary window displays the components that will be installed, the installation locations, and the amount of disk space required. The Typical installation path installs all features that are not already installed. If you want to install different features, you must click **Back** until you reach the window where you selected **Typical** installation, and select **Custom** installation instead. Then use the instructions in "Installing with the Custom installation path on Windows systems" on page 30. Typical installation does not allow you to select features for installation.

Click **Install** to begin installation.

Progress windows are displayed as features are installed.

If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation will not proceed correctly and unpredictable results might occur.

Notes:

- a. The *installpath\bin*, *installpath\sbin*, and *installpath\lib* directories are not added to the Path environment variable. This allows IBM Tivoli Directory Server 6.1 to coexist with IBM Tivoli Directory Server 6.0.
- b. If the Web Administration Tool is installed, Directory Services Markup Language (DSML) files are also copied to your computer. See Appendix M, "Installing and configuring DSML," on page 185 for information about installing and configuring DSML.
- c. If the Web Administration Tool is installed, a Web application server is required to run the tool, and Embedded WebSphere Application Server 6.1.0.7 is installed and configured for you. If version 5.0, 5.0.2, or 5.1.1 of Embedded WebSphere Application Server is already installed, the InstallShield GUI installation program automatically upgrades it to version 6.1.0.7. Any configuration files from the previous Web Administration Tool are backed up and restored. If you want to use another WebSphere application server, you must use Custom installation to select a Web application server.

When Embedded WebSphere Application Server is installed and an application (such as the Web Administration tool or the IBM Tivoli Directory Integrator Administration and Monitoring Console) is installed into Embedded WebSphere Application Server, the Embedded WebSphere Application Server server for that application is also installed as a service.

Note: After installation has begun, do not try to cancel the installation. If you inadvertently cancel the installation, see the information about recovering from a failed installation in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* before you attempt to reinstall.

13. The Typical installation path creates the default directory server instance with the following information, which you cannot change:

Name: idsinst

Instance location: c:\idsslapd-idsinst

Group name: Administrators

Administrator DN: cn=root

Database name: idsdb

In addition, the o=sample suffix is created for the default directory server instance. You can add other suffixes later with the Configuration Tool or the **idscfgsuf** command. See "Managing suffixes" on page 121 for information.

Type the following additional information about the default directory server instance in the appropriate fields:

User password

Type the system password for user idsinst. If this user does not exist on the system, the user ID will be created with the password you specify. If the user ID already exists, be sure to type the correct password for the user.

Confirm password

Type the password again for confirmation.

Encryption seed

Type an encryption seed string (used as a seed for generating encrypted stash files). The string can use characters a-z, A-Z, or 0-9. This string must be a minimum of 12 characters and a maximum of 1016 characters.

Confirm seed

Type the encryption seed string again for confirmation.

Administrator DN password

Type a password for the administrator DN for the directory server instance. (The Administrator DN for the default directory instance is cn=root.)

Confirm DN password

Type the administrator DN password again for confirmation.

Click **Next** when you have completed all the fields.

14. Click Finish.

Note: If you are asked if you want to restart your computer now or later, select the option you want and click **Finish**. (You might need to restart your system to complete IBM Tivoli Directory Server installation. You are unable to use IBM Tivoli Directory Server until this is completed.)

If your computer is restarted, log in using the same user ID that you used to install IBM Tivoli Directory Server.

If you installed DB2, the DB2 First Steps GUI might be started. You can go through the DB2 First Steps or close this GUI.

Note: A license subdirectory is created in the directory where IBM Tivoli Directory Server is installed. This subdirectory contains IBM Tivoli Directory Server license files in all provided languages.

The Instance Administration Tool starts. You can use the Instance Administration Tool to add more directory server instances or edit existing directory server instances. See Chapter 12, "Creating and administering instances," on page 93 for instructions.

To make changes to your configuration at a later time, see Chapter 13, "Configuration," on page 111 for more information about using the Configuration Tool.

If any errors occurred during installation, instance creation, or configuration, see the information in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* for information about recovering from these errors.

Installing with the Custom installation path on Windows systems

To install IBM Tivoli Directory Server 6.1 on a Windows system using the Custom installation path:

1. Be sure that you are logged on as any member of the Administrators group.
2. On the computer where you are installing IBM Tivoli Directory Server, stop any programs that are running and close all windows. If you have open windows, the initial IBM Tivoli Directory Server installation window might be hidden behind other windows.
3. If you are installing from a CD:
 - a. Insert CD 1 in your CD-ROM drive.
 - b. Go to the drive for your CD-ROM, and then go to the \tds folder.

If you are installing from downloaded .zip files, go to the folder where you unzipped the downloaded .zip files, and then go to the tdsV6.1\tds folder.

4. Double-click the **install_tds.bat** icon.

If you prefer, you can use the command line to begin installation and specify a temporary directory other than the one specified by the TEMP environment variable. To use this option, go to the appropriate directory (from step 3 on page 27) and type the following at a command prompt:

```
install_tds.bat -is:tempdir directory
```

where *directory* is the directory you want to use for temporary space. Be sure that you have at least 255 MB of free space in this directory. If you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you also have 150 MB in the directory specified by the TEMP environment variable.

For example:

```
install_tds.bat -is:tempdir "c:\My Documents\temp"
```

The language window is displayed.

Note: If the installation program exits without displaying the language window, it might be because there is not enough space in the directory specified by the TEMP environment variable or the directory you specified for temporary space. Be sure that you have at least 255 MB of free space in this directory.

5. Select the language you want to use during IBM Tivoli Directory Server installation. Click **OK**.

Note: This is the language used in the installation program, not in IBM Tivoli Directory Server. The language used in IBM Tivoli Directory Server is determined by the language pack you install.

6. On the Welcome window, click **Next**.
7. After reading the Software license agreement, select **I accept both the IBM and the non-IBM terms**. Click **Next**.
8. If you have any components already installed, they are displayed with their corresponding version levels. Click **Next**.
9. To install in the default directory, click **Next**. You can specify a different directory by clicking **Browse** or typing the directory path you want. The directory will be created if it does not exist. (The default installation directory is C:\Program Files\IBM\LDAP\V6.1.)

Notes:

- a. If you have already installed one or more language packs, the installation location is set to the path where you installed the language packs, and you are not asked where you want to install.
 - b. Be sure that the installation location is not the same as the path where another version of the client is installed.
 - c. Do not use special characters, such as hyphen (-) and period (.) in the name of the installation directory. For example, use **ldapdir** rather than **ldap-dir** or **ldap.dir**.
10. Click **Custom** and then click **Next**.

If the window in the following step is very slow to be displayed, you might have a slow network drive attached. You can detach the network drive and see if the window is displayed more quickly.

11. A window showing the following components for installation is displayed:

- Tivoli Global Security Kit
- DB2 V9.1
- Embedded WebSphere Application Server
- C Client 6.1
- Java Client 6.1
- Web Administration Tool 6.1
- Proxy Server 6.1
- Server 6.1
- Tivoli Directory Integrator

You can choose to reinstall the server, the client, or the Web Administration Tool if they were previously installed.

Notes:

- a. The *installpath\bin*, *installpath\sbin*, and *installpath\lib* directories are not added to the Path environment variable. This allows IBM Tivoli Directory Server 6.1 to coexist with IBM Tivoli Directory Server 6.0.
- b. If the Web Administration Tool is installed, Directory Services Markup Language (DSML) files are also copied to your computer. See Appendix M, "Installing and configuring DSML," on page 185 for information about installing and configuring DSML.
- c. If the Web Administration Tool is installed, a Web application server is required to run the tool, and Embedded WebSphere Application Server 6.1.0.7 is installed and configured for you. If version 5.0, 5.0.2, or 5.1.1 of Embedded WebSphere Application Server is already installed, the InstallShield GUI installation program automatically migrates it to version 6.1.0.7. Any configuration files from the previous Web Administration Tool are backed up and restored. If you want to use another WebSphere application server, you must select a Web application server.

When Embedded WebSphere Application Server is installed and an application (such as the Web Administration tool or the IBM Tivoli Directory Integrator Administration and Monitoring Console) is installed into Embedded WebSphere Application Server, the Embedded WebSphere Application Server server for that application is also installed as a service.

- d. The copy of IBM Tivoli Directory Integrator provided includes the IBM Tivoli Directory Integrator Server and the IBM Tivoli Directory Integrator Administration and Monitoring Console. The IBM Tivoli Directory Integrator Configuration Editor, which is used to develop assembly lines and event handlers, is not included as part of IBM Tivoli Directory Server. If you want the full version of IBM Tivoli Directory Integrator, purchase IBM Tivoli Directory Integrator 6.1.1, which includes all the features of IBM Tivoli Directory Integrator.

If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:

- Use the **idssupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).

You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.

- Use Simple Network Management Protocol (SNMP).

- Use the Active Directory synchronization feature.
You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

This window also indicates the amount of disk space required and available on the selected drive.

Be sure the components you want to install are selected, and click **Next**.

- If you selected **Server 6.1** but not **DB2 V9.1** and there are multiple versions of DB2 (such as versions 8 and 9) on the system, you are asked to select the version of DB2 you want to use with Tivoli Directory Server 6.1.
- If you selected **DB2 V9.1**, a window is displayed prompting you to enter a Windows user ID and password for the DB2 system ID. On the window:
 - Type the user ID. This user ID must **not** be the user ID you intend to use as the owner of the directory server instance.
If you are not using an existing user ID, DB2 creates the user ID you specify with the password you type. This is the preferred method.

Note: If you are creating a new user ID and your system has "Password must meet complexity requirements" enabled, be sure that the password you supply meets the complexity requirements. If it does not, installation will fail. See the Windows documentation for information about complexity requirements.
If you are using an existing Windows user ID, it must be a member of the Administrators group.
 - Type the password, and then type the password again for verification. (If you are using an existing Windows user ID, be sure that your password is correct. Otherwise, DB2 does not install correctly.)
 - Click **Next**.
- The Web Administration Tool 6.1 and Tivoli Directory Integrator 6.1 are applications that require a Web application server. If you selected **Web Administration Tool 6.1**, **Tivoli Directory Integrator**, or both, but you did not select **Embedded WebSphere Application Server**, a window is displayed for each of the applications you selected asking you to specify a Web application server into which to deploy the application. You can do one of the following:
 - Click **Detected WebSphere Application Servers** and then select a WebSphere Application Server that is installed on the system and detected by the InstallShield GUI installation program. The application will be deployed into this version of WebSphere Application Server.
 - Click **Custom location of WebSphere Application Server** to specify a path to a version of WebSphere Application Server in a different location. The application will be deployed into this version of WebSphere Application Server.
 - Click **Do not specify. I will manually deploy at a later time**. You must deploy the application into a WebSphere Application Server before you can use the application.
- The installation program now has enough information to begin installing. A summary window displays the components you selected and the locations where the selected components will be installed. Click **Back** to change any of your selections. Click **Install** to begin installation.

If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation will not proceed correctly and unpredictable results might occur.

Note: After installation has begun, do not try to cancel the installation. If you inadvertently cancel the installation, see the information about recovering from a failed installation in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* before you attempt to reinstall.

16. If you are asked if you want to restart your computer now or later, select the option you want and click **Finish**. (You might need to restart your system to complete IBM Tivoli Directory Server installation. You are unable to use IBM Tivoli Directory Server until this is completed.)

If your computer is restarted, log in using the same user ID that you used to install IBM Tivoli Directory Server.

If you installed DB2, the DB2 First Steps GUI might be started. You can go through the DB2 First Steps or close this GUI.

Note: A license subdirectory is created in the directory where IBM Tivoli Directory Server is installed. This subdirectory contains IBM Tivoli Directory Server license files in all provided languages.

If you installed a server, the Instance Administration Tool automatically starts so that you can create a directory server instance and complete configuration. Before you can use the server, you must:

- Create a directory server instance.
- Set the administrator DN and password for the instance.
- If you installed and plan to use the full server, configure the database that will store the directory data. (The proxy server does not require a database.)

To create a directory server instance, use the instructions in “Creating a directory server instance” on page 94. You can set the administrator DN and password and configure the database during the instance creation process.

To make changes to your configuration at a later time, see Chapter 13, “Configuration,” on page 111 for more information about using the Configuration Tool.

If any errors occurred during installation, instance creation, or configuration, see the information *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* for information about recovering from these errors.

Installing IBM Tivoli Directory Server on an AIX, Linux, Solaris, or HP-UX system

IBM Tivoli Directory Server is installed in the following directory:

- On AIX, Solaris and HP-UX systems: /opt/IBM/ldap/V6.1
- On Linux systems: /opt/ibm/ldap/V6.1

There are two installation paths in the InstallShield GUI: Typical and Custom.

- Use the Typical installation path if you want to accept default settings, install all the IBM Tivoli Directory Server components that are not already installed, and create a default directory server instance.

- Use the Custom installation path if you want to select components for installation and create a directory server instance using the Instance Administration Tool. When you use this tool you can customize the directory server instance.

Installing with the Typical installation path on AIX, Linux, Solaris, and HP-UX systems

To install IBM Tivoli Directory Server 6.1 on an AIX, Linux, Solaris, or HP-UX system using the Typical installation path:

1. Log in as **root**.
2. If you are installing from a CD, insert and mount CD 1 in your CD-ROM drive, and then change directories to the /tds directory on the CD.
If you are installing from downloaded .tar files, go to the /tdsV6.1/tds subdirectory of the directory where you untarred the downloaded .tar files.

Notes:

- a. If you are installing from CDs on a Solaris 9 system, be sure to see “Mounting and unmounting the CD on Solaris 9 systems” on page 21.
 - b. If you are installing from CDs on an HP-UX system, be sure to see “Mounting and unmounting the CD on HP-UX systems” on page 21.
3. Type `./install_tds.sh`

If you prefer, you can specify a temporary directory other than the system temporary directory. To use this option, change directories to the appropriate directory (from step 2) and type the following at a command prompt:

```
./install_tds.sh -is:tempdir directory
```

where *directory* is the directory you want to use for temporary space. Be sure that you have at least 300 MB of free space in this directory on AIX and Linux systems, and 400 MB on Solaris and HP-UX systems. If you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you also have 150 MB in the /tmp directory.

For example:

```
./install_tds.sh -is:tempdir /opt/tmp
```

A language window is displayed.

4. Select the language you want to use during IBM Tivoli Directory Server installation. Click **OK**.

Note: This is the language used in the installation program, not in IBM Tivoli Directory Server. The language used in IBM Tivoli Directory Server is determined by the language pack you install.

5. On the Welcome window, click **Next**.
6. After reading the Software license agreement, select **I accept both the IBM and the non-IBM terms**. Click **Next**.
7. If you have any components already installed, they are displayed with their corresponding version levels. Click **Next**.
8. Click **Typical**.
9. The installation program now has enough information to begin installing. A summary window displays the components that will be installed, the installation locations, and the amount of disk space required. The Typical installation path installs all features that are not already installed. If you want to install different features, you must click **Back** until you reach the window

where you selected **Typical** installation, and select **Custom** installation instead. Then use the instructions in “Installing with the Custom installation path on AIX, Linux, Solaris, and HP-UX systems” on page 37. Typical installation does not allow you to select features for installation.

Click **Install** to begin installation.

Progress windows are displayed as features are installed.

If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation will not proceed correctly and unpredictable results might occur.

Notes:

- a. If the Web Administration Tool is installed, Directory Services Markup Language (DSML) files are also copied to your computer. See Appendix M, “Installing and configuring DSML,” on page 185 for information about installing and configuring DSML.
- b. If the Web Administration Tool is installed, a Web application server is required to run the tool, and Embedded WebSphere Application Server 6.1.0.7 is installed and configured for you. If version 5.0, 5.0.2, or 5.1.1 of Embedded WebSphere Application Server is already installed, the InstallShield GUI installation program automatically migrates it to version 6.1.0.7. Any configuration files from the previous Web Administration Tool are backed up and restored. If you want to use another WebSphere application server, you must use Custom installation to select a Web application server.
- c. Because different versions of IBM Tivoli Directory Server clients and server instances can coexist on the same system, no links are set for client and server utilities. If you want to set links, use the **idslink** command after installation. See the *IBM Tivoli Directory Server version 6.1 Command Reference* for information about the **idslink** command and the **idsrmlink** command, which you can use to remove previously set links.

Note: After installation has begun, do not try to cancel the installation. If you inadvertently cancel the installation, see the information about recovering from a failed installation in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* before you attempt to reinstall.

10. The Typical installation path creates the default directory server instance with the following information, which you cannot change:
 - Name:** idsinst (On Solaris systems, this directory is /export/home/idsinst.)
 - Instance location:** /home/idsinst
 - Group name:** dbsysadm
 - Administrator DN:** cn=root
 - Database name:** idsdb

In addition, the o=sample suffix is created for the default directory server instance. You can add other suffixes later with the Configuration Tool or the **idscfgsuf** command. See “Managing suffixes” on page 121 for information.

Type the following additional information about the default directory server instance in the appropriate fields:

User password

Type the system password for user idsinst. If this user does not exist on the system, the user ID will be created with the password you specify. If the user ID already exists, be sure to type the correct password for the user.

Confirm password

Type the password again for confirmation.

Encryption seed

Type an encryption seed string (used as a seed for generating encrypted stash files). The string can use characters a-z, A-Z, or 0-9. This string must be a minimum of 12 characters and a maximum of 1016 characters.

Confirm seed

Type the encryption seed string again for confirmation.

Administrator DN password

Type a password for the administrator DN for the directory server instance. (The Administrator DN for the default directory instance is cn=root.)

Confirm DN password

Type the administrator DN password again for confirmation.

Click **Next** when you have completed all the fields.

11. Click Finish.

If you installed DB2, the DB2 First Steps GUI might be started. You can go through the DB2 First Steps or close this GUI.

Note: A license subdirectory is created in the directory where IBM Tivoli Directory Server is installed. This subdirectory contains IBM Tivoli Directory Server license files in all provided languages.

The Instance Administration Tool starts. You can use the Instance Administration Tool to add more directory server instances or edit existing directory server instances. See Chapter 12, "Creating and administering instances," on page 93 for instructions.

To make changes to your configuration at a later time, see Chapter 13, "Configuration," on page 111 for more information about using the Configuration Tool.

If any errors occurred during installation, instance creation, or configuration, see the information in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* for information about recovering from these errors.

Installing with the Custom installation path on AIX, Linux, Solaris, and HP-UX systems

To install IBM Tivoli Directory Server 6.1 on AIX, Linux, Solaris, and HP-UX systems using the Custom installation path:

1. Log in as **root**.
2. If you are installing from a CD, insert CD 1 in your CD-ROM drive, and then change directories to the /tds directory on the CD.

Notes:

- a. If you are installing from CDs on a Solaris 9 system, be sure to see "Mounting and unmounting the CD on Solaris 9 systems" on page 21.
- b. If you are installing from CDs on an HP-UX system, be sure to see "Mounting and unmounting the CD on HP-UX systems" on page 21.

If you are installing from downloaded .tar files, go to the /tdsV6.1/tds subdirectory of the directory where you untarred the downloaded .tar files.

3. Type `./install_tds.sh`

If you prefer, you can specify a temporary directory other than the system temporary directory. To use this option, change directories to the appropriate directory (from step 2 on page 37) and type the following at a command prompt:

```
./install_tds.sh -is:tempdir directory
```

where *directory* is the directory you want to use for temporary space. Be sure that you have at least 100 MB of free space in this directory. Be sure that you have at least 300 MB of free space in this directory on AIX and Linux systems, and 400 MB on Solaris and HP-UX systems. If you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you also have 150 MB in the /tmp directory.

For example:

```
./install_tds.sh -is:tempdir /opt/tmp
```

A language window is displayed.

4. Select the language you want to use during IBM Tivoli Directory Server installation. Click **OK**.

Note: This is the language used in the installation program, not in IBM Tivoli Directory Server. The language used in IBM Tivoli Directory Server is determined by the language pack you install.

5. On the Welcome window, click **Next**.

6. After reading the Software license agreement, select **I accept both the IBM and the non-IBM terms**. Click **Next**.

7. If you have any components already installed, they are displayed with their corresponding version levels. Click **Next**.

8. Click **Custom** and then click **Next**.

If the window in the following step is very slow to be displayed, you might have a slow network drive attached. You can detach the network drive and see if the window is displayed more quickly.

9. A window showing the following components for installation is displayed:

- Tivoli Global Security Kit
- DB2 V9.1
- Embedded WebSphere Application Server
- C Client 6.1
- Java Client 6.1
- Web Administration Tool 6.1
- Proxy Server 6.1
- Server 6.1
- Tivoli Directory Integrator

Components that are already installed are not displayed.

Notes:

- a. If the Web Administration Tool is installed, Directory Services Markup Language (DSML) files are also copied to your computer. See Appendix M, “Installing and configuring DSML,” on page 185 for information about installing and configuring DSML.
- b. If the Web Administration Tool is installed, a Web application server is required to run the tool, and Embedded WebSphere Application Server 6.1.0.7 is installed and configured for you. If version 5.0, 5.0.2, or 5.1.1 of Embedded WebSphere Application Server is already installed, the InstallShield GUI installation program automatically migrates it to version 6.1.0.7. Any configuration files from the previous Web Administration Tool are backed up and restored.
- c. Because different versions of IBM Tivoli Directory Server clients and server instances can coexist on the same system, no links are set for client and server utilities. If you want to set links, use the **idslink** command after installation. See the *IBM Tivoli Directory Server version 6.1 Command Reference* for information about the command.
- d. The copy of IBM Tivoli Directory Integrator provided includes the IBM Tivoli Directory Integrator Server and the IBM Tivoli Directory Integrator Administration and Monitoring Console. The IBM Tivoli Directory Integrator Configuration Editor, which is used to develop assembly lines and event handlers, is not included as part of IBM Tivoli Directory Server. If you want the full version of IBM Tivoli Directory Integrator, purchase IBM Tivoli Directory Integrator 6.1.1, which includes all the features of IBM Tivoli Directory Integrator.

If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:

- Use the **idssupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).

You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.

- Use Simple Network Management Protocol (SNMP).
- Use the Active Directory synchronization feature.

You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

Note: IBM Tivoli Directory Integrator is not provided for Solaris X64 or HP-UX Integrity systems.

This window also indicates the amount of disk space required and available on the selected drive.

Be sure the components you want to install are selected, and click **Next**.

10. If you selected **Server 6.1** but not **DB2 V9.1** and there are multiple versions of DB2 (such as versions 8 and 9) on the system, you are asked to select the version of DB2 you want to use with Tivoli Directory Server 6.1.
11. The Web Administration Tool 6.1 and Tivoli Directory Integrator are applications that require a Web application server. If you selected **Web Administration Tool 6.1**, **Tivoli Directory Integrator**, or both, but you did not select **Embedded WebSphere Application Server**, a window is displayed for

each of the applications you selected asking you to specify a Web application server into which to deploy the application. You can do one of the following:

- Click **Detected WebSphere Application Servers** and then select a WebSphere Application Server that is installed on the system and detected by the InstallShield GUI installation program. The application will be deployed into this version of WebSphere Application Server.
 - Click **Custom location of WebSphere Application Server** to specify a path to a version of WebSphere Application Server in a different location. The application will be deployed into this version of WebSphere Application Server.
 - Click **Do not specify. I will manually deploy at a later time.** You must deploy the application into a WebSphere Application Server before you can use the application.
12. The installation program now has enough information to begin installing. A summary window displays the components you selected and the locations where the selected components will be installed. Click **Back** to change any of your selections. Click **Install** to begin installation.

If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation will not proceed correctly and unpredictable results might occur.

Note: After installation has begun, do not try to cancel the installation. If you inadvertently cancel the installation, see the information about recovering from a failed installation in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* before you attempt to reinstall.

Note: A license subdirectory is created in the directory where IBM Tivoli Directory Server is installed. This subdirectory contains IBM Tivoli Directory Server license files in all provided languages.

If you installed a server, the Instance Administration Tool automatically starts so that you can create a directory server instance and complete configuration. Before you can use the server, you must:

- Create a directory server instance.
- Set the administrator DN and password for the instance.
- If you installed and plan to use the full server, configure the database that will store the directory data. (The proxy server does not require a database.)

To create a directory server instance, use the instructions in “Creating a directory server instance” on page 94. You can set the administrator DN and password and configure the database during the instance creation process.

To make changes to your configuration at a later time, see Chapter 13, “Configuration,” on page 111 for more information about using the Configuration Tool.

If any errors occurred during installation, instance creation, or configuration, see the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* for information about recovering from these errors.

Using the InstallShield GUI to install and upgrade to Tivoli Directory Server 6.1

If you have a server from IBM Directory Server 4.1 or 5.1 or IBM Tivoli Directory Server 5.2 or 6.0, you can use the InstallShield GUI to install Tivoli Directory Server 6.1 without uninstalling the previous version first.

If the server is a 4.1, 5.1 or 5.2 server, it will be automatically upgraded to version 6.1 and the previous version of Tivoli Directory Server will be uninstalled. (Servers before the 6.0 release cannot coexist on a system with Tivoli Directory Server 6.1.)

A 6.0 directory server instance can coexist with a 6.1 directory server instance; if you have a 6.0 directory server instance, it will not be automatically upgraded when you install Tivoli Directory Server 6.1, but you can migrate the directory server instance to 6.1 at the end of installation if you choose to. You can keep the 6.0 directory server instance and also create one or more 6.1 directory server instances.

Be sure that you have followed the instructions in Chapter 3, “Upgrading from previous releases,” on page 11.

Notes:

1. If the version of DB2 on your system is before DB2 V8, you must upgrade your DB2 to V8 or V9 before you begin installation.
2. If you want to install a language pack for a language other than English, install it before you upgrade. See Chapter 4, “Installing language packs using the InstallShield GUI,” on page 17 for instructions.

To install IBM Tivoli Directory Server 6.1 on a system that has a 4.1, 5.1, 5.2, or 6.0 version of Tivoli Directory Server with a server from that version:

1. Stop the previous version server and the administration server.
2. Start the InstallShield GUI installation program:
 - **On Windows systems:**
 - a. Be sure that you are logged on as a member of the Administrators group.
 - b. On the computer where you are installing IBM Tivoli Directory Server, stop any programs that are running and close all windows. If you have open windows, the initial IBM Tivoli Directory Server installation window might be hidden behind other windows.
 - c. If you are installing from a CD:
 - 1) Insert CD 1 in your CD-ROM drive.
 - 2) Go to the drive for your CD-ROM, and then go to the \tds folder. If you are installing from downloaded .zip files, go to the folder where you unzipped the downloaded .zip files, and then go to the tdsV6.1\tds folder.
 - d. Double-click the **install_tds.bat** icon.

If you prefer, you can use the command line to begin installation and specify a temporary directory other than the one specified by the TEMP environment variable. To use this option, go to the appropriate directory (from the previous step) and type the following at a command prompt:

```
install_tds.bat -is:tempdir directory
```

where *directory* is the directory you want to use for temporary space. Be sure that you have at least 255 MB of free space in this directory. If you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you also have 150 MB in the directory specified by the TEMP environment variable.

For example:

```
install_tds.bat -is:tempdir "c:\My Documents\temp"
```

The language window is displayed.

Note: If the installation program exits without displaying the language window, it might be because there is not enough space in the directory specified by the TEMP environment variable or the directory you specified for temporary space. Be sure that you have at least 255 MB of free space in this directory.

- **On AIX, Linux, Solaris, and HP-UX systems:**

- a. Be sure that you are logged on as the root user.
- b. If you are installing from a CD, insert CD 1 in your CD-ROM drive, and then change directories to the /tds directory on the CD.

Notes:

- 1) If you are installing from CDs on a Solaris 9 system, be sure to see "Mounting and unmounting the CD on Solaris 9 systems" on page 21.
- 2) If you are installing from CDs on an HP-UX system, be sure to see "Mounting and unmounting the CD on HP-UX systems" on page 21.

If you are installing from downloaded .tar files, go to the /tdsV6.1/tds subdirectory of the directory where you untarred the downloaded .tar files.

- c. Type `./install_tds.sh`

If you prefer, you can specify a temporary directory other than the system temporary directory. To use this option, change directories to the appropriate directory (from the previous step) and type the following at a command prompt:

```
./install_tds.sh -is:tempdir directory
```

where *directory* is the directory you want to use for temporary space. Be sure that you have at least 300 MB of free space in this directory on AIX and Linux systems, and 400 MB on Solaris and HP-UX systems. If you are installing any of the corequisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you also have 150 MB in the /tmp directory.

For example:

```
./install_tds.sh -is:tempdir /opt/tmp
```

A language window is displayed.

3. Select the language you want to use during IBM Tivoli Directory Server installation. Click **OK**.

Note: This is the language used in the installation program, not in IBM Tivoli Directory Server. The language used in IBM Tivoli Directory Server is determined by the language pack you install.

4. On the Welcome window, click **Next**.

5. After reading the Software license agreement, select **I accept both the IBM and the non-IBM terms**. Click **Next**.
6. Installed components from the previous version are displayed with their corresponding version levels. In addition, the DB2 instance from the previous instance is displayed. Click **Next**.
7. **On Windows systems only**, to install in the default directory, click **Next**. You can specify a different directory by clicking **Browse** or typing the directory path you want. The directory will be created if it does not exist. (The default installation directory is C:\Program Files\IBM\LDAP\V6.1.)

Notes:

- a. If you have already installed one or more language packs, the installation location is set to the path where you installed the language packs, and you are not asked where you want to install.
- b. Be sure that the installation location is not the same as the path where another version of the client is installed.
- c. Do not use special characters, such as hyphen (-) and period (.) in the name of the installation directory. For example, use **ldapdir** rather than **ldap-dir** or **ldap.dir**.

If the window in the following step is very slow to be displayed, you might have a slow network drive attached. You can detach the network drive and see if the window is displayed more quickly.

8. A window showing the following components for installation is displayed:
 - Tivoli Global Security Kit
 - DB2 V9.1
 - Embedded WebSphere Application Server
 - C Client 6.1
 - Java Client 6.1
 - Web Administration Tool 6.1
 - Proxy Server 6.1
 - Server 6.1
 - Tivoli Directory Integrator

Notes:

- a. **On Windows systems only**, if you install IBM Tivoli Directory Integrator, the Path environment variable is updated by adding the *installpath\java\bin* directory to the beginning of the existing path. (*installpath* is the directory where you installed IBM Tivoli Directory Server.)
- b. **On Windows systems only**, the *installpath\bin*, *installpath\sbin*, and *installpath\lib* directories are not added to the Path environment variable. This allows IBM Tivoli Directory Server 6.1 to coexist with IBM Tivoli Directory Server 6.0.
- c. If the Web Administration Tool is installed, Directory Services Markup Language (DSML) files are also copied to your computer. See Appendix M, "Installing and configuring DSML," on page 185 for information about installing and configuring DSML.
- d. If the Web Administration Tool is installed, a Web application server is required to run the tool, and Embedded WebSphere Application Server 6.1.0.7 is installed and configured for you. If version 5.0, 5.0.2, or 5.1.1 of Embedded WebSphere Application Server is already installed, the

InstallShield GUI installation program automatically migrates it to version 6.1.0.7. Any configuration files from the previous Web Administration Tool are backed up and restored. If you want to use another WebSphere application server, you must select a Web application server.

When Embedded WebSphere Application Server is installed and an application (such as the Web Administration tool or the IBM Tivoli Directory Integrator Administration and Monitoring Console) is installed into Embedded WebSphere Application Server, the Embedded WebSphere Application Server server for that application is also installed as a service.

e. If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:

- Use the **idssupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).

You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.

- Use Simple Network Management Protocol (SNMP).
- Use the Active Directory synchronization feature.

You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

Note: IBM Tivoli Directory Integrator is not provided for Solaris X64 or HP-UX Integrity systems.

This window also indicates the amount of disk space required and available on the selected drive.

Be sure the components you want to install are selected, and click **Next**.

9. If you selected **Server 6.1** but not **DB2 V9.1** and there are multiple versions of DB2 (such as versions 8 and 9) on the system, you are asked to select the version of DB2 you want to use with Tivoli Directory Server 6.1.
10. **On Windows systems only**, if you selected **DB2 V9.1**, a window is displayed prompting you to enter a Windows user ID and password for the DB2 system ID. On the window:
 - a. Type the user ID. This user ID must **not** be the user ID you intend to use as the owner of the directory server instance.

If you are not using an existing user ID, DB2 creates the user ID you specify with the password you type. This is the preferred method.

If you are using an existing Windows user ID, it must be a member of the Administrators group.
 - b. Type the password, and then type the password again for verification. (If you are using an existing Windows user ID, be sure that your password is correct. Otherwise, DB2 does not install correctly.)
 - c. Click **Next**.
11. The Web Administration Tool 6.1 and Tivoli Directory Integrator are applications that require a Web application server. If you selected the **Web Administration Tool 6.1** or **Tivoli Directory Integrator** component or both, but you did not select **Embedded WebSphere Application Server**, a window is displayed for each of the applications you selected asking you to specify a Web application server into which to deploy the application. You can do one of the following:

- Click **Detected WebSphere Application Servers** and then select a WebSphere Application Server that is installed on the system and detected by the InstallShield GUI installation program. The application will be deployed into this version of WebSphere Application Server.
 - Click **Custom location of WebSphere Application Server** to specify a path to a version of WebSphere Application Server in a different location. The application will be deployed into this version of WebSphere Application Server.
 - Click **Do not specify. I will manually deploy at a later time.** You must deploy the application into a supported Web application server before you can use the application. (See *IBM Tivoli Directory Server Version 6.1 System Requirements* for information about supported Web application servers.)
12. The installation program now has enough information to begin installing. A summary window displays the components you selected and the locations where the selected components will be installed. Click **Back** to change any of your selections. Click **Install** to begin installation.

If you are installing DB2 (you selected **DB2 V9.1** for installation), your data is migrated during the installation process. This data migration completes when you start the Tivoli Directory Server 6.1 server instance for the first time.

If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation cannot proceed correctly and unpredictable results might occur.

Note: After installation has begun, do not try to cancel the installation. If you inadvertently cancel the installation, see the information about recovering from a failed installation in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* before you attempt to reinstall.

13. If your previous version of Tivoli Directory Server is 4.1, 5.1, or 5.2, a window is displayed requesting information about the 6.1 directory server instance to which your previous server is being upgraded. In the window:
- In the **User/Instance Name** field, accept the user ID listed or provide a new user ID.
 - In the **Instance location** field, type the location where the directory server instance files will be stored. Be sure that you have at least 30 MB of free disk space in this location.

On Windows systems, this information is required. This location is a drive, such as C:. The directory instance files will be stored on the drive you specify in the `\idsslapd-instance_name` directory. (*instance_name* is the name of the directory server instance.)

On AIX, Linux, Solaris, and HP-UX systems, this field is optional. The default location for the instance files is in the directory server instance owner's home directory, but you can specify a different path.

- In the **Encryption seed string** field, type a string of characters that will be used as an encryption seed. The encryption seed must contain only printable ISO-8859-1 ASCII characters with values in the range of 33 to 126, and must be a minimum of 12 and a maximum of 1016 characters in length. For information about what characters can be used, see Appendix K, "ASCII characters from 33 to 126," on page 181.

This encryption seed is used to generate a set of Advanced Encryption Standard (AES) secret key values. These values are stored in the directory server instance's directory key stash file and used to encrypt and decrypt directory stored password and secretkey attributes.

Record the encryption seed in a secure location.

- Optionally, type a description of the directory server instance in the **Instance description** field. This description is displayed in other windows to help identify the instance.

Click **Next**.

Note: If the previous version on your system is Tivoli Directory Server 6.0, directory server instances are not upgraded automatically.

14. **On Windows systems only**, if you are asked if you want to restart your computer now or later, select the option you want and click **Finish**. (You might need to restart your system to complete IBM Tivoli Directory Server installation. You are unable to use IBM Tivoli Directory Server until this is completed.)

If your computer is restarted, log in using the same user ID that you used to install IBM Tivoli Directory Server.

If you installed DB2, the DB2 First Steps GUI might be started. You can go through the DB2 First Steps or close this GUI.

Note: A license subdirectory is created in the directory where IBM Tivoli Directory Server is installed. This subdirectory contains IBM Tivoli Directory Server license files in all provided languages.

On systems that had a 4.1, 5.1, or 5.2 version of Tivoli Directory Server:

- The old version of Tivoli Directory Server is uninstalled and Tivoli Directory Server version 6.1 is installed. Your previous directory server is migrated to a 6.1 directory server instance with the name, location, and encryption seed you specified in step 13 on page 45.
- Your previous configuration and schema files are migrated to 6.1 versions.
- If your previous database was 32-bit and the new database is 64-bit, the database is expanded to 64-bit. When the server is started for the first time, the directory data is migrated.
- If you installed a server, the Instance Administration Tool automatically starts. You can use this tool to view information about the 6.1 directory server instance. If the upgrade was successful, the directory server instance is created and configured and does not need any further setup.

On systems that had Tivoli Directory Server 6.0 installed:

- Tivoli Directory Server 6.1 is installed and Tivoli Directory Server 6.0 is left on the system.
- If you installed a server, the Instance Administration Tool automatically starts so that you can migrate your 6.0 directory server instance to 6.1 or create and configure a new 6.1 directory server instance. To create a new directory server instance or migrate a 6.0 directory server instance to 6.1, use the instructions in "Creating a directory server instance" on page 94.

If any errors occur during installation, instance creation, or configuration, see the information in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* for information about recovering from these errors.

Note: If you upgraded from IBM Directory Server 5.1 to IBM Tivoli Directory Server 6.1, the server will take longer than usual to start the very first time. After the server has been started for the first time, it will in a normal amount of time.

After you install using the InstallShield GUI

After you install using the InstallShield GUI, there are directories that you can remove:

- The `ismptemp.tds` directory is left on the system and can be removed. On Windows systems, the `ismptemp.tds` directory is located wherever the `TEMP` environment variable is pointing. On AIX, Linux, Solaris, and HP-UX systems, the `ismptemp.tds` directory is in the `/tmp` directory.

If you installed using the `-is:tempdir` option, the `ismptemp.tds` dir is at the location specified with that option.

- There might also be some `ismpxxx` directories (where `xxx` is a number such as 001 or 002) in the temporary directory location described in the previous item. You can remove these directories after installation exits.

When TDI is installed, the ISMP installation incorrectly assumes the Deployment Engine necessary for TDI will be installed into `/opt`, when it will actually be installed into `/usr`. If `/opt` is in a different partition than `/usr`, the space calculation may not be correct. Be sure that `/usr` has at least 200M free on AIX and Linux, and 300M free on HP and Solaris if TDI is being installed.

Chapter 7. Installing IBM Tivoli Directory Server using AIX utilities

You can use either of the following utilities to install IBM Tivoli Directory Server on AIX:

- **SMIT** (This is the preferred installation method.) See “SMIT installation” on page 53 for information.
- **installp**. See “Command line installation using installp” on page 56 for information.

Attention: If you are upgrading from IBM Directory Server 4.1 or 5.1 or IBM Tivoli Directory Server 5.2 or 6.0, use the instructions in Chapter 3, “Upgrading from previous releases,” on page 11.

Before you install IBM Tivoli Directory Server, be sure you have a supported version of DB2 installed. (See *IBM Tivoli Directory Server version 6.1 System Requirements* for supported versions of DB2.)

If you want to use the version of DB2 provided with IBM Tivoli Directory Server, use the **db2_install** utility to install it. The **db2_install** utility is in the /db2 directory of the IBM Tivoli Directory Server CD-ROM if you created one, or in the tdsV6.1/db2/ directory of the directory where you untarred the DB2 tar file for AIX.

Notes:

1. After you start the **db2_install** utility, you are prompted for a keyword. In response to this prompt, type ESE.
2. After you install DB2, you can check the /tmp/db2_install_log.99999 file to verify that the installation was successful. (99999 is a random number associated with the installation.)

If you are installing the Web Administration Tool, you must also install a Web application server such as Embedded WebSphere Application Server. See Appendix H, “Installing, configuring, and uninstalling Embedded WebSphere Application Server,” on page 171 for information.

The server and the client from IBM Tivoli Directory Server 6.1 can coexist with the following clients and servers:

- A client from any of the following:
 - IBM Directory Server 4.1
 - IBM Directory Server 5.1
 - IBM Tivoli Directory Server 5.2
 - IBM Tivoli Directory Server 6.0
- A server from IBM Tivoli Directory Server 6.0

If any of these are installed, you can leave them installed.

Notes:

1. For a server with no X11 support, do not install the Java client, which is in package idsldap.cltjava61, when you install the server. However, you will not be able to use the Instance Administration Tool or the Configuration Tool,

which require Java, and you must use the command line to create directory server instances and configure the database.

2. You do not need to install security functions if you are not going to use them. You can provide SSL by installing the SSL package on the client, server, or both, as well as installing a Global Security Kit (GSKit), which is included with IBM Tivoli Directory Server 6.1. See “Installing GSKit” on page 59 for information about installing GSKit.
3. If you are installing IBM Tivoli Directory Server on a node within an RS/6000® SP™ environment, see “Before installing on a node within an RS/6000 SP environment” before beginning installation.

For more detailed information about installation procedures and commands for the AIX operating system, see the *AIX Installation Guide* provided with the operating system.

Before installing on a node within an RS/6000 SP environment

Attention: Use this section **only** if you are installing on a node within an RS/6000 SP environment.

If you are installing IBM Tivoli Directory Server on a node within an RS/6000 SP environment you must first add the necessary users and groups to the Control Workstation (CWS) and propagate them to the nodes using the `/var/sysamn/supper update` command, as follows:

1. Add the **idsldap** user and group on the CWS, and add the `idsldap` and `root` users to the `idsldap` group. For example:

```
mkgroup idsldap
mkuser idsldap
chgrpmem -m + root,idsldap idsldap
```

2. Update the RS/6000 SP nodes with the new users and groups.

```
/var/sysamn/supper update
```

You are now ready to install and configure IBM Tivoli Directory Server on the RS/6000 SP node.

Note: You might want to turn off the timer function on the CWS to each affected RS/6000 SP node to allow installation, instance creation, and configuration to complete before the CWS updates the timer to the RS/6000 SP node. After installation, instance creation, and configuration are complete and verified, turn the timer function on again.

Packages, filesets, and prerequisites

IBM Tivoli Directory Server is installed in `/opt/IBM/ldap/V6.1`.

The following information shows the packages you must install for each feature. You can install all the features at the same time, but if you install them separately, you must install them in the order shown.

32-bit client (no SSL)

Install (in this order):

1. **Package:** `idsldap.clbase61`

Contains the following filesets:

- `idsldap.clbase61.rte` – Base client runtime

- idslldap.cltbody61.adt – Base client SDK
2. **Package:** idslldap.clt32bit61
Contains fileset idslldap.clt32bit61.rte – 32-bit client (no SSL)

32-bit client (SSL)

Install (in this order):

1. **Package:** idslldap.clttbody61
Contains the following filesets:
 - idslldap.clttbody61.rte – Base client runtime
 - idslldap.clttbody61.adt – Base client SDK
2. **Package:** idslldap.clt32bit61
Contains fileset idslldap.clt32bit61.rte – 32-bit client (no SSL)
3. **Package:** idslldap.clt_max_crypto32bit61
Contains fileset idslldap.clt_max_crypto32bit61.rte – 32-bit client (SSL)

64-bit client (no SSL)

Install (in this order):

1. **Package:** idslldap.clttbody61
Contains the following filesets:
 - idslldap.clttbody61.rte – Base client runtime
 - idslldap.clttbody61.adt – Base client SDK
2. **Package:** idslldap.clt64bit61
Contains fileset idslldap.clt64bit61.rte – 64-bit client (no SSL)

64-bit client (SSL)

Install (in this order):

1. **Package:** idslldap.clttbody61
Contains the following filesets:
 - idslldap.clttbody61.rte – Base client runtime
 - idslldap.clttbody61.adt – Base client SDK
2. **Package:** idslldap.clt64bit61
Contains fileset idslldap.clt64bit61.rte – 64-bit client (no SSL)
3. **Package:** idslldap.clt_max_crypto64bit61
Contains fileset idslldap.clt_max_crypto64bit61.rte – 64-bit client (SSL)

Java client

Install the following:

Package: idslldap.cltjava61 Contains fileset idslldap.cltjava61.rte – Java client

Proxy server (64-bit). (This includes the client packages.)

Install (in this order):

1. **Package:** idslldap.clttbody61
Contains the following filesets:
 - idslldap.clttbody61.rte – Base client runtime
 - idslldap.clttbody61.adt – Base client SDK
2. **Package:** idslldap.clt64bit61
Contains fileset idslldap.clt64bit61.rte – 64-bit client (no SSL)
3. **Package:** idslldap.cltjava61
Contains fileset idslldap.cltjava61.rte – Java client

Note: If you do not want to require X11 support, do not install the Java client.

4. **Package:** idldap.srvbase64bit61
Contains fileset idldap.srvbase64bit61.rte – Base Server
5. **Package:** idldap.srvproxy64bit61
Contains fileset idldap.srvproxy64bit61.rte – Proxy server
6. **Package:** idldap.msg61.en_US
Contains the English messages

Proxy server (SSL) (64-bit). (This includes the client packages.)

Install (in this order):

1. **Package:** idldap.cltbase61
Contains the following filesets:
 - idldap.cltbase61.rte – Base client runtime
 - idldap.cltbase61.adt – Base client SDK
2. **Package:** idldap.clt64bit61
Contains fileset idldap.clt64bit61.rte – 64-bit client (no SSL)
3. **Package:** idldap.clt_max_crypto64bit61
Contains fileset idldap.clt_max_crypto64bit61.rte – 64-bit client (SSL)
4. **Package:** idldap.cltjava61
Contains fileset idldap.cltjava61.rte – Java client
5. **Package:** idldap.srvbase64bit61
Contains fileset idldap.srvbase64bit61.rte – Base Server
6. **Package:** idldap.srv_max_cryptobase64bit61
Contains fileset idldap.srv_max_cryptobase64bit61.rte – Base Server (SSL)
7. **Package:** idldap.srvproxy64bit61
Contains fileset idldap.srvproxy64bit61.rte – Proxy server (64-bit)
8. **Package:** idldap.msg61.en_US
Contains the English messages

Server (no SSL) (64-bit). (This includes the client packages.)

Install (in this order):

1. **Package:** idldap.cltbase61
Contains the following filesets:
 - idldap.cltbase61.rte – Base client runtime
 - idldap.cltbase61.adt – Base client SDK
2. **Package:** idldap.clt64bit61
Contains fileset idldap.clt64bit61.rte – 64-bit client (no SSL)
3. **Package:** idldap.cltjava61
Contains fileset idldap.cltjava61.rte – Java client

Note: If you do not want to require X11 support, do not install the Java client.

4. **Package:** idldap.srvbase64bit61
Contains fileset idldap.srvbase64bit61.rte – Base Server (no SSL) (64-bit)
5. **Package:** idldap.srv64bit61

Contains fileset idslldap.srv64bit61.rte – Directory server(64-bit)

6. **Package:** idslldap.msg61.en_US

Contains the English messages

Server (SSL) (64-bit). (This includes the client packages.)

Install (in this order):

1. **Package:** idslldap.cltbase61. Contains the following filesets:

- idslldap.cltbase61.rte – Base client runtime
- idslldap.cltbase61.adt – Base client SDK

2. **Package:** idslldap.clt64bit61

Contains fileset idslldap.clt64bit61.rte – 64-bit client (no SSL)

3. **Package:** idslldap.clt_max_crypto64bit61

Contains fileset idslldap.clt_max_crypto64bit61.rte – 64-bit client (SSL)

4. **Package:** idslldap.cltjava61

Contains fileset idslldap.cltjava61.rte – Java client

Note: If you do not want to require X11 support, do not install the Java client.

5. **Package:** idslldap.srvbase64bit61

Contains fileset idslldap.srvbase64bit61.rte – Base Server (no SSL) (64-bit)

6. **Package:** idslldap.srv_max_cryptobase64bit61

Contains fileset idslldap.srv_max_cryptobase64bit61.rte – Base Server (SSL) (64-bit)

7. **Package:** idslldap.srv64bit61.

Contains fileset idslldap.srv64bit61.rte – Directory server (64-bit)

8. **Package:** idslldap.msg61.en_US

Contains the English messages

Web Administration Tool (no SSL)

Install the following:

Package: idslldap.webadmin61

Contains fileset idslldap.webadmin61.rte – Web Administration Tool (no SSL)

Web Administration Tool (SSL)

Install the following:

Package: idslldap.webadmin_max_crypto61

Contains fileset idslldap.webadmin_max_crypto61.rte – Web Administration Tool (SSL)

SMIT installation

To install IBM Tivoli Directory Server using **SMIT**:

1. Log in as **root**.
2. **If you are installing from a CD:**
 - a. Insert CD 1 into the CD-ROM drive.
 - b. If you are installing the client, server, or Web Administration Tool, go to the tds subdirectory.

If you are installing a language pack for a language other than English, go to the `tdsLangpack` subdirectory. (You must install a language pack for the language in which you want server messages displayed. You can install the language pack before or after you install the server.)

If you are installing from the .tar files:

- a. Go to the directory where you untarred the files.
- b. If you are installing the client, server, or Web Administration Tool, go to the `tdsV6.1/tds` subdirectory.

If you are installing a language pack for a language other than English, go to the `tdsV6.1/tdsLangpack` subdirectory. (You must install a language pack for the language in which you want server messages displayed. You can install the language pack before or after you install the server.)

3. At the command prompt, type the following:

```
smit install
```

and press Enter. The Software Installation and Maintenance window is displayed.

4. Click **Install and Update Software**. The Install and Update Software window is displayed.
5. Click **Install and Update from ALL Available Software**.
6. Do one of the following:
 - If you are installing from the CD, click **List** next to the **INPUT device/directory for software** field, and select the appropriate CD-ROM drive or the directory containing the IBM Tivoli Directory Server images.
 - If you are installing from the untarred file, type `.` in the **INPUT device/directory for software** field.

Click **OK**.

7. Move your cursor to **Software to install**. Do one of the following:
 - Type `idsldap` to install all the `idsldap` filesets.
 - Click **List** to list all the filesets on the CD, and then select the filesets that you want to install.

If you are installing the product and you select the list option, you see, for example:

```
idsldap.clt32bit61
  6.1.0.0      Directory Server - 32 bit Client
idsldap.clt64bit61
  6.1.0.0      Directory Server - 64 bit Client
idsldap.clt_max_crypto32bit61
  6.1.0.0      Directory Server - 32 bit Client (SSL)
idsldap.clt_max_crypto64bit61
  6.1.0.0      Directory Server - 64 bit Client (SSL)
idsldap.cltbase61
  6.1.0.0      Directory Server - Base Client
idsldap.cltjava61
  6.1.0.0      Directory Server - Java Client
idsldap.msg61.en_US
  6.1.0.0      Directory Server - Messages - U.S. English (en)
idsldap.srvbase64bit61
  6.1.0.0      Directory Server - Base Server
idsldap.srv64bit61
  6.1.0.0      Directory Server - 64 bit Server
idsldap.srv_max_cryptobase64bit61
  6.1.0.0      Directory Server - Base Server (SSL)
idsldap.srvproxy64bit61
  6.1.0.0      Directory Server - Proxy Server
```

```

idsldap.webadmin61
 6.1.0.0      Directory Server - Web Administration
idsldap.webadmin_max_crypto61
 6.1.0.0      Directory Server - Web Administration (SSL)
idsldap.ent61
 6.1.0.0      Directory Server - Entitlement

```

If you are installing a language pack, you see, for example:

```

> idsldap.msg61.cs_CZ      Messages - Czech (cs)
> idsldap.msg61.de_DE      Messages - German (de)
> idsldap.msg61.es_ES      Messages - Spanish (es)
> idsldap.msg61.fr_FR      Messages - French (fr)
> idsldap.msg61.hu_HU      Messages - Hungarian (hu)
> idsldap.msg61.it_IT      Messages - Italian (it)
> idsldap.msg61.ja_JP      Messages - Japanese (ja)
> idsldap.msg61.ko_KO      Messages - Korean (ko)
> idsldap.msg61.pl_PL      Messages - Polish (pl)
> idsldap.msg61.pt_BR      Messages - Brazilian Portuguese (pt_BR)
> idsldap.msg61.ru_RU      Messages - Russian (ru)
> idsldap.msg61.sk_SK      Messages - Slovak (sk)
> idsldap.msg61.zh_CN      Messages - Simplified Chinese (zh_CN)
> idsldap.msg61.zh_TW      Messages - Traditional Chinese (zh_TW)

```

Select the filesets you want to install and click **OK**.

8. Click **OK**. The message Are You Sure? is displayed.
9. Click **OK** to start the installation.

If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation cannot proceed correctly and unpredictable results might occur.

10. Check the installation summary at the end of the output to verify successful installation of the filesets.
11. Click **Done**.
12. To exit **SMIT**, press F12, or click **Cancel** until you are back to a command prompt. To verify that IBM Tivoli Directory Server was installed successfully, type the following at a command prompt:

```
lslpp -aL idsldap.*
```

The output displayed lists all the filesets starting with `idsldap`. For example:

```

idsldap.clt32bit61.rte      6.1.0.0    C   F   Directory Server - 32 bit
Client
idsldap.clt64bit61.rte      6.1.0.0    C   F   Directory Server - 64 bit
Client
idsldap.clt_max_crypto32bit61.rte
                             6.1.0.0    C   F   Directory Server - 32 bit
Client (SSL)
idsldap.clt_max_crypto64bit61.rte
                             6.1.0.0    C   F   Directory Server - 64 bit
Client (SSL)

```

idsldap.cltbase61.adt	6.1.0.0	C	F	Directory Server - Base Client
idsldap.cltbase61.rte	6.1.0.0	C	F	Directory Server - Base Client
idsldap.cltjava61.rte	6.1.0.0	C	F	Directory Server - Java Client
idsldap.msg61.en_US	6.1.0.0	C	F	Directory Server - Messages - U.S. English (en)
idsldap.srv64bit61.rte	6.1.0.0	C	F	Directory Server - 64 bit Server
idsldap.srvproxy64bit61.rte	6.1.0.0	C	F	Directory Server - Proxy Server
idsldap.srvbase64bit61.rte	6.1.0.0	C	F	Directory Server - Base Server
idsldap.srv_max_cryptobase64bit61.rte	6.1.0.0	C	F	Directory Server - Base Server (SSL)
idsldap.webadmin61.rte	6.1.0.0	C	F	Directory Server - Web Administration
idsldap.webadmin_max_crypto61.rte	6.1.0.0	C	F	Directory Server - Web Administration (SSL)
idsldap.ent61.rte	6.1.0.0	C	F	Directory Server - Entitlement

13. If you want to include security functions, install GSKit. See “Installing GSKit” on page 59.
14. If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:
 - Use the **idssupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).
You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.
 - Use Simple Network Management Protocol (SNMP).
 - Use the Active Directory synchronization feature.
You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

Notes:

1. If you install the Web Administration Tool, DSML files are also copied to your computer. See Appendix M, “Installing and configuring DSML,” on page 185 for information about installing and configuring DSML.
2. If you install the Web Administration Tool, a Web application server such as Embedded WebSphere Application Server is required to run the tool. See Appendix H, “Installing, configuring, and uninstalling Embedded WebSphere Application Server,” on page 171 for information about installing and configuring a Web application server.

Command line installation using installp

Note: If you want to upgrade from a version of IBM Directory Server or IBM Tivoli Directory Server, use the instructions in Chapter 3, “Upgrading from previous releases,” on page 11.

To install IBM Tivoli Directory Server from a command prompt:

1. Log in as **root**.

2. **If you are installing from a CD:**

- a. Insert CD 1 into the CD-ROM drive and mount the CD.
- b. If you are installing the client, server, or Web Administration Tool, go to the /tds directory on the CD.

If you are installing a language pack for a language other than English, go to the /tdsLangpack directory on the CD. (You must install a language pack for the language in which you want server messages displayed. You can install the language pack before or after you install the server.)

If you are installing from the .tar files:

- a. Go to the directory where you untarred the files.
- b. If you are installing the client, server, or Web Administration Tool, go to the /tdsV6.1/tds subdirectory.

If you are installing a language pack for a language other than English, go to the /tdsV6.1/tdsLangpack directory. (You must install a language pack for the language in which you want server messages displayed. You can install the language pack before or after you install the server.)

3. Determine which IBM Tivoli Directory Server packages and which language packs you need. See “Packages, filesets, and prerequisites” on page 50 for information. To see the packages that are available, type the following command:

```
installp -ld . | grep idsldap
```

A list of all the installable IBM Tivoli Directory Server packages or language packs is displayed. (This depends on which subdirectory you started the **installp** command from.)

4. At the command prompt, install the required packages by typing the following command:

```
installp -acgXd . packages
```

where :

- **-a** stands for **apply**.
- **-c** stands for **commit**.
- **-g** installs prerequisites if necessary.
- **-X** increases the file system space if needed.
- **-d** stands for **device**.
- *packages* is the package name or list of package names you want to install.

Examples:

To install all of the IBM Tivoli Directory Server filesets, type:

```
installp -acgXd . idsldap
```

If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation cannot proceed correctly and unpredictable results might occur.

5. Upon completion of installation, the system generates an installation summary. Verify that the Result column shows **success** for all loaded files. You can also verify that the IBM Tivoli Directory Server was installed successfully by typing the following at a command prompt:

```
lslpp -aL idsldap.*
```

The output displayed lists all the filesets starting with `idsldap`. This list includes the server, client, Web Administration Tool, HTML, and message filesets. For example:

<code>idsldap.clt32bit61.rte</code>	6.1.0.0	C	F	Directory Server - 32 bit Client
<code>idsldap.clt64bit61.rte</code>	6.1.0.0	C	F	Directory Server - 64 bit Client
<code>idsldap.clt_max_crypto32bit61.rte</code>	6.1.0.0	C	F	Directory Server - 32 bit Client (SSL)
<code>idsldap.clt_max_crypto64bit61.rte</code>	6.1.0.0	C	F	Directory Server - 64 bit Client (SSL)
<code>idsldap.cltbase61.adt</code>	6.1.0.0	C	F	Directory Server - Base Client
<code>idsldap.cltbase61.rte</code>	6.1.0.0	C	F	Directory Server - Base Client
<code>idsldap.cltjava61.rte</code>	6.1.0.0	C	F	Directory Server - Java Client
<code>idsldap.msg61.en_US</code>	6.1.0.0	C	F	Directory Server - Messages - U.S. English (en)
<code>idsldap.srv64bit61.rte</code>	6.1.0.0	C	F	Directory Server - 64 bit Server
<code>idsldap.srvproxy64bit61.rte</code>	6.1.0.0	C	F	Directory Server - Proxy Server
<code>idsldap.srvbase64bit61.rte</code>	6.1.0.0	C	F	Directory Server - Base Server
<code>idsldap.srv_max_cryptobase64bit61.rte</code>	6.1.0.0	C	F	Directory Server - Base Server (SSL)
<code>idsldap.webadmin61.rte</code>	6.1.0.0	C	F	Directory Server - Web Administration
<code>idsldap.webadmin_max_crypto61.rte</code>	6.1.0.0	C	F	Directory Server - Web Administration (SSL)
<code>idsldap.ent61.rte</code>	6.1.0.0	C	F	Directory Server - Entitlement

6. If you want to include security functions, install GSKit. See “Installing GSKit” on page 59.
7. If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:
 - Use the **idssupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).
You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.
 - Use Simple Network Management Protocol (SNMP).
 - Use the Active Directory synchronization feature.
You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

Notes:

1. If you install the Web Administration Tool, DSML files are also copied to your computer. See Appendix M, “Installing and configuring DSML,” on page 185 for information about installing and configuring DSML.
2. If you install the Web Administration Tool, a Web application server such as Embedded WebSphere Application Server is required to run the tool. See

Appendix H, "Installing, configuring, and uninstalling Embedded WebSphere Application Server," on page 171 for information about installing and configuring a Web application server.

Installing GSKit

If you installed an SSL-enabled version of IBM Tivoli Directory Server, you must install GSKit to take advantage of the security features. You can use either SMIT or **installp**.

To install using SMIT:

1. Invoke SMIT by typing `smit` at the command line.
2. Select **Software Installation & Maintenance**.
3. Select **Install and Update Software**.
4. Select **Install and Update from ALL Available Software**.
5. On the device/directory window specify the directory that contains the installable software.
6. Select the **gskta** (32-bit) and **gksa** (64-bit) packages from the multi-select list.
7. Select the filesets of the software packages to install
8. Select the options appropriate to your installation requirements from the Options window.

Note: Set the **Install all prereqs** option to **yes**.

9. Confirm that you want to complete the installation.

The **installp** command installs available software products in a compatible installation package. To install GSKit using **installp**, enter the following at a command prompt:

```
installp -acgXd . gskta.rte
installp -acgXd . gksa.rte
```

where

- **-a** stands for **apply**
- **-c** stands for **commit**
- **-g** automatically installs or commits any requisite software product.
- **-X** expands the filesystem if necessary.
- **-d** stands for **device**. This specifies where the installation media can be found.

See Appendix Q, "Setting up GSKit to support CMS key databases," on page 195 for more information about setting up GSKit after installation.

Setting system variables for GSKit

You must set the following variable so that `keyman` can run:

JAVA_HOME=*location*, where *location* is the location where JDK 1.5 is installed.

(The copy of the JDK 1.5 installed by IBM Tivoli Directory Server is in `<ldaphome>/java`, or `/opt/IBM/ldap/V6.1/java`.)

Note: If you are prompted to set `JAVA_HOME`, you can set it to the location of the Java that is installed with IBM Tivoli Directory Server. You also need to set the `LIBPATH` environment variable as follows:

```
export LIBPATH=<LDAPHOME>/java/jre/bin:<LDAPHOME>/java/jre/bin/classic:$LIBPATH
```

Removing GSKit

To remove GSKit using SMIT:

1. Invoke SMIT by typing `smit` at the command line.
2. Select **Software Installation and Maintenance** on the menu.
3. Select **Software Maintenance and Utilities**.
4. On the Maintenance window, select **Remove Installed Software** to open the Remove Software Product window.
5. Enter the name of the software package
6. Set the flag for **REMOVE dependent software?** to **YES** to instruct the system to automatically remove software products and updates that are dependent upon the product you are removing.
7. Confirm the procedure to complete the removal of the software package.

To remove GSKit using `installp`, type the following at a command prompt:

```
installp -u -g -V2 gskta.rte  
installp -u -g -V2 gksa.rte
```

where

- **-u** removes the specified software and any of its installed updates from the system.
- **-g** removes or rejects dependents of the specified software.
- **-V2** prints an alphabetically ordered list of FAILURES and WARNINGS.

Chapter 8. Installing IBM Tivoli Directory Server using Linux utilities

Attention: If you are upgrading from IBM Directory Server 4.1 or 5.1 or IBM Tivoli Directory Server 5.2 or 6.0, use the instructions in Chapter 3, “Upgrading from previous releases,” on page 11.

Installing IBM Tivoli Directory Server

Before you install IBM Tivoli Directory Server, be sure you have a supported version of DB2 installed. (See *IBM Tivoli Directory Server version 6.1 System Requirements* for supported versions of DB2.) If you want to use the version of DB2 provided with IBM Tivoli Directory Server, you must use the **db2_install** utility to install it. (If you do not use this utility, the DB2 license file is not added correctly.) The **db2_install** utility is in the /db2 directory of the IBM Tivoli Directory Server CD-ROM if you created one, or tdsV6.1/db2/ subdirectory of the directory where you untarred the DB2 tar file for Linux

Notes:

1. After you start the **db2_install** utility, you are prompted for a keyword. In response to this prompt, type ESE.
2. After you install DB2, you can check the /tmp/db2_install_log.99999 file to verify that the installation was successful. (99999 is a random number associated with the installation.)

If you are installing the Web Administration Tool, you must install a Web application server such as the Embedded WebSphere Application Server. See Appendix H, “Installing, configuring, and uninstalling Embedded WebSphere Application Server,” on page 171 for information.

Packages

IBM Tivoli Directory Server is installed in /opt/ibm/ldap/V6.1.

The IBM Tivoli Directory Server for the Linux operating system is provided in the following packages.

xSeries Linux packages:

- idslldap-cltbase61-6.1.0-0.i386.rpm – IBM Directory Server - Base Client
- idslldap-clt32bit61-6.1.0-0.i386.rpm – IBM Directory Server - 32 bit Client
Requires idslldap-cltbase61-6.1.0-0.i386.rpm
- idslldap-cltjava61-6.1.0-0.i386.rpm – IBM Directory Server - Java Client
- idslldap-srvbase32bit61-6.1.0-0.i386.rpm - IBM Directory Server – Base Server
Requires idslldap-clt32bit61-6.1.0-0.i386.rpm and its prerequisites
- idslldap-srvproxy32bit61-6.1.0-0.i386.rpm – IBM Directory Server - Proxy Server
Requires idslldap-srvbase32bit61-6.1.0-0.i386.rpm and its prerequisites
- idslldap-srv32bit61-6.1.0-0.i386.rpm – IBM Directory Server - 32 bit Server
Requires idslldap-srvbase32bit61-6.1.0-0.i386.rpm and its prerequisites

- idslldap-webadmin61-6.1.0-0.i386.rpm – IBM Directory Server - Web Administration
- idslldap-msg61-en-6.1.0-0.i386.rpm – IBM Directory Server - Messages U.S. English (en)
- idslldap-ent61-6.1.0-0.i386.rpm - IBM Directory Server Entitlement (supplied only on Passport Advantage®)

zSeries Linux packages:

- idslldap-cltbase61-6.1.0-0.s390.rpm – IBM Directory Server - Base Client
- idslldap-clt32bit61-6.1.0-0.s390.rpm – IBM Directory Server - 32 bit Client
Requires idslldap-cltbase61-6.1.0-0.s390.rpm
- idslldap-clt64bit61-6.1.0-0.s390x.rpm – IBM Directory Server - 64 bit Client
Requires idslldap-cltbase61-6.1.0-0.s390.rpm
- idslldap-cltjava61-6.1.0-0.s390.rpm – IBM Directory Server - Java Client
- idslldap-srvbase64bit61-6.1.0-0.s390x.rpm - IBM Directory Server – Base Server
Requires idslldap-clt64bit61-6.1.0-0.s390x.rpm and its prerequisites
- idslldap-srvproxy64bit61-6.1.0-0.s390x.rpm – IBM Directory Server - Proxy Server
Requires idslldap-srvbase64bit61-6.1.0-0.s390x.rpm and its prerequisites
- idslldap-srv64bit61-6.1.0-0.s390x.rpm – IBM Directory Server - 64 bit Server
Requires idslldap-srvbase64bit61-6.1.0-0.s390x.rpm and its prerequisites
- idslldap-webadmin61-6.1.0-0.s390.rpm – IBM Directory Server - Web Administration
- idslldap-msg61-en-6.1.0-0.s390.rpm – IBM Directory Server - Messages U.S. English (en)
- idslldap-ent61-6.1.0-0.s390.rpm - IBM Directory Server Entitlement (supplied only on Passport Advantage)

iSeries and pSeries Linux packages:

- idslldap-cltbase61-6.1.0-0.ppc.rpm – IBM Directory Server - Base Client
- idslldap-clt32bit61-6.1.0-0.ppc.rpm – IBM Directory Server - 32 bit Client
Requires idslldap-cltbase61-6.1.0-0.ppc.rpm
- idslldap-clt64bit61-6.1.0-0.ppc64.rpm – IBM Directory Server - 64 bit Client
Requires idslldap-cltbase61-6.1.0-0.ppc.rpm
- idslldap-cltjava61-6.1.0-0.ppc.rpm – IBM Directory Server - Java Client
- idslldap-srvbase64bit61-6.1.0-0.ppc64.rpm - IBM Directory Server – Base Server
Requires idslldap-clt64bit61-6.1.0-0.ppc.rpm and its prerequisites
- idslldap-srvproxy64bit61-6.1.0-0.ppc64.rpm – IBM Directory Server - Proxy Server
Requires idslldap-srvbase64bit61-6.1.0-0.ppc64.rpm and its prerequisites
- idslldap-srv64bit61-6.1.0-0.ppc64.rpm – IBM Directory Server - 64 bit Server
Requires idslldap-srvbase64bit61-6.1.0-0.ppc64.rpm and its prerequisites

- idslldap-webadmin61-6.1.0-0.ppc.rpm – IBM Directory Server - Web Administration
- idslldap-msg61-en-6.1.0-0.ppc.rpm – IBM Directory Server - Messages U.S. English (en)
- idslldap-ent61-6.1.0-0.ppc.rpm - IBM Directory Server Entitlement (supplied only on Passport Advantage)

AMD64/Opteron/EM64T Linux packages:

- idslldap-cltbase61-6.1.0-0.x86_64.rpm – IBM Directory Server - Base Client
- idslldap-clt64bit61-6.1.0-0.x86_64.rpm – IBM Directory Server - 64 bit Client
Requires idslldap-cltbase61-6.1.0-0.x86_64.rpm
- idslldap-cltjava61-6.1.0-0. x86_64.rpm – IBM Directory Server - Java Client
- idslldap-srvbase64bit61-6.1.0-0.x86_64.rpm - IBM Directory Server – Base Server
Requires idslldap-cltbase61-6.1.0-0.x86_64.rpm and its prerequisites
- idslldap-srvproxy64bit61-6.1.0-0. x86_64.rpm – IBM Directory Server - Proxy Server
Requires idslldap-srvbase64bit61-6.1.0-0.x86_64.rpm and its prerequisites
- idslldap-srv64bit61-6.1.0-0.x86_64.rpm – IBM Directory Server - 64 bit Server
Requires idslldap-srvbase64bit61-6.1.0-0.x86_64.rpm and its prerequisites
- idslldap-webadmin61-6.1.0-0.x86_64.rpm – IBM Directory Server - Web Administration
- idslldap-msg61-en-6.1.0-0.x86_64.rpm – IBM Directory Server - Messages U.S. English (en)
- idslldap-ent61-6.1.0-0.x86_64.rpm - IBM Directory Server Entitlement (supplied only on Passport Advantage)

Note: The instructions in this chapter use Linux Intel-based packages. For zSeries, iSeries, or pSeries Linux, substitute the appropriate package names.

Installing features

To install the proxy server or the server:

1. Log in as **root**.
2. Install the 32-bit client by typing the following at a command prompt:

```
rpm -ihv idslldap-cltbase61-6.1.0-0.i386.rpm
rpm -ihv idslldap-clt32bit61-6.1.0-0.i386.rpm
```

Note: On iSeries and pSeries Linux, zSeries Linux, and AMD64/Opteron/EM64T Linux systems, install the 64-bit client instead of the 32-bit client because the server is 64-bit. For example:

```
rpm -ihv idslldap-cltbase61-6.1.0-0.ppc.rpm
rpm -ihv idslldap-clt64bit61-6.1.0-0.ppc64.rpm
```

3. Depending on which type of server you want, do one of the following:
 - Install the proxy server by typing the following at a command prompt:


```
rpm -ihv idslldap-cltjava61-6.1.0-0.i386.rpm
rpm -ihv idslldap-srvbase32bit61-6.1.0-0.i386.rpm
rpm -ihv idslldap-srvproxy32bit61-6.1.0-0.i386.rpm
rpm -ihv idslldap-ent61-6.1.0-0.i386.rpm
```
 - Install the full server by typing the following at a command prompt:

```
rpm -ihv idsldap-cltjava61-6.1.0-0.i386.rpm
rpm -ihv idsldap-srvbase32bit61-6.1.0-0.i386.rpm
rpm -ihv idsldap-srv32bit61-6.1.0-0.i386.rpm
```

4. Verify that the packages have been installed correctly by typing the following at a command prompt:

```
rpm -qa | grep idsldap
```

If the product has been successfully installed, the following is displayed:

- For the proxy server:

```
idsldap-cltbase61-6.1.0-0
idsldap-clt32bit61-6.1.0-0
idsldap-cltjava61-6.1.0-0
idsldap-srvbase32bit61-6.1.0-0
idsldap-srvproxy32bit61-6.1.0-0
idsldap-ent61-6.1.0-0
```
- For the full server:

```
idsldap-cltbase61-6.1.0-0
idsldap-clt32bit61-6.1.0-0
idsldap-cltjava61-6.1.0-0
idsldap-srvbase32bit61-6.1.0-0
idsldap-srv32bit61-6.1.0-0
```

Note: The 64-bit client is displayed for iSeries and pSeries Linux, zSeries Linux, and AMD64/Opteron/EM64T Linux systems.

5. Install the English messages:

```
rpm -ihv idsldap-msg61-en-6.1.0-0.i386.rpm
```

You can install messages in other languages by using the package names for those languages. These names are:

- German: `idsldap-msg61-de-6.1.0-0.arch.rpm`
- Spanish: `idsldap-msg61-es-6.1.0-0.arch.rpm`
- French: `idsldap-msg61-fr-6.1.0-0.arch.rpm`
- Italian: `idsldap-msg61-it-6.1.0-0.arch.rpm`
- Japanese: `idsldap-msg61-ja-6.1.0-0.arch.rpm`
- Korean: `idsldap-msg61-ko-6.1.0-0.arch.rpm`
- Brazilian Portuguese: `idsldap-msg61-pt_BR-6.1.0-0.arch.rpm`
- Simplified Chinese: `idsldap-msg61-zh_CN-6.1.0-0.arch.rpm`
- Traditional Chinese: `idsldap-msg61-zh_TW-6.1.0-0.arch.rpm`

where *arch* is one of the following:

- `i386` for xSeries Linux systems
- `s390` for zSeries Linux systems
- `ppc` for iSeries and pSeries Linux systems
- `x86_64` for AMD64/Opteron/EM64T Linux systems

6. If you want to include security functions, install GSKit. See “Installing GSKit” on page 65.
7. If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:
 - Use the **idssupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).

You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.

- Use Simple Network Management Protocol (SNMP).
- Use the Active Directory synchronization feature.

You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

To install the client only:

Install the 32-bit client by typing the following at a command prompt:

```
rpm -ihv idslldap-cltbase61-6.1.0-0.i386.rpm
rpm -ihv idslldap-clt32bit61-6.1.0-0.i386.rpm
```

To install the Web Administration Tool, type the following at a command prompt:

```
rpm -ihv idslldap-webadmin61-6.1.0-0.i386.rpm
```

Notes:

1. If you install the Web Administration Tool, DSML files are also copied to your computer. See Appendix M, “Installing and configuring DSML,” on page 185 for information about installing and configuring DSML.
2. If you install the Web Administration Tool, a Web application server such as Embedded WebSphere Application Server is required to run the tool. See Appendix H, “Installing, configuring, and uninstalling Embedded WebSphere Application Server,” on page 171 for information about installing and configuring a Web application server.

Installing GSKit

Use the following information to install GSKit 7.0.3.30 through the command line.

The package names for GSKit 7.0.3.30 on the Linux platforms are as follows:

xSeries Linux:

```
gsk7bas-7.0-3.30.i386.rpm
```

zSeries Linux (32-bit):

```
gsk7bas-7.0-3.30.s390.rpm
```

zSeries Linux (64-bit):

```
gsk7bas64-7.0-3.30.s390x.rpm
```

iSeries and pSeries Linux (32-bit):

```
gsk7bas-7.0-3.30.ppc32.rpm
```

iSeries and pSeries Linux (64-bit):

```
gsk7bas64-7.0-3.30.ppc64.rpm
```

AMD64/Opteron/EM64T Linux (64-bit):

```
gsk7bas64-7.0-3.30.x86_64.rpm
```

To install GSKit using **rpm**, log in as **root**, go to the directory where the GSKit file is, and type the following at a command prompt: (This example uses the xSeries Linux package name.)

```
rpm -ihv gsk7bas-7.0-3.30.i386.rpm
```

See Appendix Q, “Setting up GSKit to support CMS key databases,” on page 195 for more information about setting up GSKit after installation.

Removing GSKit

To remove GSKit, type the following at a command prompt:

- On a 32-bit system:
`rpm -evv gsk7bas-7.0-3.30`
- On a 64-bit system:
`rpm -evv gsk7bas64-7.0-3.30`

where

- **-evv** specifies to erase the package and display debugging information. If no trace or debug information is desired, use only **-e**.

Chapter 9. Installing IBM Tivoli Directory Server using Solaris utilities

Attention: If you are migrating from IBM Directory Server 4.1 or 5.1 or IBM Tivoli Directory Server 5.2 or 6.0, use the instructions in Chapter 3, “Upgrading from previous releases,” on page 11.

Before you install

Before you install IBM Tivoli Directory Server, be sure that you have a supported version of DB2 installed. (See *IBM Tivoli Directory Server version 6.1 System Requirements* for supported versions of DB2.) If you want to use the version of DB2 provided with IBM Tivoli Directory Server, you must use the **db2_install** utility to install it. (If you do not use this utility, the DB2 license file is not added correctly.) The **db2_install** utility is in the /db2 directory of the IBM Tivoli Directory Server CD-ROM for DB2 if you created one, or in the tdsV6.1/db2/ directory of the directory where you untarred the DB2 tar file for Solaris.

Notes:

1. After you start the **db2_install** utility, you are prompted for a keyword. In response to this prompt, type ESE. When you are asked if you want to install to a directory other than the /opt directory, be sure to accept the default of /opt. IBM Tivoli Directory Server assumes that DB2 is installed in this directory.
2. You might see the message `test: argument expected` at the end of installation. You can ignore this message. After you install DB2, you can check the /tmp/db2_install_log.99999 file to verify that the installation was successful. (99999 is a random number associated with the installation.)

If you have a client from IBM Directory Server 4.1 or 5.1 or IBM Tivoli Directory Server 5.2 or 6.0 or a server from IBM Tivoli Directory Server 6.0, you can leave it installed. The server and the client from IBM Tivoli Directory Server 6.1 can coexist with a client or server from one of these versions.

If you are installing the Web Administration Tool, you must install a Web application server such as Embedded WebSphere Application Server. See Appendix H, “Installing, configuring, and uninstalling Embedded WebSphere Application Server,” on page 171 for information.

Installing IBM Tivoli Directory Server

IBM Tivoli Directory Server is installed in /opt/IBM/ldap/V6.1.

Use the **pkgadd** from a command prompt to install IBM Tivoli Directory Server.

Note: You do not need to install security functions if you are not going to use them. You can provide SSL by installing Global Security Kit (GSKit). See “Installing GSKit” on page 72 for information about installing GSKit.

The following instructions assume that you are installing from a CD-ROM drive.

Package dependencies

The following IBM Tivoli Directory Server packages are available for installation:

Note: There are packages available for Sun SPARC Solaris and AMD64/Opteron/EM64T Solaris operating systems. The package names are the same for both operating systems.

- IDSlbc61: Base client
- IDSl32c61: 32-bit client
- IDSl64c61: 64-bit client
- IDSljc61: Java client
- IDSlbs61: Base server
- IDSl64p61: Proxy server
- IDSl64s61: 64-bit server
- IDSlweb61: Web Administration Tool
- IDSlen61: English messages
- IDSlent61: Entitlement

Because of package dependencies, the order of installation is significant. Install the packages in the following order:

For the 32-bit client only:

Install in the following order:

1. Base client
2. 32-bit client

For the 64-bit client only:

Install in the following order:

1. Base client
2. 64-bit client

For the proxy server:

Install in the following order:

1. Base client
2. 64-bit client
3. Java client
4. Base server
5. Proxy server
6. English messages (can be in any order)
7. Entitlement (can be in any order)

For the full server:

Install in the following order:

1. Base client
2. 64-bit client
3. Java client
4. Base server
5. Full server
6. English messages (can be in any order)
7. Entitlement (can be in any order)

If you do not install in the order shown, the installation fails.

Note: Because the Web Administration Tool package has no dependencies on any of the other packages, and none of the other packages are dependent on it, you can install it in any order.

Command line installation using pkgadd

To install IBM Tivoli Directory Server from a command prompt:

1. Log in as **root**.
2. If you are installing from a CD, after you mount the CD go to:
 - The /tds directory of CD 1 to install IBM Tivoli Directory Server packages
 - The /tdsLangpack directory of CD 1 to install language packs for languages other than English

Note: If you are installing on a Solaris 9 system, be sure to see “Mounting and unmounting the CD on Solaris 9 systems” on page 21.

If you are installing from downloaded tar files, go to:

- The tdsV6.1/tds subdirectory of the directory where you untarred the tar file to install IBM Tivoli Directory Server packages
 - The tdsV6.1/tdsLangpack directory of the directory where you untarred the tar file to install language packs for languages other than English
3. At the command prompt, install the packages you want by typing the following command for each package:

```
pkgadd -d pkgfilename
```

where *pkgfilename* is the file name of the package you want to install. Do not use the system default of **ALL**. The system does not sequence the packages correctly and the installation fails.

If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation will not proceed correctly and unpredictable results might occur.

Note: If you are installing on a Solaris 9 system, be sure to see “Mounting and unmounting the CD on Solaris 9 systems” on page 21.

The packages shown in the following tables are available. Be sure to install in the order shown in “Package dependencies” on page 67.

Note: There are packages available for Sun SPARC Solaris and AMD64/Opteron/EM64T Solaris operating systems. The package names and the file names are the same for both operating systems.

Table 1. IBM Tivoli Directory Server packages for Solaris operating systems

Package	Package name	File name
IBM Directory Server - Base Client	IDS1bc61	idsldap.cltbase61.pkg
IBM Directory Server - 32 bit Client	IDS132c61	idsldap.clt32bit61.pkg
IBM Directory Server - 64 bit Client	IDS164c61	idsldap.clt64bit61.pkg
IBM Directory Server - Java Client	IDS1jc61	idsldap.cltjava61.pkg

Table 1. IBM Tivoli Directory Server packages for Solaris operating systems (continued)

Package	Package name	File name
IBM Directory Server - Base Server	IDSlbs61	idsldap.srvbase64bit61.pkg
IBM Directory Server - Proxy Server	IDS164p61	idsldap.srvproxy64bit61.pkg
IBM Directory Server - 64 bit Server	IDS164s61	idsldap.srv64bit61.pkg
IBM Directory Server - Web Administration	IDS1web61	idsldap.webadmin61.pkg
IBM Directory Server - Messages U.S. English (en)	IDSlen61	idsldap.msg61.en.pkg
IBM Directory Server - Entitlement	IDSlent61	idsldap.ent61.pkg

Table 2. IBM Tivoli Directory Server language packages for Solaris operating systems

Package	Package name	File name
IBM Directory Server - Messages German (de)	IDS1de61	idsldap.msg61.de.pkg
IBM Directory Server - Messages Spanish (es)	IDSles61	idsldap.msg61.es.pkg
IBM Directory Server - Messages French (fr)	IDS1fr61	idsldap.msg61.fr.pkg
IBM Directory Server - Messages Italian (it)	IDS1it61	idsldap.msg61.it.pkg
IBM Directory Server - Messages Japanese (ja)	IDS1ja61	idsldap.msg61.ja.pkg
IBM Directory Server - Messages Korean (ko)	IDS1ko61	idsldap.msg61.ko.pkg
IBM Directory Server - Messages Brazilian (br)	IDS1br61	idsldap.msg61.pt_BR.pkg
IBM Directory Server - Messages Simplified Chinese (cn)	IDS1cn61	idsldap.msg61.zh_CN.pkg
IBM Directory Server - Messages Traditional Chinese (tw)	IDS1tw61	idsldap.msg61.zh_TW.pkg

The following instructions show you how to install different features:

- To install the 32-bit client, type:

```
pkgadd -d idsldap.cltbodybase61.pkg
pkgadd -d idsldap.cltbody32bit61.pkg
```
- To install the 64-bit client, type:

```
pkgadd -d idsldap.cltbodybase61.pkg
pkgadd -d idsldap.cltbody64bit61.pkg
```
- To install the proxy server (with English messages), type:

```
pkgadd -d idsldap.cltbodybase61.pkg
pkgadd -d idsldap.cltbody64bit61.pkg
pkgadd -d idsldap.cltbodyjava61.pkg
pkgadd -d idsldap.srvtbodybase61.pkg
pkgadd -d idsldap.srvtbodyproxy64bit61.pkg
pkgadd -d idsldap.msg61.en.pkg
pkgadd -d idsldap.ent61.pkg
```

- To install the full server (with English messages), type:

```
pkgadd -d idsldap.cltbase61.pkg
pkgadd -d idsldap.clt64bit61.pkg
pkgadd -d idsldap.cltjava61.pkg
pkgadd -d idsldap.srvbase64bit61.pkg
pkgadd -d idsldap.srv64bit61.pkg
pkgadd -d idsldap.msg61.en.pkg
pkgadd -d idsldap.ent61.pkg
```

Notes:

- a. When you install client or server packages, the system might prompt you with the following query: This package contains scripts which will be executed with super-user permission during the process of installing the package. Continue with installation?
Type *y* to continue. These scripts create the IBM Tivoli Directory Server user ID.
 - b. If you are installing a server package, you might also see the following prompt: Do you want to install these as *setuid* and/or *setgid* files?
Type *y* to continue. The programs must be able to start daemons, run DB2 commands, and create the IBM Tivoli Directory Server DB2 instance user ID and group, so they must occasionally run as root.
- To install messages in another language, type the following:
pkgadd -d idsldap.msg60.*language_ID*.pkg

where *language_ID* is one of the following:

- **de** for German
- **es** for Spanish
- **fr** for French
- **it** for Italian
- **ja** for Japanese
- **ko** for Korean
- **pt_BR** for Brazilian Portuguese
- **zh_CN** for simplified Chinese
- **zh_TW** for traditional Chinese

- To install the Web Administration Tool package, type:

```
pkgadd -d idsldap.webadmin61.pkg
```

Notes:

- a. If you install the Web Administration Tool, DSML files are also copied to your computer. See Appendix M, “Installing and configuring DSML,” on page 185 for information about installing and configuring DSML.
 - b. If you install the Web Administration Tool, a Web application server such as Embedded WebSphere Application Server is required to run the tool. See Appendix H, “Installing, configuring, and uninstalling Embedded WebSphere Application Server,” on page 171 for information about installing and configuring a Web application server.
4. If you want to include security functions, install GSKit. See “Installing GSKit” on page 72.
 5. If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:

- Use the **idssupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).

You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.

- Use Simple Network Management Protocol (SNMP).
- Use the Active Directory synchronization feature.

You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

Note: IBM Tivoli Directory Integrator is not currently supported on Solaris X64 systems and is not provided with IBM Tivoli Directory Server for Solaris X64 systems.

6. After you install, you might need to set kernel parameters before you use the directory. See “Setting kernel parameters on Solaris or HP-UX systems” on page 139 for information.

Installing GSKit

You can install GSKit using either the AdminTool or the command line.

To install GSKit using the **admintool** utility:

1. Log in as **root**.
2. Type the following at a root command prompt: `admintool&`
The Users window is displayed.
3. Click **Browse -> Software**. The Software window is displayed.
4. Click **Edit -> Add**. The Set Source Media window is displayed.
5. In the **Path** field, type the full path name to the directory that contains the GSKit installation code. For example, if you are installing from a CD-ROM:
`/cdrom/cdrom0/gskit`
6. Click **OK**.
7. Select **Certificate and SSL Base Runtime (gsk7bas)**
8. Click **Add**. You are asked if you want to continue the installation.
9. Type `y` and press `Enter`. After the package is installed, a message is displayed and you are instructed to press `Return`.
10. Press `Enter`.
11. When you are finished installing packages, click **File —> Exit** to exit the **admintool** utility.

To install GSKit using the command line:

1. Insert the CD.
2. Log in as **root**.
3. At the command prompt, install the required tar file sets with the following command:
`pkgadd -d gsk7bas64.pkg`

See Appendix Q, “Setting up GSKit to support CMS key databases,” on page 195 for more information about setting up GSKit after installation.

Removing GSKit

To remove GSKit, type the following at a command prompt:

```
pkgrm gsk7bas64
```

Chapter 10. Installing IBM Tivoli Directory Server using HP-UX utilities

Attention: If you are upgrading from IBM Directory Server 4.1 or 5.1 or IBM Tivoli Directory Server 5.2 or 6.0, use the instructions in Chapter 3, “Upgrading from previous releases,” on page 11.

Before you install

Before you install IBM Tivoli Directory Server, you must have the following:

DB2 Before you install IBM Tivoli Directory Server, be sure you have a supported version of DB2 installed. (See *IBM Tivoli Directory Server version 6.1 System Requirements* for supported versions of DB2.) If you want to use the version of DB2 provided with IBM Tivoli Directory Server, you must use the **db2_install** utility to install it. The **db2_install** utility is in the `/db2` directory of the IBM Tivoli Directory Server CD-ROM if you created one, or in the `tdsV6.1/db2/` directory of the directory where you untarred the DB2 tar file for HP-UX.

Before installing DB2, you must remove any existing versions of DB2 that might have been installed previously. If you try to install DB2 over an existing version of DB2, DB2 does not install correctly. If this occurs you must remove DB2 and then reinstall it.

Notes:

1. After you start the **db2_install** utility, you are prompted for a keyword. In response to this prompt, type ESE.
2. You might see the message `test: argument expected` at the end of installation. You can ignore this message. After you install DB2, you can check the following file to verify that the installation was successful:
`/tmp/db2_install_log.99999`. (99999 is a random number associated with the installation.)

Web application server

If you are installing the Web Administration Tool, you must install a Web application server such as Embedded WebSphere Application Server. See Appendix H, “Installing, configuring, and uninstalling Embedded WebSphere Application Server,” on page 171 for information.

If you have a client from IBM Directory Server 4.1 or 5.1 or IBM Tivoli Directory Server 5.2, you can leave it installed. The server and the client from IBM Tivoli Directory Server 6.1 can coexist with a client from one of these versions.

Installing IBM Tivoli Directory Server

Use the following sections to install IBM Tivoli Directory Server.

Package dependencies

The following IBM Tivoli Directory Server packages are available for installation:

Note:

There are packages available for HP-UX PA-RISC and HP-UX Integrity operating systems. The package names are the same for both operating systems.

- `idsldap.cltbase61.depot`: Base client
- `idsldap.clt32bit61.depot`: 32-bit client
- `idsldap.clt64bit61.depot`: 64-bit client
- `idsldap.cltjava61.depot`: Java client
- `idsldap.srvbase61.depot`: Base server
- `idsldap.srvproxy64bit61.depot`: Proxy server
- `idsldap.srv64bit61.depot`: 64 bit server
- `idsldap.webadmin61.depot`: Web Administration Tool
- `idsldap.msg61en.depot`: English messages
- `idsldap.ent61.depot`: Entitlement

In addition, the following language packs are available. Install a language pack if you are installing a server and you want server messages to be displayed in a language other than English.

- `idsldap.msg61.de.depot`: German messages
- `idsldap.msg61.es.depot`: Spanish messages
- `idsldap.msg61.fr.depot`: French messages
- `idsldap.msg61.it.depot`: Italian messages
- `idsldap.msg61.ja.depot`: Japanese messages
- `idsldap.msg61.ko.depot`: Korean messages
- `idsldap.msg61.zh_CN.depot`: Simplified Chinese messages
- `idsldap.msg61.zh_TW.depot`: Traditional Chinese messages

Because of package dependencies, the order of installation is significant. Install the packages in the following order:

For the 32-bit client only:

Install in the following order:

1. Base client
2. 32-bit client

For the 64-bit client only:

Install in the following order:

1. Base client
2. 64-bit client

For the proxy server:

Install in the following order:

1. Base client
2. 64-bit client
3. Java client
4. Base server
5. Proxy server
6. English messages (can be in any order)
7. Entitlement

For the full server:

Install in the following order:

1. Base client
2. 64-bit client
3. Java client
4. Base server
5. Full server
6. English messages (can be in any order)
7. Entitlement

If you do not install in the order shown, the installation fails.

Note: Because the Web Administration Tool package has no dependencies on any of the other packages, and none of the other packages are dependent on it, you can install it in any order.

Installing using swinstall

The instructions in this section assume that you are logged in as **root** and have the IBM Tivoli Directory Server Version 6.1 CD mounted at `/SD_CDRROM`.

Note: Be sure to see “Mounting and unmounting the CD on HP-UX systems” on page 21.

To install IBM Tivoli Directory Server packages:

1. Log in as **root**.
2. Type `swinstall` at a command prompt.
3. Supply the full path under **Source Depot Path** for the package you want to install. For example, typing `/SD_CDRROM/tds/idsldap.clbase61.depot` installs the base client package. You must select one package at a time, and follow the order shown in “Package dependencies” on page 75. You can select from the following list:
 - IBM Directory Server - Base Client
 - IBM Directory Server - 32 bit Client
 - IBM Directory Server - 64 bit Client
 - IBM Directory Server - Java Client
 - IBM Directory Server - Base Server
 - IBM Directory Server - Proxy Server
 - IBM Directory Server - 64 Bit Server
 - IBM Directory Server - Web Administration
 - IBM Directory Server - Messages U.S. English (en)
 - IBM Directory Server - Entitlement

(For language packs, the path is `/SD_CDRROM/tdsLangpack`.)

4. Click **Actions** -> **Install** on the Install Analysis window. Analysis is complete when the Status field reads **Ready**.
5. Click **OK**.

Note: If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation will not proceed correctly and unpredictable results might occur.

6. Installation is complete when the Status field reads **Completed**. Click **Done**.

7. Select **Actions -> Change Source**.
8. Repeat step 3 on page 77 through step 7 until you have installed all the packages you want.
9. Click **File -> Exit**.

Notes:

1. To enable SSL, you must also install GSKit. See “Installing GSKit.”
2. If you install a server, you must install IBM Tivoli Directory Integrator if you want to do any of the following:
 - Use the **idssupport** tool, which gathers information from your system that you can supply to IBM Software Support if you encounter problems, or the log management tool (**idslogmgmt**).
You can find information about the support tool and the log management tool in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide*.
 - Use Simple Network Management Protocol (SNMP).
 - Use the Active Directory synchronization feature.
You can find information about SNMP and Active Directory synchronization in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information.

Note: IBM Tivoli Directory Integrator is not currently supported on HP-UX Integrity systems and is not provided with IBM Tivoli Directory Server for HP-UX Integrity systems.

3. If you install the Web Administration Tool, DSML files are also copied to your computer. See Appendix M, “Installing and configuring DSML,” on page 185 for information about installing and configuring DSML.
4. If you install the Web Administration Tool, a Web application server such as Embedded WebSphere Application Server is required to run the tool. See Appendix H, “Installing, configuring, and uninstalling Embedded WebSphere Application Server,” on page 171 for information about installing and configuring a Web application server.
5. After you install, you might need to set kernel parameters before you use the directory. See “Setting kernel parameters on Solaris or HP-UX systems” on page 139 for information.

Installing GSKit

You can install the GSKit package through the **swinstall** command.

To install GSKit:

1. Run the following command to install:

```
swinstall -s /SD_CDROM/gskit/gsk7bas64 gsk7bas64
```

where

- **-s** specifies the full_path of the software source.
- **SD_CDROM** is your mount point for the CD-ROM.
- **gsk7bas64** contains the Restricted GSKit Base Toolkit install image.

See Appendix Q, “Setting up GSKit to support CMS key databases,” on page 195 for more information about setting up GSKit after installation.

Removing GSKit

To remove GSKit, run the following command at a command prompt:

```
swremove gsk7bas64
```

Chapter 11. Installing and uninstalling silently on Windows systems

This chapter provides instructions for installing and uninstalling IBM Tivoli Directory Server 6.1 and the language packs on a Windows computer using silent installation, and for installing and uninstalling GSKit from the command line on Windows.

To silently install and uninstall on AIX, Linux, Solaris, and HP-UX systems, use the operating system utilities for those operating systems.

Silent installation

You can use silent installation to install IBM Tivoli Directory Server or the language packs with no user input required.

The following options and conditions apply to silent installation:

- You do not need to install all features. You can choose to install:
 - The client only
 - The Java client
 - The Web Administration tool only
 - The proxy server (includes the client and the Java client)
 - The full server (includes the client and the Java client)
- You can also use IBM Tivoli Directory Server silent installation to install DB2, GSKit, IBM Tivoli Directory Integrator, or Embedded WebSphere Application Server.
- If you install DB2, a Windows system user ID is created for the DB2 system ID. By default, this user ID is db2admin and the password is db2admin. If you want to use a different user ID or password, or both, find the db2.rsp file in the tds\installer\neededfiles subdirectory of the first CD or the subdirectory where you uncompressed the .zip files. Change db2admin in the file to the user ID or password (or both) that you want to use.

Notes:

1. This user ID must **not** be the user ID that will be used as the owner of the directory server instance.
 2. If you are not using an existing user ID, DB2 creates the user ID specified with the password specified. This is the preferred method.
 3. If you are creating a new user ID and your system has "Password must meet complexity requirements" enabled, be sure that the password you supply meets the complexity requirements. If it does not, installation will fail. See the Windows documentation for information about complexity requirements.
 4. If you are using an existing Windows user ID, it must be a member of the Administrators group. In this case, be sure that the password you specify is correct. Otherwise, DB2 does not install correctly.
- You must have at least 255 MB of free space in the directory specified by the TEMP environment variable or the directory you want to use as a temporary directory.

- If you are installing the proxy server or the full server, the Administrators group provided with the Windows operating system must exist.
- The installation must be run by a user ID with Administrator privileges.
- If the client is already installed, you can add the proxy server or full server in a later installation.
- If a server is selected for installation in the options file, the client and the Java client will automatically be installed if they are not there, regardless of whether they were selected for installation in the options file.
- The Web Administration Tool can be installed whether or not a server or the client is installed.
- The installation location cannot be the same as the path where another version of the client is installed.
- The server and the client from IBM Tivoli Directory Server 6.1 can coexist with the following clients and servers:
 - A client from any of the following:
 - IBM Directory Server 4.1
 - IBM Directory Server 5.1
 - IBM Tivoli Directory Server 5.2
 - IBM Tivoli Directory Server 6.0
 - A server from IBM Tivoli Directory Server 6.0

If any of these are installed, you can leave them installed.

Before you begin silent installation, be sure that the options file for the server, client, or language packs is updated with the correct information about the features you want to install and the installation path. To edit an options file, copy the file from the optionsFile directory to a writable location. The files are:

- Server options file: InstallServer.txt
- Client only options file: InstallClient.txt. (This file is provided in the client-only package.)
- Language pack options file: InstallLP.txt

For information about changing the installation options files, see “Options files for silent installation of servers and language packs” on page 86.

Installing the server or client silently

To begin installing the IBM Tivoli Directory Server 6.1 using silent installation:

1. If you are installing from a CD:
 - a. If you are installing DB2, Embedded WebSphere Application Server, or IBM Tivoli Directory Integrator, copy the files from the appropriate subdirectory to the hard disk and set the appropriate system environment variables to point to the path where you copied the files, as shown in the following table:

Table 3. Files and system environment variables for corequisite products

Product	Files to copy to hard disk	System environment variable
DB2	db2 directory (from CD 2)	DB2Files
Embedded WebSphere Application Server	appsrv directory (from CD 3)	APPSRVFiles
IBM Tivoli Directory Integrator	tdi directory (from CD 3)	TDIFiles

- b. Insert CD 1 in your CD-ROM drive.
- c. Go to the drive for your CD-ROM.
- d. At a command prompt, type the following:

```
cd \tds
```

If you are installing from downloaded .zip files:

- a. Go to the directory where you unzipped the downloaded .zip files.
 - b. At a command prompt, type the following:

```
cd tdsV6.1\tds
```
2. Type the following command:

```
install_tdsSilent.bat -is:silent -options full_path\optionsFiles\InstallServer.txt
```

where *full_path* is the full path to the optionsFiles directory.

(If you want to install only the client from the client-only package, substitute InstallClient.txt for InstallServer.txt.)

Notes:

- a. If you want to specify a temporary directory other than the one specified by the TEMP environment variable, use the **-is:tempdir** option, as follows:

```
install_tdsSilent.bat -is:silent -options optionsFiles\InstallServer.txt
-is:tempdir temp_directory
```

where *temp_directory* is the directory you want to use for temporary space. Be sure that you have at least 255 MB of free space in this directory.

- b. If you want to specify an additional log file, use the **-log** option, as follows:

```
install_tdsSilent.bat -is:silent -options full_path\optionsFiles\InstallServer.txt
-log !c:\mydirectory\ldapinst.log @ALL
```

where *full_path* is the full path to the optionsFiles directory.

c:\mydirectory\ldapinst.log can be changed to point to where you want to place the log file. The log file will still be created in the target installation directory. The default location is C:\Program Files\IBM\LDAP\V6.1\var\ldapinst.log.

- c. You must use install_tdsSilent.bat because only install_tdsSilent.bat returns a return code.
3. IBM Tivoli Directory Server is installed with no further input.

If the installation exits for any reason, you can find information about the exit by viewing the return code or checking the *installpath*\var\ldapinst.log file.

(*installpath* is the path where you installed IBM Tivoli Directory Server.)

Check the return code by checking the value of %ERRORLEVEL% from a .bat file. A return code of 0 indicates that the installation was successful. A non-zero return code indicates that the installation failed. See “Checking the return code” on page 85 for a list of return codes.

Installation is complete when control returns to the command line or to the invoking program.

If installation is unsuccessful, check to be sure that your options file settings and command-line parameters are valid.

- 4. After installation, restart the system. If you are also installing other products, you can restart at an appropriate time. If the server was installed, you must do the following before the server is usable:
 - a. Create a directory server instance using the **idsicrt** command. See “Creating an instance with the command line” on page 106.

- b. Set the administrator DN and password using the **idsdnpw** command. See “Managing the primary administrator DN with the command line” on page 113.
- c. If the directory server instance is a full server, configure the database using the **idscfgdb** command line utility to configure silently. See “Configuring the database with the command line” on page 116.

Installing language packs silently

To begin installing IBM Tivoli Directory Server 6.1 language packs using silent installation:

1. If you are installing from a CD:
 - a. Insert CD 1 in your CD-ROM drive.
 - b. Go to the drive for your CD-ROM.
 - c. At a command prompt, type the following:


```
cd tdsLangpack
```

If you are installing from downloaded .zip files:

- a. Go to the directory where you unzipped the downloaded .zip files.
- b. At a command prompt, type the following:


```
cd tdsV6.1\tdsLangpack
```

2. At a command prompt, type the following:

- For Intel 32-bit Windows systems:


```
idslp_setup_win32Silent.exe -is:silent
  -options full_path_to_options_file\InstallLP.txt
```
- For AMD/EM64T Windows systems:


```
idslp_setup_win64Silent.exe -is:silent
  -options full_path_to_options_file\InstallLP.txt
```

where *full_path_to_options_file* is the full path to the InstallLP.txt file you are using. The InstallLP.txt file is in the tdsLangpack\optionsFiles subdirectory of the CD or the unzipped .zip file, but if you moved it, you must specify the current location of the file.

Note: If you want to specify an additional log file, type the following:

- For Intel 32-bit Windows systems:


```
idslp_setup_win32Silent.exe -is:silent
  -options d:\tdsLangpack\optionsFiles\InstallLP.txt
  -log !c:\mydirectory\ldaplp_inst.log @ALL
```
- For AMD/EM64T Windows systems:


```
idslp_setup_win64Silent.exe -is:silent
  -options d:\tdsLangpack\optionsFiles\InstallLP.txt
  -log !c:\mydirectory\ldaplp_inst.log @ALL
```

c:\mydirectory\ldaplp_inst.log can be changed to point to where you want to place the log file. The log file will still be created in the target installation directory.

The default location is for the log is *install_dir\var\ldaplp_inst.log*. (If you installed in the default location, the log is C:\Program Files\IBM\LDAP\V6.1\var\ldaplp_inst.log.)

Verifying the silent installation

To verify that the silent installation was successful, you can check the return code, log file, and the Windows registry.

Common reasons for the silent installation failing are:

- A previous or current version of IBM Tivoli Directory Server is already installed. Only the following are allowed:
 - A client from any of the following:
 - IBM Directory Server 4.1
 - IBM Directory Server 5.1
 - IBM Tivoli Directory Server 5.2
 - IBM Tivoli Directory Server 6.0
 - A server from IBM Tivoli Directory Server 6.0
- The prerequisites are not present. The server requires a valid version of DB2.
- There is not enough disk space to install.
- The options file is incorrect. Be very careful when editing the options file. There cannot be blank lines or control characters in the file. If the installation exits with no log file, this is usually because the options file is invalid (with blank lines, for example), or because the path to the options file was specified incorrectly.

Checking the return code

The `%ERRORLEVEL%` variable contains the return code. The following return codes can be received:

- 2002 Java exception (A possible cause is that you are attempting to install to a location where another version is installed. If you receive this return code, entries might have been created for IBM Tivoli Directory Server 6.1 in the registry. Check the registry and, if there are any such entries, remove them before you try to install again.)
- 3001 Prerequisites missing
- 3002 Java exception
- 3003 No feature selected for silent install
- 3004 Attempting to install when version prior to 4.1 present
- 3009 Cannot install a feature. (A condition was detected that prevented a feature from being installed. A common cause is that the server or Web Administration Tool from a previous release is installed. If the server or Web Administration Tool from a previous release is installed, the only feature that can be installed is the client.)

Other return codes might be returned from the InstallShield program.

Checking the log file

To verify that silent installation was successful using the log file:

1. Check the log file to see if it exists in the target directory. If the log is not there, the installation failed, and you can refer to the log file that was specified on the silent installation command with the `-log` option to see why the installation failed.
2. Check the log file for the string **Exiting LdapExit**.

Checking the Windows registry

Verify that the installation was completed using the Windows registry. The following text should be in the registry, depending on which components were installed:

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1

```
ClientMajorVersion 6.1
JavaClientMajorVersion 6.1
BaseServerMajorVersion 6.1
ServerMajorVersion 6.1
ProxyServerMajorVersion 6.1
WebadminMajorVersion 6.1
WebSphereAppSrvMajorVersion 6.1
LDAPHome install_location
BitMode set to 32 or 64
```

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1\Client\

```
ClientMinorVersion 0.0
```

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1\JavaClient\

```
JavaClientMinorVersion 0.0
```

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1\Webadmin\

```
WebadminMinorVersion 0.0
```

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1\BaseServer\

```
BaseServerMinorVersion 0.0
```

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1\Server\

```
ServerMinorVersion 0.0
```

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1\ProxyServer\

```
ProxyServerMinorVersion 0.0
```

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1\

WebSphereAppSrv\

```
WebSphereAppSrvMinorVersion 0.7
```

In HKEY_LOCAL_MACHINE\SOFTWARE\IBM\IDSLDAP\6.1\ LanguagePack\

```
LangPackVersion 6.1
LPHome install_location
```

By default, LPHome is set to <LDAPHOME>\LangPack.

Options files for silent installation of servers and language packs

See the following sections for information about the silent installation options file for the servers, client only (from the client-only package), and language packs.

Server installation options file

The following text is in the server installation options file, InstallServer.txt, provided with IBM Tivoli Directory Server:

```
#Sample response file for the Server/Client package
#(Lines beginning with # are comments)
# Be sure there are no blank lines in this file!
```

```

# All lines that are not comments must be present; they cannot be commented out.
# Where indicated, values can be changed.
#
# The following 3 lines MUST be present, and NOT modified
-silent
-G createDirectoryResponse="yes"
-G replaceExistingResponse="yesToAll"
#
# install destination - this can be modified to install location
-P product.installLocation="C:\Program Files\IBM\ldap\V6.1"
#
# Select the features to install. Note: if the server is selected, the
# Client, JavaClient, and BaseServer will automatically be installed. If the ProxyServer
# is selected, the JavaClient, Client, and BaseServer will automatically be installed.
# The coreqs will also get installed for this release. For server to get installed make
# sure the DB2 is already installed or the active property is set to true here in the file.
# To deselect a feature, set the field to false.
-P DB2Feature.active=true
-P BaseServerFeature.active=true
-P ServerFeature.active=true
-P ProxyServerFeature.active=true
-P JavaClientFeature.active=true
-P ClientFeature.active=true
-P WebadminFeature.active=true
-P GSKITFeature.active=true
-P AppSrvFeature.active=true
-P TDIFeature.active=false
# This must be last line. Be sure no blank lines or carriage controls follow!

```

You can edit the following line to point to the desired target installation directory:

```
-P product.installLocation="C:\Program Files\IBM\ldap\V6.1"
```

Be sure that the installation location is not the same as the path where another version of the client is installed.

You can edit the features lines to disable a feature from being installed. For example, to indicate that you do not want to install the IBM Tivoli Directory Server Web Administration Tool, change

```
-P WebadminFeature.active=true
```

to

```
-P WebadminFeature.active=false
```

Note: If you have any feature except the client, GSKit, or DB2 from the 4.1, 5.1, or 6.0 version or the server from the 6.0 version installed, you can install only the client. If this is the case, be sure to disable all other features by setting them to false.

Client installation options file

The following text is in the client installation options file, InstallClient.txt, provided with the client-only package:

```

# options file for silent install
# Use this file with the Client-only package
#(Lines beginning with # are comments)
# Be sure there are no blank lines in this file!
# All lines that are not comments must be present; they cannot be commented out.
# Where indicated, values can be changed.
#
# The following 3 lines MUST be present, and NOT modified
-silent
-G createDirectoryResponse="yes"
-G replaceExistingResponse="yesToAll"

```

```
#
# install destination - this can be modified to install location
-P product.installLocation="C:\Program Files\IBM\ldap\V6.1"
# To deselect a feature, set the field to false
-P ClientFeature.active=true
-P GSKITFeature.active=true
# This must be last line. Be sure no blank lines or carriage controls follow!
```

You can change only the installation location in this file.

To change the installation location, change the following line to point to the desired target installation directory:

```
-P product.installLocation="C:\Program Files\IBM\ldap\V6.1"
```

Be sure that the installation location is not the same as the path where another version of the client is installed.

Language packs installation options file

The following text is in the language packs installation options file, InstallLP.txt, provided with IBM Tivoli Directory Server:

```
#Sample of a response file for the Language pack install
#(Lines beginning with # are comments)
# Be sure there are no blank lines in this file!
#
# The following 4 lines MUST be present
-silent
-G createDirectoryResponse="yes"
-G replaceExistingResponse="yesToAll"
-G removeModifiedResponse="yesToAll"
#
# Set the following entries to true to install a language feature or keep it
# false to NOT install
-P GermanXlations.active=false
-P FrenchXlations.active=false
-P ItalianXlations.active= false
-P SpanishXlations.active= false
-P JapaneseXlations.active= false
-P KoreanXlations.active= false
-P BrazilianXlations.active= false
-P SChineseXlations.active= false
-P TChineseXlations.active= false
-P CzechXlations.active= false
-P HungarianXlations.active= false
-P RussianXlations.active= false
-P PolishXlations.active= false
-P SlovakianXlations.active= false
# This must be last line. Be sure no blank lines or carriage controls follow!
```

By default, no language packs are installed. To install the language pack for a language, edit the line for that language and change false to true. For example, to install the Japanese language pack, change

```
-P JapaneseXlations.active=false
```

to

```
-P JapaneseXlations.active=true
```

Silent uninstallation

You can use silent uninstallation to uninstall IBM Tivoli Directory Server, the language packs, DB2, GSKit, or Embedded WebSphere Application Server with no user input required.

The following options and conditions apply to silent uninstallation:

- You must have at least 100 MB of memory free before invoking silent uninstallation.
- You must have at least 255 MB of free space in the directory specified by the TEMP environment variable.

Before you begin silent uninstallation, be sure that the options file for the server or language packs is updated with the correct information about the features you want to install. To edit an options file, copy the file from the optionsFile directory to a writable location. The files are:

- Server options file: UnInstallServer.txt
- Client only options file: UnInstallClient.txt (You cannot change this file.)
- Language pack options file: UnInstallLP.txt

For information about changing the uninstallation options files, see “Options files for silent uninstallation of servers and language packs.”

To begin uninstalling IBM Tivoli Directory Server 6.1 using silent uninstallation, type the following at a command prompt:

```
"C:\Program Files\IBM\ldap\V6.1\_uninst\uninstall.exe" -is:silent  
-options C:\UnInstallServer.txt -log !C:\ldapuninst.log @ALL
```

(If you are uninstalling a client-only installation, substitute UnInstallClient.txt for UnInstallServer.txt.) This example assumes that IBM Tivoli Directory Server is installed in the C:\Program Files\IBM\ldap\V6.1 directory and that the UnInstallServer.txt file has been copied to the C:\ directory..

To begin uninstalling IBM Tivoli Directory Server 6.1 language packs using silent uninstallation, type the following at a command prompt:

```
"C:\Program Files\IBM\ldap\V6.1\LangPack\uninstall\uninstall.exe"  
-is:silent -options C:\UnInstallLP.txt -log !C:\lpuninst.log @ALL
```

This example assumes that IBM Tivoli Directory Server is installed in the C:\Program Files\IBM\ldap\V6.1 directory and that the UninstallLP.txt file has been copied to the C:\ directory.

Options files for silent uninstallation of servers and language packs

See the following sections for information about the silent uninstallation options file for the servers and the language packs. (You cannot change the client uninstallation options file.)

Server uninstallation options file

The following text is in the server uninstallation options file, UnInstallServer.txt, provided with IBM Tivoli Directory Server:

```
#Sample response file for uninstll  
#(Lines beginning with # are comments)  
# Be sure there are no blank lines in this file!
```

```

#
# The following 4 lines MUST be present
-silent
-G createDirectoryResponse="yes"
-G replaceExistingResponse="yesToAll"
-G removeModifiedResponse="yesToAll"
#
# Select the features to be uninstalled. If a feature was never installed
# then its line must be commented out.
# The "activeForUninstall" property specifies whether you want a feature
# to be uninstalled.
# The "activeForUninstall" property for a feature defaults to true if the
# feature is currently
# installed; it must be set to false if you want to leave it installed.
# The default action, if no features are specified, is to uninstall all
# features that are currently installed.
# We are also providing support for Corequisite products such as DB2
# uninstalation with V6.1
-P ClientFeature.activeForUninstall=true
-P JavaClientFeature.activeForUninstall=true
-P BaseServerFeature.activeForUninstall=true
-P ProxyServerFeature.activeForUninstall=true
-P ServerFeature.activeForUninstall=true
-P WebadminFeature.activeForUninstall=true
-P DB2Feature.activeForUninstall=true
-P GSKITFeature.activeForUninstall=true
-P AppSrvFeature.activeForUninstall=true
-P TDIFeature.activeForUninstall=false
# This must be last line. Be sure no blank lines or carriage controls follow!

```

You can edit the features lines to disable a feature from being uninstalled. For example, to indicate that you do not want to uninstall the IBM Tivoli Directory Server Web Administration Tool, change

```
-P WebadminFeature.activeForUninstall=true
```

to

```
-P WebadminFeature.activeForUninstall=false
```

Language packs options file

The following text is in the language packs uninstallation options file, UnInstallLP.txt, provided with IBM Tivoli Directory Server:

```

# Select the features to be uninstalled. If a feature was never installed the
# Sample of a response file for the Language pack Uninstall
# (Lines beginning with # are comments)
# Be sure there are no blank lines in this file!
#
# The following 4 lines MUST be present
-silent
-G createDirectoryResponse="yes"
-G replaceExistingResponse="yesToAll"
-G removeModifiedResponse="yesToAll"
#
#
# The "activeForUninstall" property specifies whether you want a feature to be
# uninstalled.
# Unless otherwise specified, the "activeForUninstall" property for all installed
# features by default is set to true;
# a property value must be set to false if you want to leave its feature installed.
# The default action, if no property values are specified, is to uninstall all
# features that are currently installed.
# The following list of features should only include languages installed on
# your system.

```



```
# If a language feature was already installed and you do not wish to uninstall it
# then uncomment its property entry. This will set the activeForUninstall property
# value to false and keep the corresponding
# language feature installed.
#-P GermanXlations.activeForUninstall=false
#-P FrenchXlations.activeForUninstall=false
#-P ItalianXlations.activeForUninstall=true
#-P SpanishXlations.activeForUninstall=false
#-P JapaneseXlations.activeForUninstall=false
#-P KoreanXlations.activeForUninstall=false
#-P BrazilianXlations.activeForUninstall=false
#-P SChineseXlations.activeForUninstall=false
#-P TChineseXlations.activeForUninstall=false
# This must be last line. Be sure no blank lines or carriage controls follow!
```

By default, no language packs are uninstalled. To uninstall the language pack for a language, edit the line for that language. Remove the # character from the line, and change false to true. For example, to uninstall the French language pack, change

```
#-P FrenchXlations.activeForUninstall=false
```

to

```
-P FrenchXlations.activeForUninstall=true
```

Chapter 12. Creating and administering instances

During or after installation of a server, you must create a directory server instance and then set the administrator DN and password for the instance. For a full server, you must also configure the database that is associated with the server instance. (For a proxy server, no database is configured.)

The Instance Administration Tool (`idsxinst`) is a graphical user interface (GUI) that you can use to create and manage directory server instances. When you use the Instance Administration Tool, the tool guides you through the steps you need.

You can use the Instance Administration Tool to create, view, copy, change information about, and delete instances. You can also use this tool to create or edit the users who own directory server instances and to migrate instances from previous versions of IBM Tivoli Directory Server. In addition, you can launch the Configuration Tool from the Instance Administration Tool.

You can also use command-line utilities for these tasks.

Starting the Instance Administration Tool

To use the Instance Administration Tool on AIX, Linux, Solaris, and HP-UX systems, you must be logged in as **root**. On Windows systems, you must be logged on as a member of the Administrators group.

The Instance Administration Tool can be started in different ways:

- When you install a server using the InstallShield GUI, the Instance Administration Tool starts:
 - During installation to create the default instance if you use the Typical installation path.
 - After installation to create an instance for which you specify all options if you use the Custom installation path.
- When you use the InstallShield GUI to upgrade from a previous version of IBM Tivoli Directory Server, the Instance Administration Tool starts after installation.
- If you want to create a new instance or edit an existing one, you can start the Instance Administration Tool from the command line:
 1. Go to the `sbin` subdirectory of the directory where IBM Tivoli Directory Server 6.1 is installed. This directory is:
 - On Windows systems, by default:
C:\Program Files\IBM\LDAP\V6.1\sbin
 - On AIX, Solaris, and HP-UX systems: `/opt/IBM/ldap/V6.1/sbin`
 - On Linux systems: `/opt/ibm/ldap/V6.1/sbin`
 2. Type `idsxinst`.
- On Windows systems, you can also click **Start -> Programs -> IBM Tivoli Directory Server 6.1 -> Instance Administration Tool**.

Creating a directory server instance

Attention: When you create a new directory server instance that is **not** a copy of an existing directory server instance, be aware of the information that follows. (If you create a directory server instance as a copy of an existing directory server instance, the two directory server instances are cryptographically synchronized and you do not need to synchronize them.)

1. If you want to use replication, use a distributed directory, or import and export LDIF data between server instances, you must cryptographically synchronize the server instances to obtain the best performance.

If you are creating a directory server instance that must be cryptographically synchronized with an existing directory server instance, you must synchronize the server instances *before* you do any of the following:

- Start the second server instance
- Run the **idsbulkload** command from the second server instance
- Run the **idsldif2db** command from the second server instance

See Appendix E, “Synchronizing two-way cryptography between server instances,” on page 165 for information about synchronizing directory server instances.

2. After you create a directory server instance and configure the database, use the **idsdbback** utility to create a backup of the directory server instance. The configuration and directory key stash files are archived along with the associated configuration and directory data. You can then use the **idsdbrestore** utility to restore the key stash files if necessary. (You can also use the **idsdbback** utility after you load data into the database. See “Backing up the database” on page 128 for information about backing up the database.)

Creating an instance with the Instance Administration Tool

You can use the Instance Administration Tool to create an instance in several different ways:

- Create a default instance with a default name and other settings. (See “Creating the default instance.”)
- Create a new instance for which you specify all the settings. (See “Creating a new instance for which you specify all settings” on page 96.)
- Migrate an instance from a previous version of IBM Tivoli Directory Server. (See “Migrating an instance” on page 101.)
- Create a new instance that is a copy of an instance on the computer or on another computer. (See “Creating an instance that is a copy of another instance” on page 102.)

Creating the default instance

You can create the default instance if you are not migrating a directory server instance from a previous version and you want to create a new directory server instance with default settings. (This option is not available if you have already created a default directory server instance; you can create only one default instance.) The default directory server instance has the following settings, which you cannot change:

On Windows systems

Name: idsinst

Instance location: c:\idsslapd-idsinst

Group name: Administrators

Administrator DN: cn=root

Database name: idsdb

On AIX, Linux, Solaris, and HP-UX systems:

Name: idsinst

Instance location: /home/idsinst. (On Solaris systems, this directory is /export/home/idsinst.)

Group name: dbsysadm

Administrator DN: cn=root

Database name: idsdb

In addition, the o=sample suffix is created for the default directory server instance. You can add other suffixes later with the Configuration Tool or the **idscfgsuf** command. See “Managing suffixes” on page 121 for information.

If these settings are too restrictive, choose another option.

To create the default instance:

1. If the Instance Administration Tool is not started, start it. See “Starting the Instance Administration Tool” on page 93 for instructions.
2. Click **Create**.
3. On the Create new directory server instance window:
 - a. Click **Create default instance**.
 - b. Click **Next**.
4. On the Default instance details window, complete the following fields:

User password

Type the password for the system user, idsinst, that will own the directory server instance.

Encryption seed

Type a string of characters that will be used as an encryption seed.

The encryption seed must contain only printable ISO-8859-1 ASCII characters with values in the range of 33 to 126, and must be a minimum of 12 and a maximum of 1016 characters in length. For information about what characters can be used, see Appendix K, “ASCII characters from 33 to 126,” on page 181.

This encryption seed is used to generate a set of Advanced Encryption Standard (AES) secret key values. These values are stored in the directory server instance’s directory key stash file and used to encrypt and decrypt directory stored password and secretkey attributes.

Record the encryption seed in a secure location; you might need it if you export data to an LDIF file (the **idsdb2ldif** command) or regenerate the key stash file (the **idsgendirksf** command.)

Administrator DN password

The administrator DN for the default instance is **cn=root**. Type the password for the administrator DN. You must define a password. Passwords are case-sensitive. Double byte character set (DBCS) characters in the password are not valid.

Record the password in a secure location for future reference.

Click **Next**.

5. In the Verify settings window, information is displayed about the options you specified. To return to an earlier window and change information, click **Back**. To begin creating the directory server instance, click **Finish**.

6. The Results window is displayed, and messages are displayed while the directory server instance is being created. A completion message is displayed when instance creation is complete. Click **OK** to remove the message.
7. Click **Close** to close the window and return to the main window of the Instance Administration Tool.
8. If you have finished using the Instance Administration Tool, click **Close** to exit the tool.

Note: After you create the default instance, see Chapter 14, “After you install and configure,” on page 137 for information about:

- Starting the server
- Starting the Embedded WebSphere Application Server service if you have installed and configured the Web Administration Tool.

You can find information about using the Web Administration Tool in the *IBM Tivoli Directory Server Version 6.1 Administration Guide*.

Creating a new instance for which you specify all settings

To create a new instance for which you specify all the settings with the Instance Administration Tool:

1. If the Instance Administration Tool is not started, start it. See “Starting the Instance Administration Tool” on page 93 for instructions.
2. Click **Create**.
3. On the Create a new directory server instance window, click **Create a new directory server instance**.
4. If you want the new directory server instance to be a proxy server instance, select the **Set up as proxy** check box. A proxy server does not have an associated database instance.
5. Click **Next**.
6. On the Instance details window, complete the following fields:

User name

Do one of the following:

- If the user you want to own the directory server instance is an existing user on the system, select the system user ID of the user from the list. This name will also be the name of the directory server instance.

If you want to change properties for the user, click **Edit user**. On the window that displays:

- a. If you want to change the user's password, type the new password in the **Password** field.
 - b. If you are on an AIX, Linux, Solaris, or HP-UX system and you want to change the home directory for the user, type the new home directory in the **Home directory** field. You can click **Browse** to locate the home directory.
 - c. If you are on an AIX, Linux, Solaris, or HP-UX system and you want to change the user's primary group, type the new primary group in the **Primary group** field.
 - d. Click **Edit** to save your changes.
- If you want to create a new system user ID for the owner of the directory server instance, click **Create user**. On the window that displays:

- a. Type a name for the user in the **User Name** field. This name becomes the directory server instance name.
The name of the new directory server instance must be unique; if there is already a directory server instance on the computer with the same name, you will receive an error message. See Appendix D, “Setting up users and groups: directory server instance owner, database instance owner, and database owner,” on page 161 for detailed information about requirements for the user ID.
- b. Type the password for the user in the **Password** field.
- c. If you are on an AIX, Linux, Solaris, or HP-UX system:
 - 1) Type the home directory for the user in the **Home directory** field. You can click **Browse** to locate the home directory.
 - 2) Type the name of the user’s primary group in the **Primary group** field.
- d. Click **Create** to create the user.

Install location

Type the location where the directory server instance files will be stored. Be sure that you have at least 30 MB of free disk space in this location.

On Windows systems, this location is a drive, such as **C:**. The directory instance files will be stored on the drive you specify in the `\idslapd-instance_name` directory. (*instance_name* is the name of the directory server instance.)

On AIX, Linux, Solaris, and HP-UX systems, the default location for the instance files is in the directory instance owner’s home directory, but you can specify a different path. Click **Browse** if you want to select a location.

Encryption seed string

Type a string of characters that will be used as an encryption seed.

The encryption seed must contain only printable ISO-8859-1 ASCII characters with values in the range of 33 to 126, and must be a minimum of 12 and a maximum of 1016 characters in length. For information about what characters can be used, see Appendix K, “ASCII characters from 33 to 126,” on page 181.

This encryption seed is used to generate a set of Advanced Encryption Standard (AES) secret key values. These values are stored in the directory server instance’s directory key stash file and used to encrypt and decrypt directory stored password and secretkey attributes.

Record the encryption seed in a secure location; you might need it if you export data to an LDIF file (the `idsdb2ldif` command) or regenerate the key stash file (the `idsgendirksf` command.)

Confirm encryption seed

Type the encryption seed string again for confirmation.

Use encryption salt value

Select this check box if you want to provide an encryption salt value.

- If you are migrating and you want the directory server instance to be cryptographically synchronized with the same directory server

instances as the instance you are migrating, check this box and then complete the **Encryption salt string** and **Confirm encryption salt string** fields.

- If you are creating a new directory server instance and you want the new directory server instance to be cryptographically synchronized with other directory server instances, check this box and then specify the same encryption salt string that the other directory server instances have.

If you clear the check box, the Instance Administration Tool generates an encryption salt string value randomly.

Encryption salt string

If you want to provide an encryption salt string, type the value.

The encryption salt is used, along with the encryption seed, to generate two-way Advanced Encryption Standard (AES) encryption keys that are stored in key stash files. These values are used to encrypt and decrypt directory stored password and secretkey attributes.

If you want to use replication, use a distributed directory, or import and export LDIF data between server instances, you can obtain better performance if the directory server instances have the same encryption salt value. Therefore, if the directory server instance you are creating or migrating will be used in one of these ways, set the encryption salt value to the encryption salt value of the directory server instances with which it will be involved in these activities.

You can obtain the destination server's salt value by searching (using the `ldapsearch` utility) the destination server's `'cn=crypto,cn=localhost'` entry. The attribute type is `ibm-slapdCryptoSalt`.

The encryption salt must contain only printable ISO-8859-1 ASCII characters with values in the range of 33 to 126, and must be exactly 12 characters in length. For information about characters that can be used, see Appendix K, "ASCII characters from 33 to 126," on page 181.

Confirm encryption salt string

Type the encryption salt string again for confirmation.

Instance description

Optionally, type a description of the directory server instance. This description is displayed in other windows to help identify the instance.

Click **Next**.

7. If the DB2 instance details window is displayed, either accept the name that is displayed in the **DB2 instance name** field, or type or select a different name for the DB2 instance, and then click **Next**.

By default, the DB2 instance name is the same as the name of the directory server instance, but you can specify a different name for the DB2 instance. If you specify a different name, there must be a system user ID by the same name. This name cannot be already associated with another directory server instance.

8. On the TCP/IP settings for multihomed hosts window, do one of the following:
 - If you want the directory server instance to listen on all IP addresses, select the **Listen on all configured IP addresses** check box.

- If you want the directory server instance to listen on a particular set of IP addresses that are configured on the computer, clear the **Listen on all configured IP addresses** check box. Then select the IP address or addresses in the list that you want the directory server instance to listen on.

Click **Next**.

9. On the TCP/IP port settings window, complete the following fields:

Server port number

Type the number of the port you want the server to use as its contact port. The number must be between 1 and 65535.

Server secure port number

Type the number of the port you want the server to use as its secure port. The number must be between 1 and 65535.

Admin daemon port number

Type the number of the port you want the administration daemon to use as its port. The number must be between 1 and 65535.

Admin daemon secure port number

Type the number of the port you want the administration daemon to use as its secure port. The number must be between 1 and 65535.

Notes:

- a. If you have two or more directory server instances listening on the same IP address (or set of IP addresses), be sure that those directory server instances do not use any of the same port numbers.
- b. ON AIX, Linux, Solaris, and HP-UX systems, port numbers below 1000 can be used only by root.

Note:

Click **Next**.

10. If the Optional steps window is displayed:

- a. Select **Configure admin DN and password** if you want to configure the administrator DN and password for the directory server instance now. (The administrator DN and password are required for both proxy servers and full servers.)
- b. Select **Configure database** if you want to configure the database for the directory server instance now. (A proxy server instance does not require a database.)

When you configure the database, the Instance Administration Tool adds information about the database that will be used to store directory data to the configuration file (ibmslapd.conf) for the directory server instance. In addition, if the database does not already exist, the Instance Administration Tool creates the database.

In some cases (for example, if you are migrating from a previous release), these options might not be available.

Click **Next**.

Note: You can use the Configuration Tool or the command line later if you do not want to set the administrator DN or configure the database now, but you cannot use the directory server instance until you have done these steps.

11. If the Configure administrator DN and password window is displayed:

- a. In the **Administrator DN** field, type a valid DN (or accept the default DN, **cn=root**).
 The administrator DN is the DN used by the administrator of the directory server instance. This administrator is the one user who has full access to all data in the directory.
 The default DN is **cn=root**. DNs are not case sensitive. If you are unfamiliar with LDAP DN format, or if for any other reason you do not want to define a new DN, accept the default DN.
 - b. Type the password for the administrator DN in the **Administrator Password** field. You must define a password. Passwords are case-sensitive. Double byte character set (DBCS) characters in the password are not valid. Record the password in a secure location for future reference.
 - c. Retype the password in the **Confirm password** field.
 - d. Click **Next**.
12. If the Configure database window is displayed:
- a. Type a valid DB2 administrator ID in the **Database user name** field. This ID must already exist and must have the proper authority before you can configure the database.
Note: Before server startup, this user must have the locale set to the correct locale for the language in which you want server messages to be displayed. If necessary, log in as the user and change the locale to the correct one.
 - b. Type the password for the user in the **Password** field. Passwords are case-sensitive.
Note: If you change the system password for the DB2 administrator, you cannot update it through the Instance Administration Tool. You must use the Configuration Tool or the **idscfgdb** command with the **-w** option. See “Changing the password for the database owner” on page 117 or “Configuring the database with the command line” on page 116 for information.
 - c. Type the name you want to give the DB2 database in the **Database name** field. The name can be from 1 to 8 characters long.
 - d. Click **Next**.
13. If the Database options window is displayed:
- a. Type the location for the database in the **Database install location** field. For Windows platforms, this must be a drive letter. For non-Windows platforms, the location must be a directory name, such as `/home/ldapdb`. (You can click **Browse** to locate a directory.)
 Be sure that you have at least 80 MB of free hard disk space in the location you specify and that additional disk space is available to accommodate growth as new entries are added to the directory.
 - b. In the **Character-set option** box:
 - 1) Click the type of database you want to create. Click one of the following:
 - **Create a universal DB2 database (UTF-8/UCS-2)** to create a UCS Transformation Format (UTF-8) database, in which LDAP clients can store UTF-8 character data.
 - **Create a local codepage DB2 database** to create a database in the local code page.

Create a universal database if you plan to store data in multiple languages in the directory. A universal database is also most efficient because less data translation is needed. If you want to use language tags, the database must be a UTF-8 database. For more information about UTF-8, see Appendix O, “UTF-8 support,” on page 189.

c. Click **Next**.

14. In the Verify settings window, information is displayed about the options you specified. To return to an earlier window and change information, click **Back**. To begin creating the directory server instance, click **Finish**.
15. The Results window is displayed, and messages are displayed while the instance is being created. A completion message is displayed when instance creation is complete. Click **OK** to remove the message.
16. Click **Close** to close the window and return to the main window of the Instance Administration Tool.
17. If you have finished using the Instance Administration Tool, click **Close** to exit the tool.

Note: After you set the administrator DN and password and, for a full server, configure the database, see Chapter 14, “After you install and configure,” on page 137 for information about:

- Starting the server
- Starting the Embedded WebSphere Application Server service if you have installed and configured the Web Administration Tool.

You can find information about using the Web Administration Tool in the *IBM Tivoli Directory Server Version 6.1 Administration Guide*.

Migrating an instance

You can migrate a directory server instance from a previous version of IBM Tivoli Directory Server to a 6.1 directory server instance.

If you are migrating from a version that is before 6.0, you must have already backed up the configuration and schema files. See “Before you upgrade” on page 11.

- To migrate a 6.0 directory server instance:
 1. If the Instance Administration Tool is not started, start it. See “Starting the Instance Administration Tool” on page 93 for instructions.
 2. Select the 6.0 directory server instance you want to migrate in the list, and click **Migrate**.
 3. In the Migrate directory server instance window, click **Migrate**.

Messages are displayed while the directory server instance is being migrated. A completion message is displayed when migration is complete. Click **OK** to remove the message.

Click **Close** to close the window and return to the main window of the Instance Administration Tool.

If you have finished using the Instance Administration Tool, click **Close** to exit the tool.
- To migrate a directory server instance from a version before 6.0:
 1. If the Instance Administration Tool is not started, start it. See “Starting the Instance Administration Tool” on page 93 for instructions.
 2. Click **Create**.

3. Click **Migrate from a previous version of directory server**. Then type the path where you backed up the configuration and schema files from the previous version and click **Next**.

Messages are displayed while the directory server instance is being migrated. A completion message is displayed when migration is complete. Click **OK** to remove the message.

4. Click **Close** to close the window and return to the main window of the Instance Administration Tool.

If you have finished using the Instance Administration Tool, click **Close** to exit the tool.

Note: After you migrate the instance, see Chapter 14, “After you install and configure,” on page 137 for information about:

- Starting the server
- Starting the Embedded WebSphere Application Server service if you have installed and configured the Web Administration Tool.

You can find information about using the Web Administration Tool in the *IBM Tivoli Directory Server Version 6.1 Administration Guide*.

Creating an instance that is a copy of another instance

You can use the Instance Administration Tool to create a directory server instance that uses an existing directory server instance (on the local computer or on another computer) as a template. When you do this, the configuration settings and schema files from the source directory server instance are duplicated and the directory key stash files are also synchronized. The new directory server instance can be configured as a replica or a peer to the source directory server instance if it is in an existing replication deployment, as a full directory server instance that is not participating in replication, or as an additional proxy server. Requirements are:

- The source directory server instance must be running IBM Tivoli Directory Server version 6.1; it cannot be running an earlier version of IBM Tivoli Directory Server, and it cannot be running another version of LDAP.
- The source directory server instance must be running, and it cannot be running in configuration only mode.
- The source directory server instance must be accessible from the computer where you are running the Instance Administration Tool.
- If the directory server instance you are creating will be a peer or replica, there must be a replication context defined on the source directory server instance. (You cannot use the Instance Administration Tool to set up the first replica or peer in a replication topology.) The source directory server instance must already have at least one replication context, replication group, and replication subentry defined. If a replica is being configured, the source directory server instance must already have the initial replication topology defined, including an agreement to at least one other server. If a peer is being configured, the source server must be defined as a master for one or more of the subentries in the replication configuration.
- If the directory server instance you are creating will be a peer or replica, a new replication subentry will be created under `ibm-replicaGroup=default,<replContext>` DN. If this DN is not present, the instance cannot be copied..

The new directory server instance will be created on the computer where the Instance Administration Tool is running. If the source directory server is on a different computer, the operating systems of the two computers need not be the

same. For example, on a Windows system, you can make a copy of a directory server instance that is running on a Linux system.

The Instance Administration Tool will also copy the key database files if the source directory server is running under SSL mode and the Instance Administration Tool is connected to the source directory server using SSL communication.

If the directory server instance you are copying is a proxy server, the new directory server instance will also be a proxy. If the directory server instance you are copying is a full server, the new directory server instance will also be a full server, and you can choose whether or not you want to copy the data from the existing directory server instance.

Note: If you want to copy the data from the existing directory server instance while creating the new directory server instance, the following requirements must be met:

- The version of DB2 must be the same for both directory server instances; both instances must use DB2 v8 or DB2 v9. The fix pack levels, however, can be different.
- The source directory server instance must be configured to allow for online backups.
- An initial offline backup must have been taken on the source directory server instance at some time before you use the Instance Administration Tool to copy the directory server instance. The path you specify must contain only one backup image.
- The path where the backup images are stored must be accessible to both the source directory server instance and the new directory server instance.

See Appendix G, “Preparing for copying an instance or for online backup and restore,” on page 169 for information about preparing the source instance for copying the data.

To create an instance that is a copy of another instance:

1. If the Instance Administration Tool is not started, start it. See “Starting the Instance Administration Tool” on page 93 for instructions.
2. On the IBM Tivoli Directory Server Instance Administration Tool window, do one of the following:
 - If you want to make a copy of a directory server instance that is on the computer, select the directory server instance in the list and then click **Copy local instance**.
 - If you want to make a copy of a directory server instance that is on another computer, click **Copy remote instance**.

The Source information window is displayed.

3. Complete the following fields, and then click **Next**:

Host If the directory server instance you want to copy is not on the local computer, type the host name or IP address. If the directory server instance is on the local computer, this field is completed automatically and you cannot edit it.

Port If the port displayed for the directory server instance you want to copy is not correct, type the number of the port on which the directory server instance is running.

Administrator DN

If the directory server instance you want to copy is not on the local computer, type the administrator DN for the directory server instance you want to copy. If the directory server instance is on the local computer, this field is completed automatically and you cannot edit it.

Password

Type the administrator DN password for the directory server instance you want to copy.

Encryption seed

Type the encryption seed for the directory server instance you want to copy. You must provide the correct encryption seed or the directory server instance will not be copied.

Use SSL connection

If the source directory server instance is using Secure Sockets Layer (SSL) security and you want the new directory server instance to use the same SSL configuration settings, select this check box, and then complete the following fields:

Key file

Type the path and file name of the SSL key database file on the source directory server instance. You can use the Browse button to locate this file.

Key name

Type the private key name to use in the key file on the source directory server instance.

Key password

Type the key database password on the source directory server instance.

If you do not want the new directory server instance to use SSL, clear the **Use SSL connection** check box.

Click **Next**.

4. In the Instance setup - step 1 window:
 - a. Verify that the information provided about the source directory server instance in the **Source URL** and **Source instance type** fields is correct.

The **Source instance type** can be Directory server (a server that has an associated database) or Proxy server (an LDAP server that is not associated with a database, but acts as a front-end to the directory and routes requests to certain other directory servers). If these fields are not correct, click **Back** to return to a panel where you can specify information about the source directory server instance again.
 - b. If you want the new directory server instance to participate in replication as a peer or replica server, select the **Configure as Peer or Replica server** check box, and then click either **Replica** or **Peer** to specify the replication role of the directory server instance.

The **Configure as Peer or Replica server** check box is enabled only if the following requirements are met:

 - The **Source instance type** is Directory server.
 - There is a replication context defined on the source directory server instance. (You cannot use the Instance Administration Tool to set up the first replica or peer in a replication topology. The source directory server

instance must already have at least one replication context, replication group, and replication subentry defined. If a replica is being configured, the source directory server instance must already have the initial replication topology defined, including an agreement to at least one other server. If a peer is being configured, the source server must be defined as a master for one or more of the subentries in the replication configuration.

For more information about replication, see the *IBM Tivoli Directory Server Administration Guide*.

- c. In the **User name** field, specify the system user ID that will own the new directory server instance. This will also be the name of the directory server instance, the DB2 administrator ID, the database instance name, and the database name. The user ID must exist on the system and must not be the name of any other directory server instance on the computer. The name cannot be longer than 8 characters. See Appendix D, "Setting up users and groups: directory server instance owner, database instance owner, and database owner," on page 161 for detailed information about the user ID.
- d. In the **Password** field, specify the system password for the user ID.
- e. In the **Install location** field, specify the location where the directory server instance files will be stored. This will also be the location of the database. Be sure that you have at least 30 MB of free disk space in this location.
On Windows systems, this location is a drive, such as C:. The directory instance files will be stored on the drive you specify in the `\idsldapd-instance_name` directory. (*instance_name* is the name of the directory server instance.)
On AIX, Linux, Solaris, and HP-UX systems, the default location for the instance files is in the directory instance owner's home directory, but you can specify a different path. Click **Browse** if you want to select a location.

Click **Next**.

5. In the Instance setup - step 2 window, complete the following fields and then click **Next**.

Administrator DN

Type the administrator DN for the new directory server instance.

Password

Type the administrator DN password for the new directory server instance.

Confirm password

Type the administrator DN password again for confirmation.

Copy data from source instance to new instance

If you want to copy the data from the database of the source directory server instance during the copy directory server instance operation, select this check box and then type the path where the backup images are stored in the **Path for backup images** field. (You can use the **Browse** button to help you locate the path.) This check box is selected by default and cannot be cleared if you are creating a replica or peer server.

If you want to copy the data while creating the new directory server instance, the following requirements must be met:

- The source directory server instance must be configured to allow for online backups.

- An initial offline backup must have been taken on the source directory server instance at some time before you use the Instance Administration Tool to copy the directory server instance. The path you specify must contain only one backup image.
- The path where the backup images are stored must be accessible to both the source directory server instance and the new directory server instance.

See Appendix G, “Preparing for copying an instance or for online backup and restore,” on page 169 for information about preparing the source instance for copying the data.

See the *IBM Tivoli Directory Server Administration Guide* for information about the backup procedures.

6. In the Verify settings window, information is displayed about the options you specified. To return to an earlier window and change information, click **Back**. To begin creating the directory server instance, click **Finish**.
7. The Results window is displayed, and messages are displayed while the instance is being created. A completion message is displayed when instance creation is complete. Click **Close** to close the window.

Note: After you create the instance, set the administrator DN and password and, for a full server, configure the database, see Chapter 14, “After you install and configure,” on page 137 for information about:

- Starting the server
- Starting the Embedded WebSphere Application Server service if you have installed and configured the Web Administration Tool.

You can find information about using the Web Administration Tool in the *IBM Tivoli Directory Server Version 6.1 Administration Guide*.

Creating an instance with the command line

You can use the **idsicrt** command to create an instance or the **idsideploy** command to copy an instance.

For example, using the **idsicrt** command:

- To create a new directory server instance called **myinst** that has a port of 389, a secure port of 636, an encryption seed of **mysecretkey!**, an encryption salt of **mysecretsalt**, and a DB2 instance with the name **myinst**, issue the command:

```
idsicrt -I myinst -p 389 -s 636 -e mysecretkey! -g mysecretsalt
```

If the directory server instance already existed, this command would fail. If you did not specify the encryption salt, the command would randomly generate an encryption salt. If you did not specify the encryption seed, you would be prompted for the seed. In the following example, you are prompted to enter an encryption seed. The encryption seed is not displayed on the command line when you enter it. After you type the encryption seed and press Enter, the command attempts to create the directory server instance.

```
idsicrt -I myinst -p 389 -s 636
```

The response is:

Enter encryption seed:

- To create the same instance so that it binds to a particular IP address, issue the command:

```
idsicrt -I myinst -p 389 -s 636 -e mysecretkey! -g mysecretsalt -i 1.9.86.566
```


- To create a new directory server instance called **myinst** that has a port of 389, a secure port of 636, an encryption seed of **mysecretkey!**, and a DB2 instance with the name **mydbin**, use the following command:

```
idsicrt -I myinst -p 389 -s 636 -e mysecretkey! -t mydbin
```

In this case, the command will randomly generate an encryption salt value.

- To create a new proxy directory server instance called **proxyinst**, use the following command:

```
idsicrt -x -I proxyinst -p 389 -s 636 -e mysecretkey!
```

Note: After you create the directory server instance with the **idsicrt** command, use the **idsdnpw** command to set the administrator DN and password. See “Managing the primary administrator DN with the command line” on page 113. If the directory server instance is a full server, configure the database using the **idscfgdb** command line utility. See “Configuring the database with the command line” on page 116.

For example, to create a directory server instance that is a copy of an existing instance using the **idsideploy** command:

- To create a new directory server instance (**newinst**) that is a copy of directory server **myinst**:

```
idsideploy -a ownerpw -I newinst -e mysecretkey! -D cn=root -sU myinst  
-sD cn=root1 -sw srcpw -w newdnpw -l C: -b C:\output -q -L C:\backup
```

- To create a new proxy directory server instance (**prxinst**) that is a copy of proxy server instance **proxyinst**:

```
idsideploy -x -I prxinst -D cn=root -e mysecretkey! -sD cn=root -sW secret
```

Note: When created, a database instance normally requires 10 to 20 MB of space. This space is not used, however, if the directory server instance is configured as a proxy server.

See the *IBM Tivoli Directory Server 6.1 Command Reference* for more information about using the **idsicrt** and **idsideploy** commands.

Launching the Configuration Tool from the Instance Administration Tool

You can launch the Configuration Tool from the Instance Administration Tool. This is useful if you want to:

- Check the configuration status of a directory server instance.
- Set or change the administration DN or password, or both, for a directory server instance.

To launch the Configuration Tool from the Instance Administration Tool, on the IBM Tivoli Directory Server Instance Administration Tool window, select the directory server instance you want to change, and then click **Configure**.

Note: On Solaris systems, this button might not work. See “Starting and using the IBM Tivoli Directory Server Configuration Tool (idsxcfg)” on page 111 for information about launching the Configuration Tool.

For information about using the Configuration Tool, see Chapter 13, “Configuration,” on page 111.

Changing the TCP/IP settings for an instance

You can use either the Instance Administration Tool or the command line to change the TCP/IP settings for an existing directory server instance.

Changing the TCP/IP settings with the Instance Administration Tool

To change the TCP/IP settings for an existing directory server instance:

1. If the Instance Administration Tool is not started, start it. See “Starting the Instance Administration Tool” on page 93 for instructions.
2. On the IBM Tivoli Directory Server Instance Administration Tool window, select the directory server instance you want to change, and then click **Edit TCP/IP settings**.
3. On the first Edit TCP/IP settings window that is displayed, do one of the following:
 - If you want the directory server instance to listen on all IP addresses, select the **Listen on all configured IP addresses** check box.
 - If you want the directory server instance to listen on a particular set of IP addresses that are configured on the computer, clear the **Listen on all configured IP addresses** check box. Then select the IP address or addresses in the list that you want the directory server instance to listen on. (To select multiple addresses, press Shift or Ctrl and click the IP addresses you want.)

Click **Next**.

4. On the second Edit TCP/IP settings window that is displayed, complete the following fields:

Server port number

Type the number of the port you want the server to use as its contact port. The number must be between 1 and 65535.

Server secure port number

Type the number of the port you want the server to use as its secure port. The number must be between 1 and 65535.

Admin daemon port number

Type the number of the port you want the administration daemon to use as its port. The number must be between 1 and 65535.

Admin daemon secure port number

Type the number of the port you want the administration daemon to use as its secure port. The number must be between 1 and 65535.

Notes:

- a. The port numbers you specify must not cause conflicts with ports being used by any other directory server instance that is bound to a particular hostname or IP address.
- b. ON AIX, Linux, Solaris, and HP-UX systems, port numbers below 1000 can be used only by root.

Click **Finish**.

5. A Results window is displayed. A completion message is displayed when instance creation is complete. Click **OK** to remove the message.
6. Click **Close** to close the window and return to the main window of the Instance Administration Tool.

Changing the TCP/IP settings with the command line

You can use the **idssethost** command to set the IP addresses a directory server instance will bind to. For example:

To update the IP addresses of the directory server instance **myinst** to bind only to 1.3.45.668, run the following command:

```
idssethost -I myinst -i 1.3.45.668
```

To update the IP addresses of the directory server instance **myinst** to bind to all available IP addresses, use the following command:

```
idssethost -I myinst -i all
```

You can use the **idssetport** command to set the ports a directory server instance will use. For example, to update the port of the directory server instance **myinst** to 555, use the following command:

```
idssetport -I myinst -p 555
```

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for more information about the **idssethost** and **idssetport** commands.

Viewing information about an instance

You can use the Instance Administration Tool or the command line to view information about a directory server instance.

Viewing information about an instance using the Instance Administration Tool

To use the Instance Administration Tool to view information about an existing directory server instance:

1. If the Instance Administration Tool is not started, start it. See “Starting the Instance Administration Tool” on page 93 for instructions.
2. On the IBM Tivoli Directory Server Instance Administration Tool window, select the directory server instance for which you want to see information, and then click **View**.

The View instance details window is displayed.

3. Click **OK** when you have finished viewing the information.

Viewing information about an instance using the command line

You can use the **idsilist** command to list the directory server instances on the computer.

For example, to get a list of directory server instances residing on the computer, use the following command:

```
idsilist
```

To obtain detailed information about the instances, issue the same command with the **-a** or **-r** option. The **-a** option provides formatted information about all the directory server instances on the computer, and the **-r** option provides the same information in a raw format.

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for information about the **idsilist** command.

Deleting a directory server instance

You can use the Instance Administration Tool or the command line to delete a directory server instance.

Deleting an instance using the Instance Administration Tool

To use the Instance Administration Tool to delete a directory server instance:

1. If the Instance Administration Tool is not started, start it. See “Starting the Instance Administration Tool” on page 93 for instructions.
2. On the IBM Tivoli Directory Server Instance Administration Tool window, select the directory server instance you want to delete, and then click **Delete**.
The Delete directory server instance window is displayed.
3. In the **Options** box, click one of the following options:
 - Click **Delete directory server instance only** if you want to remove the directory server instance but leave the database instance intact.
 - Click **Delete directory server instance and destroy associated database instance** if you want to remove the database instance as well as removing the directory server instance.
4. Click **Delete**.
5. Messages are displayed in the window as the directory server instance is removed. A completion message is displayed when instance removal is complete. Click **OK** to remove the message.
6. When removal is complete, click **Close** to close the window and return to the main window of the Instance Administration Tool.

Deleting an instance using the command line

You can use the **idsidrop** command to delete a directory server instance.

For example, to remove a directory server instance and retain the associated database instance, run the following command:

```
idsidrop -I <instancename>
```

To remove a directory server instance and destroy the associated database instance, run the following command:

```
idsidrop -I <instancename> -r
```

To unconfigure the associated database instance without removing a directory server instance, run the following command:

```
idsidrop -I <instancename> -R
```

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for information about the **idsidrop** command.

Chapter 13. Configuration

If you did not use the Instance Administration Tool to set the administrator DN and password or configure the database for the directory server instance, you can use either the Configuration Tool (**idsxcfg**) or command-line utilities for these tasks. You must set the administrator DN and password and, for a full server, configure the database before you can use the directory instance. Also, if you want to change the administrator DN or password after you have set it for the first time, you must use either the Configuration Tool or the command line.

Note: After you configure, see Chapter 14, “After you install and configure,” on page 137 for information about:

- Starting the server
- Starting the Embedded WebSphere Application Server service if you want to use the Web Administration Tool

You can find more information in the *IBM Tivoli Directory Server Version 6.1 Administration Guide*.

You can use the Configuration Tool for the following tasks:

- Managing the primary administrator DN and password.
- Configuring and unconfiguring the database
- Enabling and disabling the change log
- Adding and removing suffixes
- Adding and removing schema files
- Importing and exporting LDIF data
- Backing up, restoring, and optimizing the database
- Configuring Active Directory synchronization
- Tuning the performance of the directory server instance

Starting and using the IBM Tivoli Directory Server Configuration Tool (idsxcfg)

To start and use the Configuration Tool:

1. On AIX, Linux, Solaris, or HP-UX systems, log in as **root**, as the directory server instance owner, or with a user ID that is in the primary group of the directory server instance owner. On Windows systems, log on as any user in the default Administrators group.
2. Go to the sbin subdirectory of the directory where IBM Tivoli Directory Server 6.1 is installed. This directory is:
 - On Windows systems, by default:
C:\Program Files\IBM\LDAP\V6.1\sbin
 - On AIX, Solaris, and HP-UX systems: /opt/IBM/ldap/V6.1/sbin
 - On Linux systems: /opt/ibm/ldap/V6.1/sbin
3. Type **idsxcfg** at a command prompt.

If you have more than one directory server instance on the computer, you must type **idsxcfg -I *instancename*** where *instancename* is the name of the directory server instance you want to configure.

Note: You can also launch the Configuration Tool from the Instance Administration Tool. In the Configuration Tool, select the directory server instance you want to configure, and click **Configure**.

4. The Configuration Tool window is displayed. This window displays information about the current configuration status of the directory server instance.

In the task list on the left, click the task you want to perform. For information about performing a task, see the section shown in the following list:

Manage the administrator DN

See “Managing the primary administrator DN for a directory server instance” on page 113.

Manage the administrator password

See “Managing the primary administrator password for a directory server instance” on page 114.

Configure the database

See “Configuring the database for a directory server instance” on page 115. This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Unconfigure the database

See “Unconfiguring the database for a directory server instance” on page 118. This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Manage the change log

See “Enabling or disabling the change log for a directory server instance” on page 119. This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Manage suffixes

See “Managing suffixes” on page 121. This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Manage schema files

See “Managing schema files” on page 123.

Import LDIF data

See “Importing LDIF data with the Configuration Tool” on page 126. (This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.)

Export LDIF data

See “Exporting LDIF data with the Configuration Tool” on page 127. (This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.)

Back up database

See “Backing up the database” on page 128. (This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.)

Restore database

See “Restoring the database” on page 129. (This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.)

Optimize database

See “Optimizing the database” on page 129. (This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.)

Configure Active Directory synchronization

See “Configuring Active Directory synchronization” on page 130.

Tune the performance of the directory server

See “Tuning the performance of the directory server” on page 133.

5. Close the Configuration Tool when you have completed all configuration tasks.

Managing the primary administrator DN for a directory server instance

The administrator DN is the DN used by the primary administrator of the directory server instance. A DN is made up of attribute:value pairs, separated by commas; for example, `cn=Ben Gray,ou=editing,o=IBM,c=US`. The default DN is `cn=root`. DNs are not case sensitive.

You can use either the Configuration Tool or the command line to set or change the primary administrator DN.

Managing the primary administrator DN with the Configuration Tool

To set or change the primary administrator DN with the Configuration Tool:

1. In the IBM Tivoli Directory Server Configuration Tool window, click **Manage administrator DN** in the task list on the left.
2. In the Manage administrator DN window on the right, type a valid DN (or accept the default DN, **cn=root**) in the **Administrator DN** field.

The IBM Directory Server administrator DN is the DN used by the primary administrator of the directory. This administrator is the one user who has full access to all data in the directory.

The default DN is **cn=root**. DNs are not case sensitive. If you are unfamiliar with LDAP DN format, or if for any other reason you do not want to define a new DN, accept the default DN.

3. Click **OK**.
4. A completion message is displayed. Click **OK**.

Managing the primary administrator DN with the command line

You can use the `idsdnpw` command to change the administrator DN and password for a directory server instance. The command can be run only when the directory server instance is not running. The primary administrator specifies an administrator password and, optionally, an administrator DN, which the utility writes to the `ibmslapd.conf` file for the directory server instance. The administrator DN is set to `cn=root` by default.

For example:

To set the administrator DN to `cn=myname` and the password to `secret` on a computer with only one directory server instance, issue the command:

```
idsdnpw -u cn=myname -p secret
```

If the password is not specified, you are prompted for the password. The password is not displayed on the command line when you type it.

Note: If the administration password policy has been enabled, the administrator's password must conform to the administration password policy requirements. See the *IBM Tivoli Directory Server Version 6.1 Administration Guide* for information about the password policy.

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the `idsdnpw` command.

Managing the primary administrator password for a directory server instance

You can use either the Configuration Tool or the command line to set or change the primary administrator password.

Managing the primary administrator password with the Configuration Tool

To set or change the primary administrator password with the Configuration Tool:

1. Stop the server if it is running.
2. In the IBM Tivoli Directory Server Configuration Tool window, click **Manage administrator password** in the task list on the left.
3. In the Manage administrator password window on the right, type a password in the **Administrator password** field. Passwords are case-sensitive. Double byte character set (DBCS) characters in the password are not supported.

Record the password in a secure place for future reference.

Note: If the administration password policy has been enabled, the primary administrator's password must conform to the administration password policy requirements. See the *IBM Tivoli Directory Server Administration Guide* for information about the password policy.

4. Retype the password in the **Confirm password** field.
5. Click **OK**.
6. A completion message is displayed. Click **OK**.

Managing the primary administrator password with the command line

You can use the `idsdnpw` command to change the primary administrator password for a directory server instance. The command can be run only when the directory server instance is not running.

For example:

To change the primary administrator password to `newsecret` on a computer with only one directory server instance, issue the command:

```
idsdnpw -p newsecret
```

You are prompted to continue or exit.

Note: If the administration password policy has been enabled, the primary administrator's password must conform to the administration password

policy requirements. See the *IBM Tivoli Directory Server Version 6.1 Administration Guide* for information about the password policy.

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the `idsdnpw` command.

Configuring the database for a directory server instance

When you configure a database, the Configuration Tool adds information about the database that will be used to store directory data to the configuration file for the directory server instance. In addition, if the database does not already exist, the Configuration Tool creates the database.

Notes:

1. The server must be stopped before you configure or unconfigure the database.
2. This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.
3. If you created the default instance, the database for that instance has already been created and configured.

You can use either the Configuration Tool or the command line to configure the database.

Configuring the database with the Configuration Tool

To configure a database for the directory server instance:

1. Stop the server if it is running.
2. In the Configuration Tool, click **Configure database** in the task list on the left.
3. If a database user name is requested:
 - a. Type a user ID in the **Database user name** field. This user ID owns the database that is used by the directory instance, and the directory server instance uses this user ID to connect to the database. The user ID must already exist before you can configure the database. (See Appendix D, “Setting up users and groups: directory server instance owner, database instance owner, and database owner,” on page 161 for more information about requirements for the user ID.)
 - b. Type a password for the user in the **Password** field. Passwords are case-sensitive.
 - c. In the **Database name** field, type the name you want to give the DB2 database that is used by the directory server instance to store directory data. The name can be from 1 to 8 characters long.
 - d. Click **Next**.

Note: If the database is already configured, only the password field is enabled. All other fields are pre-filled and disabled.

4. If the database installation location is requested:
 - a. Type the location for the database in the **Database install location** field. For Windows platforms, this location must be a drive letter. For AIX, Linux, Solaris, and HP-UX platforms, the location must be a directory name, such as `/home/ldapdb`, and you can click **Browse** to locate the directory.
Be sure that you have at least 80 MB of free hard disk space in the location you specify and that additional disk space is available to accommodate growth as new entries are added to the directory.

- b. Click the type of database you want to create. You can create a UCS Transformation Format (UTF-8) database, in which LDAP clients can store UTF-8 character data, or a local code page database, which is a database in the local code page.

Create a universal database if you plan to store data in multiple languages in the directory. A universal database is also most efficient because less data translation is needed. If you want to use language tags, the database must be a UTF-8 database. For more information about UTF-8, see Appendix O, “UTF-8 support,” on page 189.

- c. Click **Finish**.

5. Messages are displayed while the database is being configured. Click **Close** when database configuration is complete.

Configuring the database with the command line

You can use the `idscfgdb` command to configure a database for a directory server instance.

This command cannot be used for a proxy server instance.

The `idsicrt` command must have already run successfully to create the database instance. In addition, the database instance owner must be set up correctly. Otherwise, the command fails.

The directory server instance owner specifies a database administrator user ID, a database administrator password, the location to store the database, and the name of the database. The database administrator ID specified must already exist on the system. See Appendix D, “Setting up users and groups: directory server instance owner, database instance owner, and database owner,” on page 161 for information about requirements for this ID.

By using the `-w` option, you can reset the password for the database administrator and the change log database owner in the configuration file for the directory server instance.

After successfully creating the database, the command adds information about the database to the `ibmslapd.conf` file of the directory server instance. The database and local loopback settings are created, if they do not exist. You can specify whether to create the database as a local codepage database or as a UTF-8 database, which is the default.

Attention:

1. Before configuring the database, be sure that the environment variable `DB2COMM` is **not** set.
2. The server must be stopped before you configure the database.

For example:

To configure a database called `ldapdb` for directory server instance `ldapdb` in the location `/home/ldapdb` with a DB2 database administrator ID of `ldapdb` whose password is `secret`, issue the command:

```
idscfgdb -I ldapdb -a ldapdb -w secret -t ldapdb -l /home/ldapdb
```

If the password is not specified, you are prompted for the password. The password is not displayed on the command line when you type it.

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the **idscfgdb** command.

Changing the password for the database owner

If you change the system password for the database owner after the database is configured for a directory server instance, the password is not automatically changed in the configuration file for the directory server instance. When the password for the database owner in the configuration file does not match the system password for the database owner user ID, the directory server instance starts only in configuration mode until you update the password in the configuration file.

Changing the password for the database owner with the Configuration Tool

To change the password for the database owner in the configuration file for the directory server instance:

1. In the Configuration Tool, click **Configure database** in the task list on the left.
2. Type the database owner's new password in the **Password** field. Passwords are case sensitive.
3. Click **Next**.
4. Click **Finish**.
5. Messages are displayed while the password is being changed. Click **Close** when processing is complete.

Note: If the change log is enabled, this procedure also updates the password for the change log database owner in the configuration file.

Changing the password for the database owner with the command line

When the password for the database owner is changed on the system, the directory server must be notified to update its configuration file. This update can be done in one of two ways:

- Using the **idscfgdb** command when the server is stopped
- Using the **idsldapmodify** command

You can use the **idscfgdb** command to change the password for the database owner in the configuration file for the directory server instance if the directory server is stopped.

For example, to change the password to `newpasswr` on a system with only one directory server instance, use the following command:

```
idscfgdb -w newpasswr
```

You are prompted to either continue or exit.

You can use the **idsldapmodify** command to change the password while the directory server instance is running. The **idsldapmodify** command must be used by the primary directory server administrator or by a directory administrator with `dirdata` authority. Use the **idsldapmodify** command with an LDIF file that has the following contents:

```
dn: cn=Directory, cn=RDBM Backends, cn=IBM Directory, cn=Schemas, cn=Configuration
changetpype: modify
replace: ibm-slapdDbUserPW
ibm-slapdDbUserPW: newPassword
```

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the **idscfgdb** and **idsldapmodify** commands.

Unconfiguring the database for a directory server instance

When you unconfigure the database, the Configuration Tool removes the database information for the directory server instance from the configuration file. Based on your selections, it might also delete the database (and all data in it).

Note: This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

You can use either the Configuration Tool or the command line to unconfigure the database.

Unconfiguring the database with the Configuration Tool

To unconfigure the database using the Configuration Tool:

1. In the Configuration Tool, click **Unconfigure database** in the task list on the left.
2. In the Unconfigure database window, click one of the following:

Unconfigure only

Does not destroy any existing LDAP DB2 data. However, the configuration information for the database will be removed from the configuration file for the directory server instance, and the database will be inaccessible to the directory server instance.

Unconfigure and destroy database

Removes the existing database and its contents, and removes the configuration information for the database from the configuration file for the directory server instance.

3. Click **Unconfigure**.
4. In response to the confirmation message that is displayed, click **Yes**.

Unconfiguring the database with the command line

You can use the **idsucfgdb** command to unconfigure a database for a directory server instance.

By default, the command only unconfigures the database from the `ibmslapd.conf` file and does not delete the database. However, you can use the `specify` that you want to delete the database during the unconfiguration process. You are prompted to confirm that you want to continue with the actions you requested.

This command cannot be used for a proxy server instance.

For example:

To unconfigure the database for directory server instance `myinstance` and not prompt before unconfiguring, issue the command:

```
idsucfgdb -n -I myinstance
```

To unconfigure and delete the database for directory server instance `myinstance` and not prompt for confirmation before removing the directory server instance, issue the command:

```
idsucfgdb -r -n -I myinstance
```

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the **idsucfgdb** command.

Enabling or disabling the change log for a directory server instance

The change log database is used to record changes to the schema or directory entries in the typical LDAP entry structure that can be retrieved through the LDAP API. The change log records all update operations: add, delete, modify, and modrdn. The change log enables an IBM Tivoli Directory Server client application to retrieve a set of changes that have been made to an IBM Tivoli Directory Server database. The client might then update its own replicated or cached copy of the data.

You can use the Configuration Tool or the command line to enable or disable the change log.

Notes:

1. The server must be stopped before you enable or disable the change log.
2. This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Enabling the change log

You can use either the Configuration Tool or the command line to enable the change log.

Enabling the change log with the Configuration Tool

To use the Configuration Tool to enable the change log:

1. Stop the server.
2. In the Configuration Tool, click **Manage changelog** in the task list on the left.
3. In the Configure/unconfigure changelog window, select the **Enable change log database** check box.
4. In the **Maximum number of log entries** box, click **Unlimited** if you want an unlimited number of entries in the change log. If you want to limit the number of entries, click **Entries** and type the maximum number of entries you want recorded. The default is 1,000,000 entries.
5. In the **Maximum age** box, accept the default of **Unlimited** if you want entries to remain in the change log indefinitely, or click **Age** and type the number of days and hours for which you want each entry to be kept.
6. Click **Update**.
7. Messages are displayed while the change log is being enabled. Click **Close** when the task is complete.

Enabling the change log with the command line

You can use the **idscfgchlg** command to configure a change log for a directory server instance.

The change log is a database that is created in the same database instance as the directory server instance database. An additional 30 MB of hard disk space are

required. The change log information is added to the directory server instance's `ibmslapd.conf` file. A change log requires the following:

- A database instance with the same name as the directory server instance must already exist.
- A database for the directory server instance must already be configured.
- For AIX, Linux, Solaris, and HP-UX platforms, the local loopback service must be registered in the `/etc/services` file.

Otherwise, the command fails.

This command cannot be used for a proxy server instance.

You can optionally specify the maximum number of entries to keep in the change log and the maximum age to which each entry in the change log is kept until it is automatically destroyed. If you do not specify any options, the entries in the change log never expire and the size of the change log is a maximum of 1,000,000 entries.

For example:

To configure a change log for directory server instance `ldapdb` with no age limit or size limit, issue the command:

```
idscfgchglg -I ldapdb -m 0
```

To configure a default change log for directory server instance `ldapdb` with a size limit of 1,000,000 and an entry age of 25 hours, issue the command:

```
idscfgchglg -I ldapdb -y 1 -h 1
```

Note: After the change log is configured, the `-y`, `-h`, and `-m` options can be used to update the maximum age and maximum size of the entries in the change log.

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the `idscfgchglg` command.

Disabling the change log

You can use either the Configuration Tool or the command line to unconfigure the change log. When you unconfigure the change log, the change log database is also deleted.

Disabling the change log with the Configuration Tool

To use the Configuration Tool to disable the change log:

1. In the Configuration Tool, click **Manage changelog** in the task list on the left.
2. In the Configure/unconfigure changelog window, clear the **Disable change log database** check box.
3. Click **Update**.
4. In response to the confirmation message, click **Yes**.
5. Messages are displayed while the change log is being disabled. Click **Close** when the task is complete.

Disabling the change log with the command line

You can use the `idsucfgchglg` command to unconfigure a change log for a directory server instance. A change log must be currently configured in the `ibmslapd.conf` file for the directory server instance. No parameters are needed to

remove the change log and the change log information from the `ibmslapd.conf` file. The directory server instance owner is prompted to confirm the action before the change log is deleted.

This command cannot be used for a proxy server instance.

For example:

To unconfigure the change log for the directory server instance on a computer with only one directory server instance without prompting the user for confirmation, issue the command:

```
idsucfgchglg -n
```

To unconfigure the change log for the directory server instance `myinstance` on a computer with multiple instances, issue the command:

```
idsucfgchglg -I myinstance
```

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the `idsucfgchglg` command.

Managing suffixes

A suffix (also known as a naming context) is a DN that identifies the top entry in a locally held directory hierarchy. Because of the relative naming scheme used in LDAP, this DN is also the suffix of every other entry within that directory hierarchy. A directory server can have multiple suffixes, each identifying a locally held directory hierarchy; for example, `o=ibm,c=us`.

You can use either the Configuration Tool or the command line to add and remove suffixes.

Notes:

1. The specific entry that matches the suffix must be added to the directory.
2. This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Entries to be added to the directory must have a suffix that matches the DN value, such as `ou=Marketing,o=ibm,c=us`. If a query contains a suffix that does not match any suffix configured for the local database, the query is referred to the LDAP server that is identified by the default referral. If no LDAP default referral is specified, an **Object does not exist** result is returned.

Note: The server must be stopped before you add or remove suffixes.

Adding a suffix

You can use either the Configuration Tool or the command line to add suffixes.

Adding a suffix with the Configuration Tool

To add a suffix using the Configuration Tool:

1. Be sure the directory server instance is stopped.
2. In the Configuration Tool, click **Manage suffixes** in the task list on the left. (This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.)

3. In the Manage suffixes window, type the suffix you want to add in the **SuffixDN** field, and click **Add**.
4. When you have added all the suffixes you want, click **OK**.

Note: When you click **Add**, the suffix is added to the list in the **Current suffix DNs** box; however, the suffix is not actually added to the directory until you click **OK**.

Adding a suffix with the command line

You can use the **idscfgsuf** command to configure a suffix for a directory server instance. The suffix is added to the directory server instance's `ibmslapd.conf` file. This command fails if the directory server instance is a proxy server or if the suffix already exists in the configuration file.

For example:

To configure the suffix `o=sample` on a computer with a single directory server instance, issue the command:

```
idscfgsuf -s o=sample
```

To configure the suffix `o=sample` for directory server instance `myinstance` on a computer with a multiple directory server instances, issue the command:

```
idscfgsuf -I myinstance -s o=sample
```

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the **idscfgsuf** command.

Removing a suffix

Removing a suffix does not remove the entry from the directory, but only removes it from the configuration file. You can use either the Configuration Tool or the command line to remove suffixes.

Removing a suffix with the Configuration Tool

To use the Configuration Tool to remove a suffix:

1. In the Configuration Tool, click **Manage suffixes** in the task list on the left. (This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.)
2. In the Manage suffixes window, click the suffix you want to remove in the **Current suffix DNs** box, and click **Remove**.
3. When you have selected all the suffixes you want to remove, click **OK**. The following suffixes cannot be removed:
 - `cn=localhost`
 - `cn=configuration`
 - `cn=ibmpolicies`

Note: When you click **Remove**, the suffix is removed from the list in the **Current suffix DNs** box; however, the suffix is not actually removed until you click **OK**.

4. In response to the confirmation message, click **Yes**.

Removing a suffix with the command line

You can use the `idsucfgsuf` command to remove a suffix from a directory server instance's `ibmslapd.conf` file. This command fails if the directory server instance is a proxy server or if the suffix does not exist in the configuration file.

For example:

To remove the suffix `o=sample` from the `ibmslapd.conf` file on a computer with a single directory server instance, run the following command:

```
idsucfgsuf -s o=sample
```

To remove the suffix `o=sample` from the `ibmslapd.conf` file of directory server instance `myinstance` on a computer with multiple directory server instances, issue the command:

```
idsucfgsuf -I myinstance -s o=sample
```

Note: These system defined suffixes cannot be removed:

- `cn=localhost`
- `cn=configuration`
- `cn=ibmpolicies`

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the `idsucfgsuf` command.

Managing schema files

You can use the Configuration Tool or the command line for the following schema file tasks:

- Adding a schema file to the list of schema files that will be loaded at startup
- Removing a schema file from the list of schema files that will be loaded at startup
- Changing the type of validation checking that is done for schema files

Note: The server must be stopped before you add or remove schema files.

Adding a schema file

You can use either the Configuration Tool or the command line to add a schema file to the list of schema files that will be loaded at startup. The schema file must exist on the computer.

Adding a schema file with the Configuration Tool

To use the Configuration Tool to add a schema file to the list of schema files that will be loaded at startup:

1. In the Configuration Tool, click **Manage schema files** in the task list on the left.
2. In the Manage schema files window, type the path and file name of the schema file you want to load at startup. (Alternatively, click **Browse** to search for the file.)
3. Click **Add**.

Note: When you click **Add**, the schema file is added to the list in the **Current schema files** box; however, the schema file is not actually added until you click **OK**.

4. When you have added all the schema files you want, click **OK**.

Adding a schema file with the command line

You can use the `idscfgsch` command to add a schema file to the list of schema files that will be loaded at startup. The schema file must exist on the computer. The directory server instance owner must specify the schema file to add to the directory server instance's `ibmslapd.conf` file. For example, to configure the schema file `/home/mydir/myschema.oc` in the directory server instance's `ibmslapd.conf` file, run the following command:

```
idscfgsch -s /home/mydir/myschema.oc
```

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the `idscfgsch` command.

Removing a schema file

You can use either the Configuration Tool or the command line to remove a schema file from the list of schema files that will be loaded at startup.

Removing a schema file with the Configuration Tool

To use the Configuration Tool to remove a schema file from the list of schema files that will be loaded at startup:

1. In the Configuration Tool, click **Manage schema files** in the task list on the left.
2. In the Manage schema files window, click the schema file you want to remove in the **Current schema files** box.
3. Click **Remove**.

Notes:

- a. The following schema files cannot be removed:
 - V3.system.at
 - V3.system.oc
 - V3.config.at
 - V3.config.oc
 - V3.ibm.at
 - V3.ibm.oc
 - V3.user.at
 - V3.user.oc
 - V3.ldapsyntaxes
 - V3.matchingrules
 - V3.modifiedschema
 - b. When you click **Remove**, the schema file is removed from the list in the **Current schema files** box; however, the schema file is not actually removed until you click **OK**.
4. In response to the confirmation message, click **Yes**.
 5. When you have selected all the schema files you want to remove, click **OK** to process the files.

Removing a schema file with the command line

You can use the `idsucfgsch` command to unconfigure a schema file for a directory server instance. The schema file must be currently configured in the directory server instance's `ibmslapd.conf` file. The directory server instance owner must specify the schema file to remove from the directory server instance's `ibmslapd.conf` file.

For example, to unconfigure the schema file `/home/mydir/myschema.oc` from the directory server instance's `ibmslapd.conf` file, run the following command:
`idsucfgsch -s /home/mydir/myschema.oc`

Note: The following system-defined schema files cannot be removed:

1. `V3.system.at`
2. `V3.system.oc`
3. `V3.config.at`
4. `V3.config.oc`
5. `V3.ibm.at`
6. `V3.ibm.oc`
7. `V3.user.at`
8. `V3.user.oc`
9. `V3.ldapsyntaxes`
10. `V3.matchingrules`
11. `V3.modifiedschema`

See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for detailed information about the `idsucfgsch` command.

Changing the type of validation checking that is done

To change the type of validation checking that is done on schema files:

1. In the Configuration Tool, click **Manage schema files** in the task list on the left.
2. In the Manage schema files window, accept the default schema validation rule in the **Schema validation rules** box, or click the rule you want. You can select one of the following rules:
 - Version 3 (Strict)
LDAP version 3 strict validation checking is done. With this type of validation checking, all parent object classes must be present when adding entries.
 - Version 3 (Lenient)
LDAP version 3 lenient validation checking is done. With this type of validation checking, all parent object classes do not need to be present when adding entries.
This is the default.
 - Version 2
LDAP version 2 checking is done.
 - None
No validation checking is done.
3. Click **OK**.

Importing and exporting LDIF data

You can use the Configuration Tool to import data from an LDAP Data Interchange Format (LDIF) file or to export data from the database to an LDIF file. LDIF is used to represent LDAP entries in text form. When importing, you can add entries to an empty directory database or to a database that already contains entries. You can also use the Configuration Tool to validate the data in the LDIF file without adding the data to the directory.

This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

You can also use the command line to import, export, or validate LDIF data.

- To import data from an LDIF file, you can use either the **idsldif2db** or the **idsbulkload** utility.
- To export data to an LDIF file, use the **idsdb2ldif** utility.
- To validate the data in the LDIF file, use the **idsbulkload** utility.

See the *IBM Tivoli Directory Server Version Command Reference* for information about the **idsldif2db**, **idsdb2ldif**, and **idsbulkload** commands.

Importing LDIF data with the Configuration Tool

Attention: If you want to import LDIF data from another server instance, the LDIF import file must be cryptographically synchronized with the server instance that is importing the LDIF file; otherwise any AES-encrypted entries in the LDIF file will not be imported. See Appendix E, “Synchronizing two-way cryptography between server instances,” on page 165 for information about synchronizing directory server instances. If you selected the **Export data for AES-enabled destination server** check box when exporting the data with the Configuration Tool (see step 5 on page 127), the LDIF import file is cryptographically synchronized with the server instance that is importing the LDIF file.

Before you being to import data, also consider the following information:

Notes:

1. This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.
2. Before you import the data from an LDIF file, be sure to add any necessary suffixes. See “Adding a suffix” on page 121 for information about adding a suffix.
3. The server must be stopped before you import LDIF data.

To import data from an LDIF file:

1. In the Configuration Tool, click **Import LDIF data** in the task list on the left.
2. In the Import LDIF data window on the right, type the path and file name of the LDIF file in the **Path and LDIF file name** field. Alternatively, you can click **Browse** to locate the file.
3. If you want trailing spaces removed from the data, select the **Remove trailing spaces in Standard import or Bulkload** check box.
4. Click **Standard import** if you want to import the data using the **idsldif2db** utility, or click **Bulkload** if you want to import the data using the **idsbulkload** utility.

Note: For large LDIF files, the **idsbulkload** utility is a faster alternative to **idsldif2db** if you are importing a large number of entries.

5. If you clicked **Bulkload**, select the type or types of checking you want to perform on the LDIF data in the **Bulkload options** box. You can select one or more of the following:
 - Enable schema checking
 - Enable ACL checking
 - Enable password policy

Click **Import**.

Note: After loading large amounts of data, especially after populating the database using `idsbulkload`, be sure to optimize the database. This can make a significant improvement to the performance of the database

Validating LDIF data without adding it to the database using the Configuration Tool

To validate the data in the LDIF file without adding it to the database:

1. In the Configuration Tool, click **Import LDIF data** in the task list on the left.
2. In the Import LDIF data window on the right, type the path and file name of the LDIF file in the **Path and LDIF file name** field. Alternatively, you can click **Browse** to locate the file.
3. Click **Data validation only**.
4. Click **Import**.

Exporting LDIF data with the Configuration Tool

Before you export LDIF data, be sure that you have enough space to export all the data.

To export data from the database to an LDIF file:

1. In the Configuration Tool, click **Export LDIF data** in the task list on the left.
2. In the Export LDIF data window on the right, type the path and file name of the LDIF file in the **Path and LDIF file name** field. Alternatively, you can click **Browse** to locate the file.
3. If you want to overwrite the data in an existing file, select the **Overwrite if file exists** check box.
4. If you want to export the `creatorsName`, `createTimestamp`, `modifiersName`, and `modifyTimestamp` operational attributes, select the **Export operational attributes** check box.

These operational attributes are created and modified by the server when a directory entry is created or modified; they are also modified any time the entry is modified. They contain information about the user who created or modified the entry and the time the entry was created or modified. These entries are stored as a base-64-encoded control in the LDIF file.

5. If you are exporting data that will be imported into an Advanced Encryption Standard (AES)-enabled server and *if the two servers are not cryptographically synchronized*, select the **Export data for AES-enabled destination server** check box. Then complete the **Encryption seed** and **Encryption salt** fields with the values for the destination server. (See Appendix E, "Synchronizing two-way cryptography between server instances," on page 165 for information about cryptographic synchronization of servers.)

When the source server (the server you are exporting data from) and the destination server (the server into which you will be importing the data) are using non-matching directory key stash files, and you specify the encryption seed and salt values of the destination server, any AES-encrypted data will be decrypted using the source server's AES keys, then re-encrypted using the destination server's encryption seed and salt values. This encrypted data is stored in the LDIF file.

You can obtain the destination server's salt value by searching (using the `ldapsearch` utility) the destination server's "`cn=crypto,cn=localhost`" entry. The attribute type is `ibm-slapedCryptoSalt`.

6. If you want to specify a filter for entries that are exported to the LDIF file, in the **Filter entry DN** field, type the DN of a valid replication filter. This filter is used to export only some of the directory database entries to the LDIF file. For more information about replication filters, see the *IBM Tivoli Directory Server 6.1 Administration Guide*.
7. If you want comments to be added into the LDIF file, add these comments to the **Comments** field.
8. If you want to export only some of the data in the directory, complete the **Subtree DN** field. The subtree DN identifies the top entry of the subtree that is to be written to the LDIF output file. This entry, plus all entries below it in the directory hierarchy, are written to the file. If you do not specify this option, all directory entries stored in the database are written to the output file based on the suffixes specified in the IBM Tivoli Directory Server configuration file.
9. Click **Export**.

Backing up the database

The server must be stopped before you can back up the database.

You can use the Configuration Tool to back up the data in the database.

- Restoring data and, optionally, configuration settings that were previously backed up
- Updating statistics related to the data tables for the purpose of improving performance and query speed

This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Backing up the database with the Configuration Tool

To back up the database using the Configuration Tool:

1. In the Configuration Tool, click **Backup database** in the task list on the left.
2. In the Backup database window on the right, in the **Backup directory** field, type the directory path in which to back up all directory data and configuration settings. Alternatively, click **Browse** to locate the directory path.
3. Click one of the following:
 - **Create backup directory as needed** if you want the directory to be created if it does not exist.
 - **Halt if backup directory is not found** if you do not want the directory you specified to be created. If this directory does not exist and you select this option, the database will not be backed up.
4. Click **Backup**.

Backing up the database with the command line

You can use the **idsdbback** command to back up the database. For information, see the *IBM Tivoli Directory Server version 6.1 Command Reference*.

This command cannot be used for proxy server instances because there is no database associated with a proxy server. You can, however, use the **migbkup** command to back up the configuration files and schema files for a proxy server. See step 3 on page 11 in “Before you upgrade” on page 11 for instructions.

Restoring the database

You can use the Configuration Tool or the command line to restore data and, optionally, configuration settings that were previously backed up.

- Updating statistics related to the data tables for the purpose of improving performance and query speed

This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

The server must be stopped before you can restore the database.

Notes:

1. A database can be restored only into a database and database instance with the same names that were used for the database backup.
2. The restore function works only if a database is currently configured for a given directory server instance. The restore function restores the backup database into the currently configured database. The command fails if the backed up database instance and database do not match the configured database instance and database. Additionally, the restore function requires that the database location of the backed up database and the database it is restoring are the same.

Using the Configuration Tool

To restore the database using the Configuration Tool:

1. In the Configuration Tool, click **Restore database** in the task list on the left.
2. In the Restore database window on the right, in the **Restore directory** field, type the path in which the directory was previously backed up. Alternatively, click **Browse** to locate the path.
3. If you want to restore only the directory data, but not the configuration settings, select the **Restore data only (not configuration settings)** check box. If you want to restore both data and configuration settings, be sure the check box is cleared.
4. Click **Restore**.

Using the command line

For information about using the **idsdbrestore** command to restore a previously backed up database, see the *IBM Tivoli Directory Server version 6.1 Command Reference*.

This command cannot be used for proxy server instances.

Optimizing the database

Optimize the database to update statistics related to the data tables; this can improve performance and query speed. Perform this action periodically or after heavy database updates; for example, after importing database entries.

The server must be stopped before you can optimize the database.

This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Using the Configuration Tool

To optimize the database using the Configuration Tool:

1. In the Configuration Tool, click **Optimize database** in the task list on the left.
2. In the Optimize database window on the right, click **Optimize**.

Using the command line

For information about using the `idsrunstats` command to optimize the database, see the *IBM Tivoli Directory Server version 6.1 Command Reference*.

This command cannot be used for proxy server instances.

Configuring Active Directory synchronization

Active Directory synchronization is a tool for synchronizing users and groups in Active Directory with IBM Tivoli Directory Server 6.1. Synchronization is one-way, from Active Directory to IBM Tivoli Directory Server only.

Active Directory synchronization uses IBM Tivoli Directory Integrator for synchronizing the directories. You must have IBM Tivoli Directory Integrator installed before Active Directory synchronization can run. (You can install IBM Tivoli Directory Integrator with the InstallShield GUI, with operating system utilities, or with silent installation on Windows systems.)

Notes:

1. If you configure or change the administrator DN or password (or both) for the directory server instance after configuring Active Directory synchronization, you must reconfigure Active Directory synchronization.
2. If the user or group container names from Active Directory are changed dynamically (while Active Directory synchronization is running), you must reconfigure Active Directory synchronization with the new names or Active Directory synchronization will no longer run.
3. Active Directory synchronization synchronizes only users and groups. It does not synchronize other objects in the directory.
4. Active Directory synchronization does not synchronize nested organizational units (OUs).
5. Multiple attributes from Active Directory cannot be mapped to a single attribute in IBM Tivoli Directory Server.
6. Mapping of the userPassword attribute is not allowed.
7. Active Directory synchronization can synchronize users and groups from one or more Active Directory user containers to a single Tivoli Directory Server OU. However, it will not synchronize multiple Active Directory user containers to multiple Tivoli Directory Server OUs.

After you install IBM Tivoli Directory Server 6.1 (including IBM Tivoli Directory Integrator) and create and configure a directory server instance, use the following steps to configure and use Active Directory synchronization:

1. If you use a copy of IBM Tivoli Directory Integrator that you did not install with IBM Tivoli Directory Server 6.1, you must set the `IDS_LDAP_IDI_HOME` environment variable to the directory where you installed IBM Tivoli Directory Integrator.

Note: On Windows systems, if there are spaces in this path, Active Directory synchronization will not work properly. Set the environment variable to

a path with no spaces and no quotation marks, or use the short name when you specify the path. For example, if you wanted to specify the C:\Program Files\IBM\TDI\V6.1.1 directory, you could use c:\Progra~1\IBM\TDI\V6.1.1) to avoid spaces in the path.

2. Optionally, load the sample users.ldif and groups.ldif files into the Active Directory Server. Use the documentation for Active Directory Server.
3. Configure Active Directory synchronization using the IBM Tivoli Directory Server Configuration Tool or the **idsacscfg** command. Configuring Active Directory synchronization generates the adsync_private.prop and adsync_public.prop files. See “Configuring Active Directory synchronization with the Configuration Tool” for information.
4. Modify the adsync_public.prop file to customize optional attributes and SSL parameters, if needed. See the *IBM Tivoli Directory Server Version 6.1 Administration Guide* for information. (If you are using SSL, be sure to see the SSL setup information also.)
5. Start Active Directory synchronization, using the **idsadsrun** command. You are asked if you want to fully synchronize, followed by real time synchronization, or only start real time synchronization. See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for information.

Note: If there are errors in the parameters specified for Active Directory, these errors will not be found during configuration, but during runtime (when you use the **idsadsrun** command). If errors are reported during runtime in the Active Directory parameters, you must reconfigure the Active Directory parameters correctly using the Configuration Tool (in the Active Directory synchronization: Active Directory details window) or the **idsacscfg** command.

Changes made to the Active Directory entries will be read by the Active Directory synchronization, which listens for changes.

Active Directory synchronization will synchronize any changes to the IBM Tivoli Directory Server directory. The IBM Tivoli Directory Integrator Administration and Monitoring Console can be used for further administration and monitoring.

Configuring Active Directory synchronization with the Configuration Tool

To configure Active Directory synchronization with the Configuration Tool:

1. In the Configuration Tool, click **Active directory synchronization** in the task list on the left. The Active Directory synchronization: Instance Details window opens. Use this window to provide information about the directory server instance you want to synchronize with Active Directory. The information you provide will be saved in the adsync_private.properties and adsync_public.properties files, which are in the etc\tdisoldir subdirectory of the directory server instance.
2. In the **Directory suffix** field, type the IBM Tivoli Directory Server suffix you want to use for Active Directory synchronization. (The **LDAP URL** field is completed with the URL for the directory server instance. You cannot edit this field.)
3. In the **Group container entry DN** field, type the DN of the container into which groups from Active Directory will be copied. (This container must exist.)

Groups and the memberships of users in groups are kept synchronized between Active Directory and IBM Tivoli Directory Server. When a user is

added to or removed from a group in Active Directory, the user will be added to or removed from the corresponding group in IBM Tivoli Directory Server.

4. In the **User container entry DN** field, type the DN of the container into which users from Active Directory will be copied. (This container must exist.)
5. If you want to use an SSL connection to Active Directory, select the **Use SSL connection to Active directory** check box. (Using an SSL connection to IBM Tivoli Directory Server is not supported.) See the *IBM Tivoli Directory Server Administration Guide* for information about additional setup that is required for an SSL connection.
6. Click **Next**. The Active Directory synchronization: Active Directory details window opens. Use this window to provide information about your Active Directory setup before you synchronize with IBM Tivoli Directory Server.
7. In the **Host address** field, type the hostname or IP address of the Active Directory domain controller.
8. In the **Host port** field, type the port used by Active Directory.
9. In the **Login name** and **Login password** fields, type the login name and password that IBM Tivoli Directory Integrator will use to bind to Active Directory. The ID must have sufficient permission to read the Active Directory entries that are to be propagated to the directory server instance.
10. In the **Search base** field, type the subtree in Active Directory from which the changes to the directory server instance will be made. Only changes to users in this subtree will be propagated to the directory server instance. In most cases, set the search base to the top of the Active Directory tree, so that all users in Active Directory groups will be found and copied to the directory server instance.
11. In the **Group container entry DN** field, type the DN for the Active Directory container from which groups in Active Directory will be synchronized to the directory server instance.
12. In the **User container entry DN** field, type the DN for the Active Directory container that contains the user entries in Active Directory to be synchronized to the directory server instance.

When a user is added to Active Directory, the user will be added to the directory server instance only if it is in this container. When an existing user is moved into this container, the user will be added to the directory server instance. The user's group memberships will also be checked and the user will be added to any groups in IBM Tivoli Directory Server that are synchronized with Active Directory. When an existing user is moved out of this container, the user will be deleted from IBM Tivoli Directory Server, and the user will be deleted from all groups in IBM Tivoli Directory Server.

If the user container names from Active Directory are changed dynamically (while Active Directory synchronization is running), you must reconfigure Active Directory synchronization with the new names or Active Directory synchronization will stop and no longer run until the names are reconfigured.

You can specify multiple user containers to synchronize with a single organizational unit (OU) in Tivoli Directory Server by using the semicolon (;) as a separator. (Other characters used as separators are not supported.) If you use the semicolon (;) separator, enclose the argument in quotation marks ("), as shown in the following example:

```
"ou=SWUGroups,dc=adsync,dc=com;ou=STGGroups,dc=adsync,dc=com"
```

The sAMAccountName attribute from Active Directory will be used to compose the \$dn attribute in Tivoli Directory Server. Because the

sAMAccountName attribute is unique in a domain, there will not be conflicts when synchronizing multiple Active Directory user containers to a single Tivoli Directory Server OU.

13. Click **Finish**. The Active Directory synchronization: Results window opens. This window shows the time at which Active Directory synchronization configuration started, the amount of time that has passed since Active Directory synchronization configuration began, and any messages that occur during configuration.
14. Click **Close** when the configuration process is complete.

Configuring Active Directory synchronization with the command line

You can use the `idsadscfg` command to configure Active Directory synchronization. For example:

```
idsadscfg -I inst1 -adH ldap://9.182.191.134:389 -adb dc=adsynctest,dc=com -adD
cn=administrator,cn=users,dc=adsynctest,dc=com -adw sec001ret -adg ou=testgroup1,
dc=adsynctest,dc=com -adu ou=testuser1,dc=adsynctest,dc=com -idss o=ibm,c=us -idsg
ou=Testgroup1,ou=groups,o=ibm,c=us -idsu ou=Testuser1,ou=users,o=ibm,c=us
```

Tuning the performance of the directory server

The Performance Tuning tool makes recommendations about performance tuning settings (the directory server caches and DB2 buffer pools) based on input you provide about the directory server instance. The tool can also update these settings.

Additionally, if your directory server instance has been deployed and running for some time, the tool monitors the performance of the directory server instance and displays database "health check" information.

For best performance, always run the Performance Tuning tool on new directory server instances, as soon as the initial directory data is loaded. Then run the tool again periodically, especially after you add a significant number of entries or make major changes to the content of entries (such as adding a new set of attributes to each entry).

This option is not available if you are configuring a proxy server or if you have not installed the full server on the computer.

Performance tuning with the Configuration Tool

To run the Performance Tuning tool with the Configuration Tool:

1. In the Configuration Tool, click **Performance tuning** in the task list on the left. The Performance tuning: administrator input window opens.

Note: When the window opens, the message "Loading total number of entries and average entry size from server instance database" is displayed at the top of the window. Wait until the message is removed before you type information in the fields.

Use this window to provide information that the Performance Tuning tool will use to calculate the following settings for the directory server instance:

- Entry cache size
- Filter cache size
- Group Member Cache size
- Group Member Cache Bypass Limit

- DB2 LDAPDB buffer pool size
- DB2 IBMDEFAULTDB buffer pool size

Notes:

- a. The Performance Tuning tool backs up the `ibmslapd.conf` file and saves it in the `logs/ibmslapd.conf.save` file in the directory for this directory server instance.
- b. The information you provide is logged in the `logs/perftune_input.conf` file in the directory for this directory server instance.

Additionally, if the directory server instance has been running for some time and a substantial amount of database activity has occurred, the tool monitors the performance of the directory server instance and displays database "health check" information about the following DB2 parameters:

- DB2 NUM_IOSERVERS
- DB2 NUM_IOCLEANERS
- CATALOGCACHE_SZ
- PCKCACHESZ
- LOGFILSIZ
- LOCKLIST

2. Type the percentage of system memory you want allocated to this directory server instance in the **Percentage of available system memory to be allocated to this directory instance** field. This allows available system memory to be divided between multiple instances of Tivoli Directory Server, or between Tivoli Directory Server and other servers you plan to run on this system. This information will be used for calculating the sizes of the entry and filter caches.
3. In the **Planned number of entries** field, type your estimate of the total number of entries planned for the directory server instance. The Performance Tuning tool attempts to discover the number of entries in the directory server instance. If it cannot, it uses a default of 10,000 entries. This information will be used for calculating sizes for the directory server caches.
4. In the **Average size of an entry (Bytes)** field, type the estimated average size of an entry in the directory server instance. The Performance Tuning tool attempts to compute the size of an entry in the directory server instance. If it cannot, it uses a default of 2650 bytes. This information will be used for calculating sizes for the directory server caches.
5. In the **Planned number of groups** field, type the estimated number of groups in the directory server instance. This information will be used for calculating sizes for the directory server caches.
6. In the **Maximum number of members in a group that will be referenced frequently** field, type the average number of members for groups that will be referenced frequently.
7. In the **Update frequency** box, click one of the following:
 - **Frequent updates expected** if there will be frequent updates to the directory server instance. (As a guideline, an average of more than one update for every 500 searches would be considered frequent updates.)
 - **Batch updates** if you expect less frequent updates or if updates are grouped and made at certain times during the day.

This information is used to set the filter cache size. The filter cache is useful only when there are infrequent updates to the directory and the same searches are run more than once. If frequent updates are expected, the filter cache will be set to 0. If infrequent or batch updates are expected, the filter cache will be set to 1024 filter cache entries.

8. If you want the tool to provide the most thorough performance analysis, select the **Enable collection of additional system data for extended tuning** check box. The Performance Tuning tool will run for 5 minutes and collect and analyze data about the directory server instance, and then make recommendations about the settings for the following DB2 parameters in addition to the settings recommended when you do not enable extended tuning:

- SORTHEAP
- MAXFILOP
- DBHEAP
- CHNGPGS_THRESH
- NUM_IOSERVERS
- NUM_IOCLEANERS

Recommendations for these DB2 parameters are made in the perftune_stat.log file for the directory server instance.

Notes:

- a. The directory server instance must have been running for some time before there will be enough DB2 data available to do the database health check analysis and make any recommendations for these settings.
 - b. Selecting this check box enables the DB2 monitor switches BUFFERPOOL and SORTHEAP. The performance of the directory server instance is likely to degrade while these switches are enabled and the data is being collected.
 - c. To get accurate data for the best tuning for your directory server instance, select the **Enable collection of additional system data for extended tuning** check box during a time when directory activity is typical for your environment. Running the database health check when the directory server is less busy than usual does not result in optimum performance recommendations.
9. Click **Next**. The Performance tuning: verification window opens. Use this window to verify that you want to use the performance tuning settings calculated by the Performance Tuning tool.
 10. Inspect the settings recommended by the tool.

The Database health status table is not completed if this is a new directory server instance with no database activity yet. The table is completed if the Performance Tuning tool has collected information about at least one DB2-related parameter. The information is also logged in the perftune_stat.log file.

If the database is populated and has had enough activity, information about the following DB2 parameters is displayed:

- DB2 NUM_IOSERVERS
- DB2 NUM_IOCLEANERS
- CATALOGCACHE_SZ
- PCKCACHESZ
- LOGFILSIZ
- LOCKLIST

If you selected the **Enable collection of additional system data for extended tuning** check box on the Performance tuning: administrator input window, information about the following DB2 parameters is also displayed:

- SORTHEAP

- MAXFILOP
- DBHEAP
- CHNGPGS_THRESH
- NUM_IOSERVERS
- NUM_IOCLEANERS

The health status displayed for the DB2 parameters can be one of the following:

- OK
- Increase
- Decrease
- Not Collected

Parameters not analyzed have a health status of Not Collected.

Use the information to decide which DB2 parameters you can tune to obtain better performance.

11. Do one of the following:

- If you want to update the settings for your directory server instance to the settings recommended in the **Calculated directory cache sizes** and **Calculated database buffer pool sizes** boxes, click **Yes, use the recommended values to update the directory and database configuration settings**.
- If you do not want to use the settings recommended, click **No, keep the current settings**. When you click **Finish**, no configuration settings will be updated. Your current settings will be kept.

12. Click **Finish**.

Performance tuning with the command line

To perform basic tuning of the directory server, run the following command:

```
idsperftune -I myinst -i <property file> -B -u
```

Because this command is specified using the **-u** option, the recommended LDAP cache and DB2 bufferpool values are updated in the server and the database instance respectively. If specified without the **-u** option, the recommended settings are updated in the `perftune_stat.log` file only.

To perform advanced tuning of the directory server, run the following command:

```
idsperftune -I myinst -i <property file> -A -m
```

The **-m** option causes the monitor switches for BUFFERPOOL and SORT to be turned on.

For more information about the **idsperftune** command, see the *IBM Tivoli Directory Server version 6.1 Command Reference*.

Chapter 14. After you install and configure

After you install the server, create the directory server instance, set the administrator DN and password, and configure the database (for a full server only), you can start the directory server instance. If you installed the Web Administration Tool and Embedded WebSphere Application Server, you can also start the Web application server.

Starting the directory server instance

To start the directory server instance using the command line, go to the `sbin` subdirectory of the directory where you installed IBM Tivoli Directory Server. This directory is:

- `C:\Program Files\IBM\LDAP\V6.1\sbin` by default on Windows systems
- `/opt/IBM/ldap/V6.1/examples/sample.ldif` on AIX, Solaris, and HP-UX systems
- `/opt/ibm/ldap/V6.1/examples/sample.ldif` on Linux systems

Type the following commands at a command prompt:

```
idsslapd -I instancename  
idsdiradm -I instancename
```

instancename is the name of the directory server instance you want to start. (You must start both the directory server instance and the administration server for the instance for all functions of the Web Administration Tool to work.)

On Windows systems, you can also start and stop the directory server instance through the **Services** folder.

- To start the directory server instance, in the **Services** folder:
 1. Click **IBM Tivoli Directory Server Instance V6.1 - *instancename***. Then click **Action -> Start**.
 2. Click **IBM Tivoli Directory Admin Daemon V6.1 - *instancename***. Then click **Action -> Start**.
- To stop the directory server instance, in the **Services** folder:
 1. Click **IBM Tivoli Directory Server Instance V6.1 - *instancename***. Then click **Action -> Stop**.
 2. Click **IBM Tivoli Directory Admin Daemon V6.1 - *instancename***. Then click **Action -> Stop**.

instancename is the name of the directory server instance you want to start or stop.

For information about starting and stopping the server and performing other administrative tasks using the Web Administration Tool and the command line, see the *IBM Tivoli Directory Server Version 6.1 Administration Guide*.

Starting the Web application server to use the Web Administration Tool

If you installed IBM Tivoli Directory Server using the InstallShield GUI installation program, the Web application server is started automatically. These instructions are provided in case you need to start it manually.

To start the Web application server if you are using Embedded WebSphere Application Server as your Web application server:

Type one of the following at a command prompt.

- `WASPath\profiles\TDSWebAdminProfile\bin\startServer.bat server1` for Windows systems
- `WASPath/profiles/TDSWebAdminProfile/bin/startServer.sh server1` for AIX, Linux, Solaris, or HP-UX systems

where *WASPath* is the path where you installed Embedded WebSphere Application Server. This path is:

- By default on Windows: `c:\Program Files\IBM\LDAP\V6.1\appsrv`
- On AIX, Solaris, and HP-UX: `/opt/IBM/ldap/V6.1/appsrv`
- On Linux: `/opt/ibm/ldap/V6.1/appsrv`

Starting the Web Administration Tool

To start the Web Administration Tool:

1. After you have started the Web application server, from a Web browser, type the following address: `http://localhost:12100/IDSWebApp/IDSjsp/Login.jsp`
The IBM Tivoli Directory Server Web Administration Tool Login page is displayed.

Note: This address works only if you are running the browser on the computer on which the Web Administration Tool is installed. If the Web Administration Tool is installed on a different computer, replace **localhost** with the hostname or IP address of the computer where the Web Administration Tool is installed. You can use the **ipconfig** command to find the IP address of the computer.

2. Log in to the console as the console administrator, using the following instructions:
 - a. Be sure that **Console Admin** is displayed in the **LDAP Hostname** field.
 - b. In the **Username** field, type `superadmin`.
 - c. In the **Password** field, type `secret`.

The IBM Tivoli Directory Server Web Administration Tool console is displayed.

3. Add the server to the console, using the following instructions:
 - a. Expand **Console administration** in the navigation area.
 - b. Click **Manage console servers**. A table of server host names and port numbers is displayed.
 - c. Click **Add**.
 - d. Type the hostname or the IP address of the server in the **Hostname** field; for example, `myserver.mycity.mycompany.com`
 - e. Specify the server port number in the **Port** field and the Admin daemon port number in the **Administration port** field.

- f. Select the **Enable SSL encryption** check box if the server is SSL-enabled.
 - g. Click **OK**, and then click **OK** again on the confirmation panel.
4. Click **Logout** in the navigation area.
 5. Log in as the directory server instance administrator:
 - a. On the IBM Tivoli Directory Server Web Administration Login Tool page, select the LDAP host name or IP address for your computer from the drop-down menu for the **LDAP Hostname** field.
 - b. Type the administrator DN and the password for the directory server instance. You specified these fields during instance creation.
 - c. Click **Login** on the lower left side of the window.

For detailed information about using the Web Administration Tool, see the *IBM Tivoli Directory Server Version 6.1 Administration Guide*.

Stopping the Web application server

Use one of the following commands to stop the Web application server:

- On Windows systems:

```
WASPath\profiles\TDSWebAdminProfile\bin\stopServer.bat server1
```

- On AIX, Linux, Solaris, or HP-UX systems:

```
WASPath/profiles/TDSWebAdminProfile/bin/stopServer.sh server1
```

where *WASPath* is the path where you installed Embedded WebSphere Application Server. This path is:

- By default on Windows: c:\Program Files\IBM\LDAP\V6.1\appsrv
- On AIX, Solaris, and HP-UX: /opt/IBM/ldap/V6.1/appsrv
- On Linux: /opt/ibm/ldap/V6.1/appsrv

Setting kernel parameters on Solaris or HP-UX systems

On Solaris and HP-UX systems, you might need to update kernel parameters in the `/etc/system` file before you use the database.

A utility called `db2osconf` is provided with some versions of DB2 for Solaris and HP-UX. The `db2osconf` utility determines the correct kernel settings for your computer. The command for configuring kernel parameters varies by operating system, hardware, and DB2 version.

For more information, see the DB2 documentation. You can also search DB2 technotes for additional information.

Chapter 15. Uninstalling IBM Tivoli Directory Server

Use the following sections to uninstall IBM Tivoli Directory Server.

Notes:

1. If you uninstall IBM Tivoli Directory Server without unconfiguring your databases or deleting your directory server instances, they are left intact. If you plan to install IBM Tivoli Directory Server again and you want to preserve your data, do not unconfigure the database or remove the directory server instance or instances before you uninstall.
2. The `idsldap` user and group are left on the system after you uninstall IBM Tivoli Directory Server. If you do not want this user and group defined, you can remove them using operating system utilities for your operating system. This user and group are needed by both the proxy and the full server and they must remain defined if you have either server installed.
3. On Windows systems, the Administration Server and Server services are removed when you uninstall, and they are not replaced if you reinstall IBM Tivoli Directory Server. You can use the `idssladd` command to add the Server service and the `idsdiradm` command to add the Administration Server service. See the *IBM Tivoli Directory Server Version 6.1 Command Reference* for information.

Uninstalling IBM Tivoli Directory Server using the InstallShield GUI

This section describes how to uninstall the IBM Tivoli Directory Server using the InstallShield GUI.

Notes:

1. If you installed IBM Tivoli Directory Server using the InstallShield GUI, use the InstallShield GUI to uninstall.
If you inadvertently uninstall IBM Tivoli Directory Server using operating system utilities after installing using the InstallShield GUI, follow the process in “Uninstalling IBM Tivoli Directory Server using the InstallShield GUI” and the instructions in the *IBM Tivoli Directory Server Problem Determination Guide* for a failed installation to clean up your system files and registry.
2. If you are uninstalling Embedded WebSphere Application Server, you must stop the Web application server. (See “Stopping the Web application server” on page 139 for information.) Before you start to uninstall, close all windows to make sure that the `installpath/appsrv` (`installpath\appsrv` on Windows) directory is not in use.

After uninstalling Embedded WebSphere Application Server, verify that the `installpath/appsrv` directory (`installpath\appsrv` on Windows) is removed. If it is not, you must remove it before you attempt to install again.

To remove IBM Tivoli Directory Server using the InstallShield GUI:

1. To start the InstallShield GUI uninstallation program:
 - On Windows systems:
 - a. In the Control Panel, click **Add/Remove Programs**.
 - b. Select **IBM Tivoli Directory Server 6.1**. Click **Change/Remove**.
 - On AIX, Linux, Solaris, and HP-UX systems:

- a. At a command prompt, go to the IBM Tivoli Directory Server _uninst directory.
 - On AIX, Solaris and HP-UX systems, this directory is /opt/IBM/ldap/V6.1/_uninst.
 - On Linux systems, this directory is /opt/ibm/ldap/V6.1/_uninst.
- b. Run the uninstall command:


```
./uninstall
```
2. Select the language you want to use during the uninstallation procedure. Click **OK**.
3. On the Welcome window, click **Next**.
4. Select the features you want to uninstall. Click **Next**. Be sure that you do not select:
 - The client unless you also select the Server and the Proxy Server
 - The java client unless you also select the Server and the Proxy Server
 - DB2 unless you also select the Server

If you remove features that are required for other features, your system is left in an inconsistent state and unpredictable results will occur.

Note: If features are deselected, and then you re-select all features, be sure to select the top check box (the **Product Uninstallation** check box) so that the InstallShield GUI removes everything associated with the product. The **Product Uninstallation** check box must always be selected unless you want to leave one or more features installed.
5. On the confirmation window, to uninstall the selected features, click **Next**.
6. If you are asked if you want to restart your computer now or later, select the option you want. Click **Finish**.

Uninstalling language packs using the InstallShield GUI

This section describes how to uninstall the IBM Tivoli Directory Server language packs using the InstallShield GUI.

Notes:

1. If you installed the language packs using the InstallShield GUI, use the InstallShield GUI to uninstall.

To remove language packs using the InstallShield GUI:

1. To start the InstallShield GUI uninstallation program:
 - On Windows systems:
 - a. In the Control Panel, click **Add/Remove Programs**.
 - b. Select **IBM Tivoli Directory Server 6.1 Language Pack**. Click **Change/Remove**.
 - On AIX, Linux, Solaris, and HP-UX systems: (The InstallShield GUI for language packs is not available on Solaris X64 and HP-UX Integrity systems.)
 - a. At a command prompt, go to the IBM Tivoli Directory Server language pack uninstallation directory.
 - On AIX, Solaris, and HP-UX systems, this directory is /opt/IBM/ldap/V6.1/LangPack/uninstall
 - On Linux systems, this directory is /opt/ibm/ldap/V6.1/LangPack/uninstall

- b. Run the uninstall command: `uninstaller.bin`
2. On the Welcome window, click **Next**.
3. Select the language packs you want to uninstall. Click **Next**.
4. On the confirmation window, to uninstall the selected features, click **Next**.
5. Click **Finish** when the uninstallation is complete.

Uninstalling using operating system utilities

Use one of the following procedures to uninstall IBM Tivoli Directory Server using operating system utilities for your operating system.

Notes:

1. If you installed IBM Tivoli Directory Server using the InstallShield GUI, uninstall using the process in “Uninstalling IBM Tivoli Directory Server using the InstallShield GUI” on page 141.
2. If you inadvertently uninstall IBM Tivoli Directory Server using operating system utilities after installing using the InstallShield GUI, follow the process in “Uninstalling IBM Tivoli Directory Server using the InstallShield GUI” on page 141 and the instructions in the *IBM Tivoli Directory Server Problem Determination Guide* for a failed installation to clean up your system files and registry.
3. Uninstalling IBM Tivoli Directory Server does not remove any databases you created using IBM Tivoli Directory Server.

AIX systems

You can uninstall IBM Tivoli Directory Server from an AIX system using **SMIT** or **installp**.

SMIT removal

To uninstall IBM Tivoli Directory Server using **SMIT**:

1. Log in as **root**.
2. Type `smit` at a command prompt and press Enter.
3. Select **Software Installation and Maintenance**.
4. Select **Software Maintenance and Utilities**.
5. Select **Remove Installed software**.
6. In the **Software Name** field, you can press F4 to display a list of installed software. (You can search for **idsldap** in the list to display only the IBM Tivoli Directory Server packages.)
7. Select the packages you want to remove, and press Enter.

installp removal

To uninstall all of the IBM Tivoli Directory Server filesets using the **installp** command-line utility:

1. Log in as **root**.
2. Type the following at a command prompt:

```
installp -u idsldap
```

This removes only IBM Tivoli Directory Server filesets, but it does remove IBM Tivoli Directory Server 6.0 filesets if you have any. It does not remove other components such as DB2.

Linux systems

The following procedures show how to remove IBM Tivoli Directory Server from an xSeries Linux computer. If you do not have the full server installed, remove only the packages that you do have installed, but be sure that you follow the order shown. See “Installing IBM Tivoli Directory Server” on page 61 for package names. Before removing IBM Tivoli Directory Server, ensure that the server is stopped and then issue the following commands.

Note: These instructions use Linux Intel-based packages. For zSeries, iSeries, or pSeries Linux, substitute the appropriate package names.

1. Log in as **root**.
2. Uninstall the English messages:

```
rpm -ev idsldap-msg61-en-6.1.0-0
```
3. Do one of the following, based on what you want to uninstall:
 - For a 32-bit server (such as xSeries Linux):
 - Uninstall the full server (and the client) by typing the following at a command prompt:

```
rpm -ev idsldap-srv32bit61-6.1.0-0
rpm -ev idsldap-srvbase32bit61-6.1.0-0
rpm -ev idsldap-cltjava61-6.1.0-0
rpm -ev idsldap-clt32bit61-6.1.0-0
rpm -ev idsldap-cltbase61-6.1.0-0
```
 - Uninstall the proxy server (and the client) by typing the following at a command prompt:

```
rpm -ev idsldap-srvproxy32bit61-6.1.0-0
rpm -ev idsldap-srvbase32bit61-6.1.0-0
rpm -ev idsldap-cltjava61-6.1.0-0
rpm -ev idsldap-clt32bit61-6.1.0-0
rpm -ev idsldap-cltbase61-6.1.0-0
rpm -ev idsldap-ent61-6.1.0-0
```
 - Uninstall only the 32-bit client by typing the following at a command prompt: (If you have a server installed, you must uninstall it before you can uninstall the client.)

```
rpm -ev idsldap-clt32bit61-6.1.0-0
rpm -ev idsldap-cltbase61-6.1.0-0
```
 - For a 64-bit server (such as iSeries Linux):
 - Uninstall the full server (and the client) by typing the following at a command prompt:

```
rpm -ev idsldap-srv64bit61-6.1.0-0
rpm -ev idsldap-srvbase64bit61-6.1.0-0
rpm -ev idsldap-cltjava61-6.1.0-0
rpm -ev idsldap-clt64bit61-6.1.0-0
rpm -ev idsldap-cltbase61-6.1.0-0
```
 - Uninstall the proxy server (and the client) by typing the following at a command prompt:

```
rpm -ev idsldap-srvproxy64bit61-6.1.0-0
rpm -ev idsldap-srvbase64bit61-6.1.0-0
rpm -ev idsldap-cltjava61-6.1.0-0
rpm -ev idsldap-clt64bit61-6.1.0-0
rpm -ev idsldap-cltbase61-6.1.0-0
rpm -ev idsldap-ent61-6.1.0-0
```
 - Uninstall only the 64-bit client by typing the following at a command prompt: (If you have a server installed, you must uninstall it before you can uninstall the client.)

```
rpm -ev idsldap-clt64bit61-6.1.0-0
rpm -ev idsldap-cltbase61-6.1.0-0
```

To uninstall only the Web Administration Tool, type the following at a command prompt:

```
rpm -ev idsldap-webadmin61-6.1.0-0
```

Solaris systems

You can uninstall IBM Tivoli Directory Server using the **admintool** utility or from a command line using **pkgrm**.

Command line removal using pkgrm

To see what IBM Tivoli Directory Server components are installed, type:

```
pkginfo | grep -i IDS1
```

The output displayed is similar to the following: (Only the installed packages are displayed.)

```
application IDS132c61      IBM Directory Server - 32 bit Client
application IDS164p61      IBM Directory Server - Proxy Server
application IDS164s61      IBM Directory Server - 64 bit Server
application IDS164c61      IBM Directory Server - 64 bit Client
application IDS1bc61       IBM Directory Server - Base Client
application IDS1bs61       IBM Directory Server - Base Server
application IDS1jc61       IBM Directory Server - Java Client
application IDS1en61       IBM Directory Server - Messages U.S. English (en)
application IDS1web61      IBM Directory Server - Web Administration
application IDS1ent61      IBM Directory Server - Entitlement
```

Use **pkgrm** to remove the desired packages. For example:

- To uninstall the full server (with the client and English messages), type:

```
pkgrm IDS1ent61 IDS1en61 IDS164s61 IDS1bs61 IDS1jc61 IDS164c61 IDS1bc61
```
- To uninstall the proxy server (with the client and English messages), type:

```
pkgrm IDS1ent61 IDS1en61 IDS164p61 IDS1bs61 IDS1jc61 IDS164c61 IDS1bc61
```
- To uninstall only the 32-bit client, type: (You cannot uninstall only the client if you have a server installed.)

```
pkgrm IDS132c61 IDS1bc61
```
- To uninstall the 64-bit client, type:

```
pkgrm IDS164c61 IDS1bc61
```
- To uninstall the Web Administration Tool package, type:

```
pkgrm IDS1web61
```

Remove the packages in the reverse order of the installation sequence. (The order in which you remove the Web Administration Tool is not important.)

HP-UX systems

To remove IBM Tivoli Directory Server, complete the following steps:

1. Type **swremove** at a command prompt.
2. On the list that is displayed, select the IBM Tivoli Directory Server packages you want to remove.
3. Click **Actions -> Mark For Remove**.
4. Click **Actions -> Remove**.
5. Click **OK** when analysis is complete.
6. When removal is complete, click **Done**.

7. Click **File** -> **Exit**.

Note: The subdirectories of `/opt/IBM/ldap/V6.1/` and `/var/idsldap/V6.1/` might not be removed when you uninstall IBM Tivoli Directory Server. You can use the `rm -rf` command to remove these directories.

Appendix A. Directory structure of downloaded files

For each type of operating system, there are:

- .iso files that you can use to create CDs for installation
- .zip files (for Windows systems) or .tar files (for non-Windows systems) that you can uncompress and use for installation

The sections that follow show the directory structure and, at a high level, the contents of the .iso, .zip and .tar files for IBM Tivoli Directory Server 6.1 for each type of operating system.

Directory structure for Windows files

The directory structure for the Intel 32-bit Windows and AMD/EM64T Windows packages is the same, though some file names are different.

The file names for the IBM Tivoli Directory Server 6.1 for Windows packages are:

Intel 32-bit Windows packages

Table 4. File names for Intel 32-bit Windows packages

CD number	CD Image File name	.zip File name
CD 1	tds61-win-ia32-cd1.iso	tds61-win-ia32-cd1.zip
CD 2	tds61-win-ia32-cd2.iso	tds61-win-ia32-cd2.zip
CD 3	tds61-win-ia32-cd3.iso	tds61-win-ia32-cd3.zip
CD 4	tds61-win-ia32-cd4.iso	tds61-win-ia32-cd4.zip

AMD/EM64T Windows packages

Table 5. File names for AMD/EM64T Windows packages

CD number	CD Image File name	.zip File name
CD 1	tds61-win-x86_64-cd1.iso	tds61-win-x86_64-cd1.zip
CD 2	tds61-win-x86_64-cd2.iso	tds61-win-x86_64-cd2.zip
CD 3	tds61-win-x86_64-cd3.iso	tds61-win-x86_64-cd3.zip
CD 4	tds61-win-x86_64-cd4.iso	tds61-win-x86_64-cd4.zip

After you create the CDs or unzip the .zip files, the directory structure is as follows:

- **CD 1:**
 - tdsV6.1 (Top level directory for unzipped file)
 - gskit\ (GSKit 7.0.3.30)
 - license\ (Licenses for IBM Tivoli Directory Server and other provided products)
 - quickstart\ (Quick Start Guides in English and other languages)
 - tds\ (Installer files)
 - entitlement\ (Entitlement files for Proxy server)
 - tdsLangpack\ (IBM Tivoli Directory Server language packs)
 - tools\ (Tools including **migbkup**)

- **CD 2:**
 - tdsV6.1 (Top level directory for unzipped file)
 - db2\ (DB2 v9 Fix Pack 2)
- **CD 3:**
 - tdsV6.1 (Top level directory for unzipped file)
 - appsrv\ (Embedded WebSphere Application Server version 6.1.0.7)
 - tdi\ (IBM Tivoli Directory Integrator 6.1.1 server runtime and AMC)
- **CD 4:**
 - tdsV6.1 (Top level directory for unzipped file)
 - whitepages\ (Directory White Pages)
 - appsrv\ (Embedded WebSphere Application Server version 6.1.0.7)
 - license\ (License for White Pages)
 - entitlement\ (Entitlement files for White Pages)

Directory structure for AIX files

The file names for the IBM Tivoli Directory Server 6.1 for AIX packages are:

AIX packages

Table 6. File names for AIX packages

CD number	CD Image File name	.tar File name
CD 1	tds61-aix-ppc64-cd1.iso	tds61-aix-ppc64-cd1.tar
CD 2	tds61-aix-ppc64-cd2.iso	tds61-aix-ppc64-cd2.tar
CD 3	tds61-aix-ppc64-cd3.iso	tds61-aix-ppc64-cd3.tar
CD 4	tds61-aix-ppc64-cd4.iso	tds61-aix-ppc64-cd4.tar

After you create the CDs or untar the .tar files, the directory structure is as follows:

- **CD 1:**
 - tdsV6.1 (Top level directory for untarred file)
 - gskit/ (GSKit 7.0.3.30)
 - license/ (Licenses for IBM Tivoli Directory Server and other provided products)
 - quickstart/ (Quick Start Guides in English and other languages)
 - tdsfiles/ (Operating system utility installation files)
 - tds/ (Installer files)
 - entitlement/ (Entitlement files for Proxy server)
 - tdsLangpack/ (IBM Tivoli Directory Server language packs)
 - tools/ (Tools including **migbkup**)
- **CD 2:**
 - tdsV6.1 (Top level directory for untarred file)
 - db2/ (DB2 v9 Fix Pack 2)
- **CD 3:**
 - tdsV6.1 (Top level directory for untarred file)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)
 - tdi/ (IBM Tivoli Directory Integrator 6.1.1 server runtime and AMC)
- **CD 4:**

- tdsV6.1 (Top level directory for untarred file)
 - whitepages/ (Directory White Pages)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)
 - license/ (License for White Pages)
 - entitlement/ (Entitlement files for White Pages)

Note: The AIX files includes a 32-bit client in addition to the 64-bit client that is installed through the InstallShield GUI installation program.

Directory structure for Linux files

The directory structure for the xSeries Linux, AMD64/EM64T Linux, zSeries Linux, and iSeries and pSeries Linux packages is the same, though some file names are different.

The file names for the IBM Tivoli Directory Server 6.1 forLinux packages are:

xSeries Linux packages

Table 7. File names for xSeries Linux packages

CD number	CD Image File name	.tar File name
CD 1	tds61-linux-ia32-cd1.iso	tds61-linux-ia32-cd1.tar
CD 2	tds61-linux-ia32-cd2.iso	tds61-linux-ia32-cd2.tar
CD 3	tds61-linux-ia32-cd3.iso	tds61-linux-ia32-cd3.tar
CD 4	tds61-linux-ia32-cd4.iso	tds61-linux-ia32-cd4.tar

AMD64/EM64T Linux packages

Table 8. File names for AMD64/EM64T Linux packages

CD number	CD Image File name	.tar File name
CD 1	tds61-linux-x86_64-cd1.iso	tds61-linux-x86_64-cd1.tar
CD 2	tds61-linux-x86_64-cd2.iso	tds61-linux-x86_64-cd2.tar
CD 3	tds61-linux-x86_64-cd3.iso	tds61-linux-x86_64-cd3.tar
CD 4	tds61-linux-x86_64-cd4.iso	tds61-linux-x86_64-cd4.tar

zSeries Linux packages

Table 9. File names for zSeries Linux packages

CD number	CD Image File name	.tar File name
CD 1	tds61-linux-s390x-cd1.iso	tds61-linux-s390x-cd1.tar
CD 2	tds61-linux-s390x-cd2.iso	tds61-linux-s390x-cd2.tar
CD 3	tds61-linux-s390x-cd3.iso	tds61-linux-s390x-cd3.tar
CD 4	tds61-linux-s390x-cd4.iso	tds61-linux-s390x-cd4.tar

iSeries and pSeries Linux packages

Table 10. File names for iSeries and pSeries Linux packages

CD number	CD Image File name	.tar File name
CD 1	tds61-linux-ppc64-cd1.iso	tds61-linux-ppc64-cd1.tar
CD 2	tds61-linux-ppc64-cd2.iso	tds61-linux-ppc64-cd2.tar

Table 10. File names for iSeries and pSeries Linux packages (continued)

CD number	CD Image File name	.tar File name
CD 3	tds61-linux-ppc64-cd3.iso	tds61-linux-ppc64-cd3.tar
CD 4	tds61-linux-ppc64-cd4.iso	tds61-linux-ppc64-cd4.tar

After you create the CDs or untar the .tar files, the directory structure is as follows:

- **CD 1:**

- tdsV6.1 (Top level directory for untarred file)
 - gskit/ (GSKit 7.0.3.30)
 - license/ (Licenses for IBM Tivoli Directory Server and other provided products)
 - quickstart/ (Quick Start Guides in English and other languages)
 - tdsfiles/ (Operating system utility installation files)
 - tds/ (Installer files)
 - entitlement/ (Entitlement files for Proxy server)
 - tdsLangpack/ (IBM Tivoli Directory Server language packs)
 - tools/ (Tools including **migbkup**)

- **CD 2:**

- tdsV6.1 (Top level directory for untarred file)
 - db2/ (DB2 v9 Fix Pack 2)

- **CD 3:**

- tdsV6.1 (Top level directory for untarred file)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)
 - tdi/ (IBM Tivoli Directory Integrator 6.1.1 server runtime and AMC)

- **CD 4:**

- tdsV6.1 (Top level directory for untarred file)
 - whitepages/ (Directory White Pages)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)
 - license/ (License for White Pages)
 - entitlement/ (Entitlement files for White Pages)

Note: The Linux for iSeries and pSeries files include a 64-bit client in addition to the 32-bit client that is installed through the InstallShield GUI installation program.

Directory structure for Solaris SPARC files

The file names for the IBM Tivoli Directory Server 6.1 for Solaris SPARC packages are:

Table 11. File names for Solaris SPARC packages

CD number	CD Image File name	.tar File name
CD 1	tds61-solaris-sparc-cd1.iso	tds61-solaris-sparc-cd1.tar
CD 2	tds61-solaris-sparc-cd2.iso	tds61-solaris-sparc-cd2.tar
CD 3	tds61-solaris-sparc-cd3.iso	tds61-solaris-sparc-cd3.tar
CD 4	tds61-solaris-sparc-cd4.iso	tds61-solaris-sparc-cd4.tar

After you create the CDs or untar the .tar files, the directory structure is as follows:

- **CD 1:**

- tdsV6.1 (Top level directory for untarred file)
 - gskit/ (GSKit 7.0.3.30)
 - license/ (Licenses for IBM Tivoli Directory Server and other provided products)
 - quickstart/ (Quick Start Guides in English and other languages)
 - tdsfiles/ (Operating system utility installation files)
 - tds/ (Installer files)
 - entitlement/ (Entitlement files for Proxy server)
 - tdsLangpack/ (IBM Tivoli Directory Server language packs)
 - tools/ (Tools including **migbkup**)

- **CD 2:**

- tdsV6.1 (Top level directory for untarred file)
 - db2/ (DB2 v9 Fix Pack 2)

- **CD 3:**

- tdsV6.1 (Top level directory for untarred file)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)
 - tdi/ (IBM Tivoli Directory Integrator 6.1.1 server runtime and AMC)

- **CD 4:**

- tdsV6.1 (Top level directory for untarred file)
 - whitepages/ (Directory White Pages)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)
 - license/ (License for White Pages)
 - entitlement/ (Entitlement files for White Pages)

Directory structure for Solaris X64 files

The file names for the IBM Tivoli Directory Server 6.1 for Solaris X64 packages are:

Table 12. File names for Solaris X64 packages

CD number	CD Image File name	.zip File name
CD 1	tds61-solaris-x86_64-cd1.iso	tds61-solaris-x86_64-cd1.tar
CD 2	tds61-solaris-x86_64-cd2.iso	tds61-solaris-x86_64-cd2.tar
CD 3	tds61-solaris-x86_64-cd3.iso	tds61-solaris-x86_64-cd3.tar

Solaris X64 packages

After you create the CDs or untar the .tar files, the directory structure is as follows:

- **CD 1:**

- tdsV6.1 (Top level directory for untarred file)
 - gskit/ (GSKit 7.0.3.30)
 - license/ (Licenses for IBM Tivoli Directory Server and other provided products)
 - quickstart/ (Quick Start Guides in English and other languages)
 - tdsfiles/ (Operating system utility installation files)
 - tds/ (Installer files)
 - entitlement/ (Entitlement files for Proxy server)

- tdsLangpack/ (IBM Tivoli Directory Server language packs)
- tools/ (Tools including **migbkup**)
- **CD 2:**
 - tdsV6.1 (Top level directory for untarred file)
 - db2/ (DB2 v9 Fix Pack 2)
- **CD 3:**
 - tdsV6.1 (Top level directory for untarred file)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)

Directory structure for HP-UX PA-RISC files

The file names for the IBM Tivoli Directory Server 6.1 for HP-UX PA-RISC packages are:

Table 13. File names for HP-UX PA-RISC packages

CD number	CD Image File name	.tar File name
CD 1	tds61-hpux-parisc-cd1.iso	tds61-hpux-parisc-cd1.tar
CD 2	tds61-hpux-parisc-cd2.iso	tds61-hpux-parisc-cd2.tar
CD 3	tds61-hpux-parisc-cd3.iso	tds61-hpux-parisc-cd3.tar
CD 4	tds61-hpux-parisc-cd4.iso	tds61-hpux-parisc-cd4.tar

After you create the CDs or untar the .tar files, the directory structure is as follows:

- **CD 1:**
 - tdsV6.1 (Top level directory for untarred file)
 - gskit/ (GSKit 7.0.3.30)
 - license/ (Licenses for IBM Tivoli Directory Server and other provided products)
 - quickstart/ (Quick Start Guides in English and other languages)
 - tdsfiles/ (Operating system utility installation files)
 - tds/ (Installer files)
 - entitlement/ (Entitlement files for Proxy server)
 - tdsLangpack/ (IBM Tivoli Directory Server language packs)
 - tools/ (Tools including **migbkup**)
- **CD 2:**
 - tdsV6.1 (Top level directory for untarred file)
 - db2/ (DB2 v9 Fix Pack 2)
- **CD 3:**
 - tdsV6.1 (Top level directory for untarred file)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)
 - tdi/ (IBM Tivoli Directory Integrator 6.1.1 server runtime and AMC)
- **CD 4:**
 - tdsV6.1 (Top level directory for untarred file)
 - whitepages/ (Directory White Pages)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)
 - license/ (License for White Pages)
 - entitlement/ (Entitlement files for White Pages)

Directory structure for HP-UX Integrity files

The file names for the IBM Tivoli Directory Server 6.1 for HP-UX Integrity packages are:

Table 14. File names for HP-UX Integrity packages

CD number	CD Image File name	.zip File name
CD 1	tds61-hpux-ia64-cd1.iso	tds61-hpux-ia64-cd1.tar
CD 2	tds61-hpux-ia64-cd2.iso	tds61-hpux-ia64-cd2.tar
CD 3	tds61-hpux-ia64-cd3.iso	tds61-hpux-ia64-cd3.tar

After you create the CDs or untar the .tar files, the directory structure is as follows:

- **CD 1:**

- tdsV6.1 (Top level directory for untarred file)
 - gskit/ (GSKit 7.0.3.30)
 - license/ (Licenses for IBM Tivoli Directory Server and other provided products)
 - quickstart/ (Quick Start Guides in English and other languages)
 - tdsfiles/ (Operating system utility installation files)
 - tds/ (Installer files)
 - entitlement/ (Entitlement files for Proxy server)
 - tdsLangpack/ (IBM Tivoli Directory Server language packs)
 - tools/ (Tools including **migbkup**)

- **CD 2:**

- tdsV6.1 (Top level directory for untarred file)
 - db2/ (DB2 v9 Fix Pack 2)

- **CD 3:**

- tdsV6.1 (Top level directory for untarred file)
 - appsrv/ (Embedded WebSphere Application Server version 6.1.0.7)

Appendix B. Disk space requirements for installable features

IBM Tivoli Directory Server requires the following amounts of disk space for each installable feature. Information is given for each type of supported operating system.

Windows disk space requirements

On Windows systems, the following amounts of disk space are required:

Table 15. Sizes of installable features (in MB) on Windows systems

Installable feature	Installed size
Client SDK	25 MB
Java client	95 MB
Deployed Web Administration Tool (includes Embedded WebSphere Application Server, IBM Tivoli Directory Integrator Administration and Monitoring Console, and Web Administration Tool deployed into Embedded WebSphere Application Server)	352 MB
Base server	23 MB
Proxy server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	15 MB
Full server (Be sure to add the sizes for the Client SDK, Java client, and Base server)	22 MB
DB2	420 MB
IBM Tivoli Directory Integrator	232 MB
GSKit	11 MB

Note: If you install both the proxy server and the full directory server, add the sizes for the client, Java client, and base server only once.

AIX disk space requirements

On AIX systems, the following amounts of disk space are required:

Table 16. Sizes of installable features (in MB) on AIX systems

Installable feature	Installed size
Client SDK	11 MB
Java client	143 MB
Deployed Web Administration Tool (includes Embedded WebSphere Application Server, IBM Tivoli Directory Integrator Administration and Monitoring Console, and Web Administration Tool deployed into Embedded WebSphere Application Server)	361 MB
SSL Web Administration Tool	51 MB
Base server	35 MB

Table 16. Sizes of installable features (in MB) on AIX systems (continued)

Installable feature	Installed size
Proxy server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	20 MB
Full server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	40 MB
DB2	450 MB
IBM Tivoli Directory Integrator	232 MB
GSKit	40 MB

Note: If you install both the proxy server and the full directory server, add the sizes for the client, Java client, and base server only once.

Linux disk space requirements

On Linux systems, the following amounts of disk space are required:

Table 17. Sizes of installable features (in MB) on Linux systems

Installable feature	Installed size
Client SDK	7 MB
Java client	175 MB
Deployed Web Administration Tool (includes Embedded WebSphere Application Server, IBM Tivoli Directory Integrator Administration and Monitoring Console, and Web Administration Tool deployed into Embedded WebSphere Application Server)	380 MB
Base server	32 MB
Proxy server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	20 MB
Full server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	25 MB
DB2 (xSeries Linux)	451 MB
DB2 (zSeries Linux)	425 MB
DB2 (iSeries and pSeries Linux)	451 MB
IBM Tivoli Directory Integrator	232 MB
GSKit	40 MB

Note: If you install both the proxy server and the full directory server, add the sizes for the client, Java client, and base server only once.

Solaris disk space requirements

On Solaris systems, the following amounts of disk space are required:

Table 18. Sizes of installable features (in MB) on Solaris systems

Installable feature	Installed size
Client SDK	8 MB
Java client	135 MB

Table 18. Sizes of installable features (in MB) on Solaris systems (continued)

Installable feature	Installed size
Deployed Web Administration Tool (includes Embedded WebSphere Application Server, IBM Tivoli Directory Integrator Administration and Monitoring Console, and Web Administration Tool deployed into Embedded WebSphere Application Server)	451 MB
Base server	36 MB
Proxy server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	20 MB
Full server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	15 MB
DB2	681 MB
IBM Tivoli Directory Integrator	232 MB
GSKit	18 MB

Note: If you install both the proxy server and the full directory server, add the sizes for the client, Java client, and base server only once.

HP-UX disk space requirements

On HP-UX systems, the following amounts of disk space are required:

Table 19. Sizes of installable features (in MB) on HP-UX systems

Installable feature	Installed size
Client SDK	10 MB
Java client	160 MB
Deployed Web Administration Tool (includes Embedded WebSphere Application Server, IBM Tivoli Directory Integrator Administration and Monitoring Console, and Web Administration Tool deployed into Embedded WebSphere Application Server)	451 MB
Base server	47 MB
Proxy server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	47 MB
Full server (Be sure to add the sizes for the Client SDK, Java client, and Base server.)	15 MB
DB2	681 MB
IBM Tivoli Directory Integrator	232 MB
GSKit	16 MB

Note: If you install both the proxy server and the full directory server, add the sizes for the client, Java client, and base server only once.

Appendix C. Configuration planning

Before configuring and populating your database, determine:

What type of data you are going to store in the directory

Decide what sort of schema you need to support the type of data you want to keep in your directory. A standard set of attribute-type definitions and object-class definitions is included with the directory server. Before you begin adding entries to the directory, you might want to add new attribute-type and object-class definitions that are customized to your data.

Note: You can make schema additions after the directory is already populated with data, but schema changes might require you to unload and reload your data.

Which code page you are going to use

Decide whether to create your database using the local code page or using the Universal Character Set (UTF-8). Selecting the local code page enables IBM Tivoli Directory Server applications and users to get search results as expected for the collation sequence of the native language, but allows only data in that specific code page to be stored in the directory. Using UTF-8 enables the storing of any UTF-8 character data in the directory. IBM Tivoli Directory Server clients running anywhere in the world (in any UTF-8 supported language) can access and search the directory. In many cases, however, the client might have limited ability to properly display the results retrieved from the directory in a particular language or character set. See Appendix O, "UTF-8 support," on page 189 for more information.

Note: If you want to use language tags, the database must be a UTF-8 database.

How you want to structure your directory data

An IBM Directory is stored in a hierarchical tree structure. The names of entries in the directory are based on their relative position within the tree structure. It is important to define some logical organization to the directory. A logical organization makes it easier for clients to determine which branch of the tree contains the information they are trying to locate.

Your data security requirements

See the Secure Sockets Layer information in the *IBM Tivoli Directory Server Version 6.1 Administration Guide* for information about how your data is secured.

How you want to allocate access permissions

See the access control lists information in the *IBM Tivoli Directory Server version 6.1 Administration Guide* for information about using access permissions.

Whether you need a proxy server

If the directory data is large and the environment is write-intensive, consider using a proxy server. Large directory environments that are read-heavy might be able to achieve adequate scaling by introducing replication. Before deciding to use a proxy server, refer to the list of supported features within the proxy server in the *IBM Tivoli Directory Server Version 6.1 Administration Guide*. Proxy server supports fewer features than the directory server alone.

Appendix D. Setting up users and groups: directory server instance owner, database instance owner, and database owner

When you create a directory server instance, a user ID on the operating system must exist for the directory server instance owner. For a full server, there must also be user IDs on the operating system for the owners of the database instance and the database. You can use the same user ID for all three roles; if you do this, the directory server instance, the database instance, and the database owner all have the same name.

If you use the Instance Administration Tool to create a directory server instance, you can create the directory server instance owner user ID through the tool. If you use the command line to create the directory server instance, you can use the **idsadduser** command to create the directory server instance owner user ID. This command creates a user ID that meets all requirements.

Use the following information to understand the directory server instance owner, database instance owner, and database owner roles before you create the user ID or IDs.

The roles are defined as follows:

Directory server instance owner

You must have a user ID for the owner of the directory server instance. The user ID for the directory server instance owner is also the name of the directory server instance. This user has the authority to manage the directory server instance.

On Windows systems, any member of the Administrators group also has the authority to manage the directory server instance.

On AIX, Linux, Solaris, and HP-UX systems, the primary group of the directory server instance owner also has the authority to manage the directory server instance.

Note: On AIX, Linux, Solaris, and HP-UX systems, these names are case-sensitive. You must always specify the directory server instance name and owner exactly as the user ID is specified. For example, JoeSmith and joesmith are different names.

Database instance owner

This user ID owns the database instance that is configured to be used by the directory server instance. The database instance name and the database instance owner name are the same. This user manages the database instance. The directory server instance owner can also manage the database instance. By default, this user ID is the same as the directory server instance owner ID.

Database owner

This user ID owns the database that is used by the directory server instance to store the directory data. The database resides in the database instance owned by the database instance owner. The directory server instance uses this user ID and its password to connect to the database.

Naming rules

The requirements in this section apply to the following:

- The directory server instance name (the user ID that owns the directory server instance).
- The database instance name (the user ID that owns the database instance). This is usually the same as the directory server instance name.
- On AIX, Linux, Solaris, and HP-UX, the primary groups of the directory server instance owner user ID and the database instance owner user ID.

These user and group IDs:

- Can be no longer than 8 characters
- Cannot be any of the following:
 - USERS
 - ADMINS
 - GUESTS
 - PUBLIC
 - LOCAL
 - idslldap
- Cannot begin with any of the following:
 - IBM
 - SQL
 - SYS
- Cannot include accented characters
- Can include the following characters:
 - A through Z
 - a through z
 - 0 through 9
- Must begin with one of the following characters:
 - A through Z
 - a through z

Additional restrictions for users and groups

In addition to the naming rules, be sure that the following requirements are met:

- On Windows systems,
 - The directory server instance owner and the database instance owner must be members of the Administrators group.
 - The database instance owner must have the locale set to the correct locale for the language in which you want server messages to be displayed. If necessary, log in as the user and change the locale to the correct one.
- On AIX, Linux, Solaris, and HP-UX systems:
 - The root ID must be a member of the primary group of the directory server instance owner and the database instance owner.
 - The root ID must be a member of the idslldap group.
 - The directory server instance owner and the database instance owner must be members of the idslldap group.

- The directory server instance owner and the database instance owner must have home directories.
- The specific permissions for the home directory of the directory server instance owner must be as follows:
 - The user ownership is the directory server instance owner.
 - The group ownership is the directory server instance owner's primary group.
 - The directory server instance owner and its primary group must have read, write, and execute permissions to the home directory.
- The directory server instance owner and its primary group must have read, write, and execute access to the location where the database will be created.
- If the directory server instance owner and the database instance owner for a given directory server instance are different users, the directory server instance owner must be a member of the database instance owner's primary group.
- The database instance owner and the database owner for a given directory server instance must have the same primary group.
- For best results, the login shell of the directory server instance owner, the database instance owner, and the database owner should be the Korn shell script (/usr/bin/ksh).
- The password of the directory server instance owner, the database instance owner, and the database owner must be set correctly and ready to use. For example, the password cannot be expired or waiting for a first-time validation of any kind. (The best way to verify that the password is correctly set is to telnet to the same computer and successfully log in with that user ID and password.)
- When configuring the database, it is not necessary, but customary, to specify the home directory of the database instance owner as the database location. However, if you specify some other location, the database instance owner's home directory still must have 3 to 4 MB of space available. This is because DB2 creates links and adds files into the home directory of the database instance owner even though the database itself is elsewhere. If you do not have enough space in the home directory, you can either create enough space or change the database instance owner's home directory.

Creating instance owners: examples

You can use the **idsadduser** command to create instance owners that meet the requirements for a directory server instance owner.

For example:

- The following command creates a new user on an AIX, Linux, Solaris, or HP-UX system with user name JoeSmith. The primary group is employees, the home directory is /home/joe, and the password is joespw.

```
idsadduser -u JoeSmith -g employees -l /home/joe -w joespw
```

- The following command creates a new user on a Windows system with user name JoeSmith and password joespw. The user is a member of the Administrators group.

```
idsadduser -u JoeSmith -w joespw
```

Appendix E. Synchronizing two-way cryptography between server instances

If you want to use replication, use a distributed directory, or import and export LDIF data between server instances, you must cryptographically synchronize the server instances to obtain the best performance. (If you create a directory server instance as a copy of an existing directory server instance, the two directory server instances are cryptographically synchronized and you do not need to synchronize them.)

If you already have a server instance, and you have another server instance that you want to cryptographically synchronize with the first server instance, use the following procedure *before* you do any of the following:

- Start the second server instance
- Run the **idsbulkload** command from the second server instance
- Run the **idsldif2db** command from the second server instance

To cryptographically synchronize two server instances, assuming that you have already created the first server instance:

1. Create the second server instance, but do not start the server instance, run the **idsbulkload** command, or run the **idsldif2db** command on the second server instance.
2. Use the **idsgendirksf** utility on the second server instance to recreate the `ibmslapddir.ksf` file (the key stash file) from the first server instance. This file is used to replace the second server instance's original `ibmslapddir.ksf` file. For information about the **idsgendirksf** utility, see the *IBM Tivoli Directory Server Version 6.1 Administration Guide*. The file is in the `idsslapd-instance_name/etc` directory on Windows systems, or in the `idsslapd-instance_name/etc` directory on AIX, Linux, Solaris, and HP-UX systems. (*instance_name* is the name of the directory server instance).
3. Start the second server instance, run the **idsbulkload** command, or run the **idsldif2db** command on the second server instance.

The server instances are now cryptographically synchronized, and AES-encrypted data will load correctly.

Although the procedure discusses two server instances, you might need a group of server instances that are cryptographically synchronized.

Note: When importing LDIF data, if the LDIF import file is not cryptographically synchronized with the server instance that is importing the LDIF data, any AES-encrypted entries in the LDIF import file will not be imported.

Appendix F. Directory server instances

A directory server instance consists of all files that are required for a directory server and its corresponding administration daemon to run on a computer. The administration daemon (`idsdiradm`) enables remote management of the directory server instance. When it is running, the administration daemon supports starting, stopping, restarting, and monitoring the status of the directory server instance.

Directory server instance files include:

- The `ibmslapd.conf` file (the configuration file)
- Schema files
- Log files
- Key stash files
- Temporary status files

The files for a directory server instance are stored in a directory named `idsslapd-instance_name`, where *instance_name* is the name of the directory server instance.

Note: If you are using SSL, the SSL key database, Java keystore, and the Kerberos key tab files are not directly part of a directory server instance. A default SSL key database attribute value exists in the `ibmslapd.conf` file of each directory server instance. However, it is the responsibility of the directory server instance owner to do the following:

- Create the SSL key database, the key stash file, and the Kerberos key tab as needed
- Add the information into the `ibmslapd.conf` file of the directory server instance

. These files can be shared by multiple directory server instances on the computer and should be stored in a secure location on the system that is independent of a given directory server instance.

Directory server instance content on Windows systems

On Windows systems, the `idsslapd-instance_name` directory is in the root directory of a drive that you specify during instance creation.

The directory server instance owner user ID and by all members of the Administrators group have read and write access to files in the `idsslapd-instance_name` directory.

The `idsslapd-instance_name` directory on Windows systems contains the following subdirectories and files:

- `etc`
- `tmp`
- `logs`
- `idsprofile.bat`
- `userprofile.bat`

The `idsprofile.bat` file is used to set the environment for the directory server instance. The `userprofile.bat` file is used to customize the environment. The `idsprofile.bat` file invokes the `userprofile.bat` file after setting the environment. If you want to customize the environment, be sure to change the `userprofile.bat` file and not the `idsprofile.bat` file.

Directory server instance content on AIX, Linux, Solaris, and HP-UX systems

On AIX, Linux, Solaris, and HP-UX systems, the `idsslapd-instance_name` directory is, by default, in the directory server instance owner's home directory, but you can specify a different location during instance creation.

For AIX, Linux, Solaris, and HP-UX systems, the `idsslapd-instance_name` directory contains the following subdirectories and files:

- `adworkdir`
- `db2instance` → `DB2_instance_directory` (for example, `/home/ldapdb2/sqllib`)
- `etc`
- `idsprofile`
- `logs`
- `tmp`
- `userprofile`
- `workdir`

The `idsprofile` file is used to set the environment for the directory server instance. The `userprofile` file is used to customize the environment. The `idsprofile` file invokes the `userprofile` file after setting the environment. If you want to customize the environment, be sure to change the `userprofile` file and not the `idsprofile` file.

Files in the `idsslapd-instance_name` directory are owned by the directory server instance owner user ID and the primary group of the directory server instance owner user ID.

Appendix G. Preparing for copying an instance or for online backup and restore

Online backup and restore is used when you make a copy of a directory server instance **and** copy the data to the new instance. Before the directory server instance can be copied, you must do the following on the directory server instance that will be copied.

On the directory server instance you are making a copy of:

1. Determine a location to store files to be used for recovery purposes. This can be, for example, a backup computer or separate media.

In the steps that follow, a directory named `/largespace` is used to store the files. The DB2 instance owner must have write permission for the `/largespace` directory. The logs and backup files should not be kept on the same filesystem as the directory database.

The directory server instance and the database are both named `ldapdb2` in the example. Substitute the name of the directory server instance you want to copy for **ldapdb2** and the location where you are storing the backup files for **/largespace** when you run the commands.

2. Make sure that **ibmslapd** is not running by using the following command:

```
ibmslapd -I ldapdb2 -k
```

3. Specify where the log files will be kept, as shown in the following command:

```
db2 update db config for ldapdb2 using newlogpath /largespace/db2logs-ldapdb2
```

(For this example, the log files are stored in the `/largespace/db2logs-ldapdb2` directory.)

4. Update the directory server instance database for online backup support (set **logretain** on):

```
db2 update db config for ldapdb2 using logarchmeth1 logretain
db2 force applications all
db2stop
db2start
```

Note: In the LOGRETAIN mode, it is important to monitor the disk space available for the log files because if the disk fills up, directory updates will not be possible until the condition is corrected.

5. After **logretain** is set to recovery, you must make a full offline backup. Create a full database offline backup by using the following command:

```
db2 backup db ldapdb2 to /largespace/full-ldapdb2
```

(The backup files for this example are stored in the `/largespace/full-ldapdb2` directory.)

6. Restart the directory server instance:

```
ibmslapd -I ldapdb2
```

For complete information about online backup and restore, see the *IBM Tivoli Directory Server V6.1 Administration Guide*.

Appendix H. Installing, configuring, and uninstalling Embedded WebSphere Application Server

To use the Web Administration Tool, a Web application server is required. Embedded WebSphere Application Server 6.1.0.7 is provided with IBM Tivoli Directory Server 6.1 as a Web application server.

If you use the InstallShield GUI to install the Web Administration Tool, you can select Embedded WebSphere Application Server for installation. In this case, configuration is also done automatically.

If you use native installation methods, you can install and configure Embedded WebSphere Application Server manually. If you already have Embedded WebSphere Application Server 6.1.0.7 installed, you must configure manually before you can use the Web Administration Tool.

Manually installing and configuring Embedded WebSphere Application Server

The following instructions show how to manually install Embedded WebSphere Application Server, and then how to deploy the Web Administration Tool into it. If you install the Web Administration Tool and Embedded WebSphere Application Server through the InstallShield GUI, this setup is done for you.

Installing Embedded WebSphere Application Server

To manually install Embedded WebSphere Application Server, use the following procedure:

1. After you download and unzip (or untar) the IBM Tivoli Directory Server zip or tar files, change directories to the directory where you expanded the files, and then change to the `appsrv` subdirectory.
2. Type the following command at a command prompt:

- On Windows systems:
`install.bat -installRoot EWAS_installpath`
- On AIX, Linux, Solaris, and HP-UX systems:
`install.sh -installRoot EWAS_installpath`

where `EWAS_installpath` is the directory where you are installing Embedded WebSphere Application Server. By convention, this directory is the `appsrv` subdirectory of the directory where IBM Tivoli Directory Server is installed, but you can use any directory. (This directory is `/opt/IBM/ldap/V6.1/appsrv` on AIX, Solaris, and HP-UX systems and `/opt/ibm/ldap/V6.1/appsrv` on Linux systems, by convention.)

3. Install the Web Administration Tool, using either the InstallShield GUI or an operating system utility for your operating system. After installing the Web Administration Tool, copy the Web Administration Tool to the Embedded WebSphere Application Server directory by using the following commands:
 - On Windows systems:
`md EWAS_installpath\installableApps\
copy installpath\idstools\IDSWebApp.war EWAS_installpath\installableApps\`
 - On AIX, Linux, Solaris, and HP-UX systems:

```
mkdir EWAS_installpath/installableApps/  
cp installpath/idstools/IDSWebApp.war EWAS_installpath/installableApps/
```

where

- *EWAS_installpath* is the directory where you are installing Embedded WebSphere Application Server. By convention, this directory is the `appsrv` subdirectory of the directory where IBM Tivoli Directory Server is installed, but you can use any directory.
- *installpath* is the directory where IBM Tivoli Directory Server is installed.

Deploying the Web Administration Tool into Embedded WebSphere Application Server

The `deploy_IDSWebApp` command deploys the `IDSWebApp.war` file to Embedded WebSphere Application Server or WebSphere Application Server, retaining the configuration settings of the currently deployed `IDSWebApp.war` file if there are any.

First be sure that the `deploy_IDSWebApp.bat` file is present in the `/installpath/idstools` folder. (*installpath* is the directory where IBM Tivoli Directory Server is installed.)

Deploy the Web Administration Tool into Embedded WebSphere Application Server by using the following command:

- On Windows systems:
`deploy_IDSWebApp.bat`
- On AIX, Linux, Solaris, and HP-UX systems:
`deploy_IDSWebApp`

Note: If you install the Web Administration Tool and Embedded WebSphere Application Server through the InstallShield GUI, this command is run automatically.

Optionally, you can also use the following flags:

- **-a** *Application Name* where *Application Name* is the name of the application to deploy. If not specified, defaults to `IDSWebApp.war`.
- **-w** *path to IDSWebApp.war file* where *path to IDSWebApp.war file* is the fully qualified path of the `IDSWebApp.war` file to deploy
- **-p** *location of app server* where *location of app server* is the location of WebSphere Application Server where the application is to be deployed.
- **-r** *profile* where *profile* is the profile name associated with the application. If not specified, the default is `'TDSWebAdminProfile'`.
- **-h** displays usage for the command.
- **-v** displays the version and date strings for the `deploy_IDSWebApp` script and the application war file.

Note: The **-w**, **-p**, and **-r** flags must be used if you are deploying into a non-embedded version of WebSphere Application Server. They can be used optionally with an embedded version of WebSphere Application Server. You can also use the

Uninstalling the Web Administration Tool from Embedded WebSphere Application Server

To uninstall the Web Administration Tool from Embedded WebSphere Application Server manually:

1. Be sure that the Web application server is started. See “Starting the Web application server to use the Web Administration Tool” on page 138 for instructions.
2. Type the following at a command prompt to uninstall the Web Administration Tool:
 - On Windows systems:
`deploy_IDSWebApp.bat -u`
 - On AIX, Linux, Solaris, and HP-UX systems:
`deploy_IDSWebApp -u`

where **-u** specifies to uninstall a previously existing application. Optionally, you can also use the following flags:

- **-a** *Application Name* where *Application Name* is the name of the application to undeploy. If not specified, the default application `IDSWebApp.war` is undeployed.
- **-w** *path to IDSWebApp.war file* where *path to IDSWebApp.war file* is the fully qualified path of the `IDSWebApp.war` file to deploy
- **-p** *location of app server* where *location of app server* is the location of WebSphere Application Server where the application is to be deployed.
- **-r** *profile* where *profile* is the profile name associated with the application. If not specified, the default is ‘`TDSWebAdminProfile`’.

Note: The **-w** , **-p**, and **-r** flags must be used if you are undeploying from a non-embedded version of WebSphere Application Server. They can be used optionally with an embedded version of WebSphere Application Server.

Default ports for Embedded WebSphere Application Server for the Web Administration Tool

Embedded WebSphere Application Server uses four default port settings:

- HTTP Transport (port 1): 12100
- HTTP Transport (port 2): 12101
- Bootstrap/rmi port: 12102
- Soap connector port: 12103
- Admin Console (for administering WebSphere Application Server) port: 12104
- Secure Admin Console (for administering WebSphere Application Server) port: 12105

Other ports that might be used are: 9405, 9406, 9407, 9105, 9375, 7276, 7286, 5558, 5577, 5075, 5076

If a conflict exists with another application using one or more of these default ports, you can use a text editor to change from the default ports to unused ports.

In the `install_dir\appsrv\profiles\TDSWebAdminProfile\properties\portdef.props` file, (`install_dir` is the directory where IBM Tivoli Directory Server is installed), make the following changes as needed:

HTTP Transport port 1

Find the line containing the port number 12100 and replace the 12100 with the port number that you want.

HTTP Transport port 2

Find the line containing the port number 12101 and replace the 12101 with the port number that you want.

Bootstrap/rmi port

Find the line containing the port number 12102 and replace the 12102 with the port number that you want.

Soap connector port

Find the line containing the port number 12103 and replace the 12103 with the port number that you want.

Admin Console port

Find the line containing the port number 12104 and replace the 12104 with the port number that you want.

Admin Secure Console port

Find the line containing the port number 12105 and replace the 12105 with the port number that you want.

Using HTTPS for Embedded WebSphere Application Server Version 6.1.0.7

Embedded WebSphere Application Server 6.1.0.7, by default, has HTTPS set up on port 12101. To use HTTPS, you must change your login Web address to the following:

```
https://<hostname>:12101/IDSWebApp/IDSjsp/Login.jsp
```

For non-HTTPS connections, continue to use the following Web address:

```
http://<hostname>:12100/IDSWebApp/IDSjsp/Login.jsp
```

Additionally, if you want to change the Web application server's SSL certificate, you can create new key and trust store database files for Embedded WebSphere Application Server to use. By default, the key and trust store database files are separate and are located in the <WASHOME>/etc directory. These files are named **DummyServerKeyFile.jks** and **DummyServerTrustFile.jks** respectively.

After you have created your new jks files, you can change the key and trust store database files that WAS uses by modifying the following items (highlighted in **bold**) in the <WASHOME>/config/cells/DefaultNode/security.xml file to use your new file names, passwords, and file formats:

```
<repertoire xmi:id="SSLConfig_1" alias="DefaultNode/DefaultSSLSettings">
  <setting xmi:id="DefaultSSLSettings"
    <setting xmi:id="SecureSocketLayer_1"
      keyFileName="`${USER_INSTALL_ROOT}/etc/DummyServerKeyFile.jks`"
      keyFilePassword="WebAS`" keyFileFormat="JKS`"
      trustFileName="`${USER_INSTALL_ROOT}/etc/DummyServerTrustFile.jks`"
      trustFilePassword="WebAS`" trustFileFormat="JKS`"
      clientAuthentication="false" securityLevel="HIGH"
      enableCryptoHardwareSupport="false">
    <cryptoHardware xmi:id="CryptoHardwareToken_1" tokenType=""
      libraryFile="" password=""/>
  <properties xmi:id="Property_4" name="com.ibm.ssl.protocol" value="SSLv3"/>
```

```
        <properties xmi:id="Property_5" name="com.ibm.ssl.contextProvider"  
            value="IBMJSSE"/>  
    </setting>  
</repertoire>
```

Appendix I. Installing the Web Administration Tool into WebSphere

IBM Tivoli Directory Server 6.1 provides Embedded WebSphere Application Server 6.1.0.7 as an application server for the Web Administration Tool. However, you can also use WebSphere as a Web application server for the Web Administration Tool. (For supported versions, see *IBM Tivoli Directory Server Version 6.1 System Requirements*.) If you use WebSphere, you must install the Web Administration Tool into WebSphere. Use the following instructions as a guide:

1. Install WebSphere, using the installation information provided with it.
2. Install the Web Administration Tool using either the InstallShield GUI or the installation utility for your operating system. The file containing the Web Administration Tool is named `IDSWebApp.war`, and it is in the `idstools` subdirectory of the installation directory you specified during installation.
3. Install the Web Administration Tool application into WebSphere, using the information provided with WebSphere. For example, if you use the Administrative Console, on the Install New Application window, set the **Local path** to `installdirectory/idstools/IDSWebApp.war`, and the **Context root** to `/IDSWebApp`.

installdirectory is the directory you specified when installing the Web Administration Tool.

4. Start the Web Administration Tool (for example, through the Administrative Console).
5. From a Web browser, type the following address:
 - For HTTP, type `http://localhost:<WAS_http_port>/IDSWebApp/IDSjsp/Login.jsp`
 - For HTTPS, type `http://localhost:<WAS_https_port>/IDSWebApp/IDSjsp/Login.jsp`

By default, the HTTP port is 9080 and the HTTPS port is 9443.

The IBM Tivoli Directory Server Web Administration login page window is displayed.

Note: This address works only if you are running the browser on the computer on which the Web Administration Tool is installed. If the Web Administration Tool is installed on a different computer, replace `localhost` with the hostname or IP address of the computer where the Web Administration Tool is installed.

When deploying the Web Administration Tool into Websphere Application Server, if Global or Administrative security is turned on for Websphere Application Server and SSL must be enabled for the Web Administration Tool, you can use one of the following approaches:

- Deploy the Web Administration Tool into a new profile.
- If it is not possible to deploy the Web Administration Tool into a new profile, you must add the directory server's certificate to the profile's trust store. Additionally, for server-client authentication, you must add the Websphere Application Server profile certificate to the directory server's trust store.

Appendix J. Default ports for Embedded WebSphere Application Server for IBM Tivoli Directory Integrator

IBM Tivoli Directory Integrator Administration and Monitoring Console uses four default port settings:

- HTTP Transport (port 1): 12110
- HTTP Transport (port 2): 12111
- Bootstrap/rmi port: 12112
- Soap connector port: 12113
- Admin Console (for administering WebSphere Application Server) port: 12114
- Secure Admin Console (for administering WebSphere Application Server) port: 12115

Other ports that might be used are: 9408, 9409, 9410, 9106, 9376, 7277, 7287, 5559, 5578, 5077, 5078

If a conflict exists with another application using one or more of these default ports, you can use a text editor to change from the default ports to unused ports.

In the *install_dir*\appsrv\profiles\TDSTDIAMCProfile\properties\portdef.props file, (*install_dir* is the directory where IBM Tivoli Directory Server is installed), make the following changes as needed:

HTTP Transport port 1

Find the line containing the port number 12110 and replace the 12110 with the port number that you want.

HTTP Transport port 2

Find the line containing the port number 12111 and replace the 12111 with the port number that you want.

Bootstrap/rmi port

Find the line containing the port number 12112 and replace the 12112 with the port number that you want.

Soap connector port

Find the line containing the port number 12113 and replace the 12113 with the port number that you want.

Admin Console port

Find the line containing the port number 12114 and replace the 12114 with the port number that you want.

Admin Secure Console port

Find the line containing the port number 12115 and replace the 12115 with the port number that you want.

Appendix K. ASCII characters from 33 to 126

The following table shows ASCII characters from 33 to 126. These are the characters that can be used in the encryption seed string.

ASCII code	Character	ASCII code	Character	ASCII code	Character
33	! exclamation point	34	" double quotation	35	# number sign
36	\$ dollar sign	37	% percent sign	38	& ampersand
39	' apostrophe	40	(left parenthesis	41) right parenthesis
42	* asterisk	43	+ plus sign	44	, comma
45	- hyphen	46	. period	47	/ slash
48	0	49	1	50	2
51	3	52	4	53	5
54	6	55	7	56	8
57	9	58	: colon	59	; semicolon
60	< less-than sign	61	= equals sign	62	> greater-than sign
63	? question mark	64	@ at sign	65	A uppercase a
66	B uppercase b	67	C uppercase c	68	D uppercase d
69	E uppercase e	70	F uppercase f	71	G uppercase g
72	H uppercase h	73	I uppercase i	74	J uppercase j
75	K uppercase k	76	L uppercase l	77	M uppercase m
78	N uppercase n	79	O uppercase o	80	P uppercase p
81	Q uppercase q	82	R uppercase r	83	S uppercase s
84	T uppercase t	85	U uppercase u	86	V uppercase v
87	W uppercase w	88	X uppercase x	89	Y uppercase y
90	Z uppercase z	91	[left square bracket	92	\ backslash
93] right square bracket	94	^ caret	95	_ underscore
96	` grave accent	97	a lowercase a	98	b lowercase b
99	c lowercase c	100	d lowercase d	101	e lowercase e
102	f lowercase f	103	g lowercase g	104	h lowercase h
105	i lowercase i	106	j lowercase j	107	k lowercase k
108	l lowercase l	109	m lowercase m	110	n lowercase n
111	o lowercase o	112	p lowercase p	113	q lowercase q
114	r lowercase r	115	s lowercase s	116	t lowercase t
117	u lowercase u	118	v lowercase v	119	w lowercase w
120	x lowercase x	121	y lowercase y	122	z lowercase z
123	{ left curly brace	124	vertical bar	125	} right curly brace
126	~ tilde				

Appendix L. Information for bundlers

If you produce a product that bundles IBM Tivoli Directory Server, use the information in this appendix:

How to install silently

To install IBM Tivoli Directory Server and its corequisite products such as DB2 silently:

On Windows systems:

Use the silent installation provided with IBM Tivoli Directory Server. See Chapter 11, "Installing and uninstalling silently on Windows systems," on page 81 for instructions.

On AIX, Linux, Solaris, and HP-UX systems:

Note: Silent installation using the IBM Tivoli Directory Server InstallShield GUI installation is not supported on AIX, Linux, Solaris, and HP-UX systems.

- If you want to use InstallShield for Multi-platforms to build your installation program, you can use the native install beans provided by InstallShield for Multi-platforms to bundle and launch native installation of the IBM Tivoli Directory Server native packages for the appropriate operating system.
- To use native operating system commands to install the native installation packages, you can launch a script during your installation that runs the native commands.

For information about the native installation packages for each operating system, see one of the following:

- Chapter 7, "Installing IBM Tivoli Directory Server using AIX utilities," on page 49
- Chapter 8, "Installing IBM Tivoli Directory Server using Linux utilities," on page 61
- Chapter 9, "Installing IBM Tivoli Directory Server using Solaris utilities," on page 67
- Chapter 10, "Installing IBM Tivoli Directory Server using HP-UX utilities," on page 75

Environment variable for silent installation with native packages

To install IBM Tivoli Directory Server using the native installation packages, you must set the environment variable `IBMLDAP_INSTALL_SILENT` to **yes**. If you do not set this environment variable, the installation might hang when an echo or prompt statement in the native package is reached.

Note: This does not apply to Solaris or HP-UX systems.

Starting the instance administration tool in migration mode

If you are migrating a directory server from a release before 6.0 to an IBM Tivoli Directory Server 6.1 directory server instance, you can start the Instance Administration Tool in *migration mode*. The command for starting the Instance Administration Tool in this way is:

```
idsxinst -migrate path
```

where *path* is the path where the backed-up configuration and schema files are stored.

The first window displayed in the Instance Administration Tool when you start it in this way is the Create new directory server instance window, with fields completed from the backed-up files.

Additional information about GSKit

GSKit has shipped the following jar files for your convenience:

- lib/ext/ibmjceprovider.jar
- lib/ext/ibmpkcs.jar
- lib/ibmjcefw.jar
- lib/security/local_policy.jar
- lib/security/US_export_policy.jar
- lib/ibmpkcs11.jar

It is up to each individual product to decide whether to provide these JSSE jar files in the product. The following are GSKit's recommendations:

- A product should ship whatever JSSE jar files it used for system testing with the product.
- If your existing Java 1.5 installation's JSSE jar files are later than those required by GSKit, no action is required.
- If your existing Java 1.5 installation's JSSE jar files are older than those required by GSKit, you should replace your old JSSE jar files with GSKit's. GSKit IKeyman will work with the old JSSE jar files. However, the support for IPv6 may not work and some IKeyman functions may fail due to known bug fixes that are not included in your JDK installation.

Appendix M. Installing and configuring DSML

Directory Services Markup Language (DSML) is installed as a .zip file named DSML.zip in the *installpath/idstools* (or *installpath\idstools* for Windows systems) directory when you install the Web Administration Tool. After you unzip the DSML.zip file, documentation files are available that tell you how to install, configure, and use DSML. These files are:

DSMLReadme.txt

Describes the files in the package and tells you how to install and configure DSML.

dsml.pdf

Describes how to use DSML. This file is in PDF format.

dsml.htm

Describes how to use DSML, in HTML format.

Appendix N. Loading the sample LDIF file into the database

Use the following procedure to load the sample database.

1. Start the Configuration Tool if it is not already started. See “Starting and using the IBM Tivoli Directory Server Configuration Tool (idsxcfg)” on page 111 for instructions.
2. If you created a directory server instance that is **not** the default directory server instance, create the `o=sample` suffix by using the following steps. (If you created the default directory server instance, this suffix is already created.)
 - a. In the Configuration Tool, click **Manage suffixes** in the task list on the left.
 - b. In the Manage suffixes window, in the **SuffixDN** field, type `o=sample`. This is the suffix DN that will hold the sample data. Because the sample data is part of the suffix `o=sample`, this is the suffix DN you must add.
 - c. Click **Add**.
 - d. Click **OK**.

Note: When you click **Add**, the suffix is added to the list in the **Current suffix DNs** box; however, the suffix is not actually added until you click **OK**.

3. In the Configuration Tool, click **Import LDIF data** in the task list on the left.
4. In the Import LDIF data window on the right, in the **Path and LDIF file name** field, type one of the following:
 - `install_dir\examples\sample.ldif` on Windows systems. *install_dir* is the directory where you installed IBM Tivoli Directory Server. By default on Windows systems, this directory is `C:\Program Files\IBM\LDAP\V6.1`.
 - `/opt/IBM/ldap/V6.1/examples/sample.ldif` on AIX, Solaris, and HP-UX systems.
 - `/opt/ibm/ldap/V6.1/examples/sample.ldif` on Linux systems.

Alternatively, you can click **Browse** to locate the file.

5. Click **Standard import**.
6. Click **Import**. (Scroll down to see the **Import** button if it is not visible.)
7. Click **OK**.

Note: As an alternative, you can use:

- The **idscfgsuf** command to add the suffix:

```
idscfgsuf -s "o=sample"
```
- The **idsldif2db** utility to import the data. For example,

```
idsldif2db -i install_dir\examples\sample.ldif -I myinstance
```

where *myinstance* is the name of the directory server instance.

8. After processing is complete, click **Close**.
9. To start the directory server instance:
 - a. Go to the `sbin` subdirectory of the directory where you installed IBM Tivoli Directory Server.
 - b. If you have only one directory server instance, type `idsslapd` at a command prompt. If you have more than one directory server instance, type

```
idsslapd -I instancename
```

where *instancename* is the name of the instance you want to start. Messages are displayed while the server is starting. The following message is displayed if the server starts successfully:

```
IBM Tivoli Directory, Version 6.1 Server started.
```

You have verified that the sample database is loaded correctly and that the installation is successful.

Use the instructions in “Starting the Web Administration Tool” on page 138 to start the Web Administration Tool if you installed it. See the *IBM Tivoli Directory Server Version 6.1 Administration Guide* for information about using the Web Administration Tool and using the server.

Appendix O. UTF-8 support

IBM Tivoli Directory Server supports a wide variety of national language characters through the UTF-8 (UCS Transformation Format) character set. As specified for the LDAP Version 3 protocol, all character data that is passed between an LDAP client and a server is in UTF-8. Consequently, the directory server can be configured to store any national language characters that can be represented in UTF-8. The limitations on what types of characters can be stored and searched for are determined by how the database is created. The database character set can be specified as UTF-8 or it can be set to use the server system's local character set (based on the locale, language, and code page environment).

If you specify UTF-8, you can store any UTF-8 character data in the directory. LDAP clients running anywhere in the world (in any UTF-8 supported language) can access and search the directory. In many cases, however, the client has limited ability to properly display the results retrieved from the directory in a particular language/character set. There is also a performance advantage to using a UTF-8 database because no data conversion is required when storing data to or retrieving data from the database.

Note: If you want to use language tags, the database must be a UTF-8 database.

Why choose anything other than UTF-8?

A UTF-8 database has a fixed collation sequence. That sequence is the binary order of the UTF-8 characters. It is not possible to do language-sensitive collation with a UTF-8 database.

If it is important to your LDAP applications or users to get results for a search using an ordering filter (for example, "name >= SMITH") or any search specifying the control to sort the results as they would expect for their native language, then UTF-8 might not be the appropriate character set for their directory database. In that instance, the LDAP server system and all client systems should run using the same character set and locale. For example, an LDAP server running in a Spanish locale with a database created using that locale returns results of searches based on character ordering, as Spanish-language clients would expect. This configuration does limit your directory user community to a single end-user character set and collation sequence.

Server utilities

Manual creation of an LDIF file containing UTF-8 values is difficult. To simplify this process, a charset extension to the LDIF format is supported. This extension allows an Internet Assigned Numbers Authority (IANA) character set name to be specified in the header of the LDIF file (along with the version number). A limited set of the IANA character sets are supported.

Examples

You can use the optional charset tag so that the server utilities automatically convert from the specified character set to UTF-8 as in the following example:

```

version: 1
charset: ISO-8859-1

dn: cn=Juan Griego, o=University of New Mexico, c=US
cn: Juan Griego
sn: Griego
description:: V2hhdCBhIGNhcmVmdWwgcmVhZGVyIH1vd
title: Associate Dean
title: [title in Spanish]
jpegPhoto:< file:///usr/local/photos/jgriego.jpg

```

In this instance, all values following an attribute name and a single colon are translated from the ISO-8859-1 character set to UTF-8. Values following an attribute name and a double colon (such as `description:: V2hhdCBhIGNhcm...`) should be base 64-encoded, and are expected to be either binary or UTF-8 character strings. Values read from a file, such as the `jpegPhoto` attribute specified by the Web address in the example above, are also expected to be either binary or UTF-8. No translation from the specified "charset" to UTF-8 is done on those values.

In this example of an LDIF file without the charset tag, content is expected to be in UTF-8:

```

# IBM IBM Directorysample LDIF file
#
# The suffix "o=IBM, c=US" should be defined before attempting to load
# this data.

version: 1

dn: o=IBM, c=US
objectclass: top
objectclass: organization
o: IBM

dn: ou=Austin, o=IBM, c=US
ou: Austin
objectclass: organizationalUnit
seealso: cn=Mary Smith, ou=Austin, o=IBM, c=US

```

This same file could be used without the `version: 1` header information, as in previous releases of IBM Tivoli Directory Server:

```

# IBM IBM Directorysample LDIF file
#
#The suffix "o=IBM, c=US" should be defined before attempting to load
#this data.

dn: o=IBM, c=US
objectclass: top
objectclass: organization
o: IBM

dn: ou=Austin, o=IBM, c=US
ou: Austin
objectclass: organizationalUnit
seealso: cn=Linda Carlesberg, ou=Austin, o=IBM, c=US

```

Supported IANA character sets

IBM Tivoli Directory Server supports the Internet Assigned Number Authority (IANA) character set names by platform, as shown in the following table. These are the character set names that can be specified in an LDIF file or using the C-client interface to identify the character set of input data to be used with the directory.

Go to <http://www.iana.org/assignments/character-sets> for more information about IANA-registered character sets.

Table 20. IANA-defined character sets

Character Set Name	Locale					DB2 Code Page	
	HP-UX	Linux, Linux_390,	Windows	AIX	Solaris	UNIX	Windows
ISO-8859-1	X	X	X	X	X	819	1252
ISO-8859-2	X	X	X	X	X	912	1250
ISO-8859-5	X	X	X	X	X	915	1251
ISO-8859-6	X	X	X	X	X	1089	1256
ISO-8859-7	X	X	X	X	X	813	1253
ISO-8859-8	X	X	X	X	X	916	1255
ISO-8859-9	X	X	X	X	X	920	1254
ISO-8859-15	X	n/a	X	X	X		
IBM437	n/a	n/a	X	n/a	n/a	437	437
IBM850	n/a	n/a	X	X	n/a	850	850
IBM852	n/a	n/a	X	n/a	n/a	852	852
IBM857	n/a	n/a	X	n/a	n/a	857	857
IBM862	n/a	n/a	X	n/a	n/a	862	862
IBM864	n/a	n/a	X	n/a	n/a	864	864
IBM866	n/a	n/a	X	n/a	n/a	866	866
IBM869	n/a	n/a	X	n/a	n/a	869	869
IBM1250	n/a	n/a	X	n/a	n/a		
IBM1251	n/a	n/a	X	n/a	n/a		
IBM1253	n/a	n/a	X	n/a	n/a		
IBM1254	n/a	n/a	X	n/a	n/a		
IBM1255	n/a	n/a	X	n/a	n/a		
IBM1256	n/a	n/a	X	n/a	n/a		
TIS-620	n/a	n/a	X	X	n/a	874	874
EUC-JP	X	X	n/a	X	X	954	n/a
EUC-KR	n/a	n/a	n/a	X	X	970	n/a
EUC-CN	n/a	n/a	n/a	X	X	1383	n/a
EUC-TW	X	n/a	n/a	X	X	964	n/a
Shift-JIS	n/a	X	X	X	X	932	943
KSC	n/a	n/a	X	n/a	n/a	n/a	949
GBK	n/a	n/a	X	X	n/a	1386	1386
Big5	X	n/a	X	X	X	950	950
GB18030	n/a	X	X	X	X		
HP15CN	X (with non-GB18030)						

Notes:

1. The Chinese character set standard (GB18030) is supported with appropriate patches available from www.sun.com and www.microsoft.com
2. On Windows operating systems, you must set the environment variable zhCNGB18030=TRUE.

Appendix P. Installing and uninstalling GSKit manually on Windows operating systems

If you install IBM Tivoli Directory Server using silent installation, GSKit is not installed. You can use the following procedure to install it.

To install GSKit 7.0.3.30:

1. Change directories to the \gskit directory on the IBM Tivoli Directory Server CD or the itdsV61\gskit subdirectory of the directory where you unzipped the IBM Tivoli Directory Server .zip file.
2. Run one of the following commands. (Do **not** start setup.exe by clicking on the icon.)
 - On 32-bit Windows systems:
setup LDAP -s -f1"setup_file_location\setup.iss"

where LDAP is the name of your application and will be registered as a registered user of GSK in the Windows Registry (under the key HKEY_LOCAL_MACHINE\SOFTWARE\IBM\GSK\ CurrentVersion\ REGAPPS).

The following options can be used:

- -s to run the setup in the silent mode.
- -f1setup_file_location\setup.iss specifies the response file needed to run the setup in the silent mode. Note that there is no space between -f1 and the beginning of the setup file location.

For example, if you unzipped the IBM Tivoli Directory Server .zip file into the d:\DirectoryServerV6.1 directory, type:

```
cd d:\DirectoryServerV6.1\itdsV61\gskit
setup LDAP -s -f1"d:\DirectoryServerV6.1\itdsV61\gskit\setup.iss"
```

- On AMD64/Opteron/EM64T Windows systems:
GSK7BAS_64.msi

See Appendix Q, "Setting up GSKit to support CMS key databases," on page 195 for more information about setting up GSKit after installation.

Removing GSKit

To remove GSKit, run one of the following commands:

- On Intel 32-bit Windows systems:
%SYSTEMROOT%\gsk7bui.exe -f <GSKit_INSTALL_HOME>\gsk7BUI.isu
- On AMD64/Opteron/EM64T Windows systems, use **Add or Remove Programs** in the Control Panel, or use the following command:
MsiExec.exe -uninstall {9512AA72-3544-4016-A7CB-DEF07972441C}

Appendix Q. Setting up GSKit to support CMS key databases

To set up GSKit to support Certificate Management Services (CMS) key databases, complete the following procedure before starting the iKeyman GUI:

1. Be sure that you have installed GSKit 7.0.3.30.
2. Set JAVA_HOME to point to the java subdirectory of the IBM Tivoli Directory Server installation directory.
3. JDK 1.5 requires the user to have jurisdiction policy files. Due to the import restrictions for some countries, the jurisdiction policy files distributed with J2SDK version 1.5 have built-in restrictions on the available cryptographic strength.

The JDK 1.5 requires jurisdiction policy files that contain no restrictions on cryptographic strength. Note that the 1.5 IBM JRE uses the 1.4 policy files. Download the Unrestricted JCE Policy files for 1.4.2 from:

<https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?source=jcesdk>

The download includes the local_policy.jar and US_export_policy.jar files.

4. Remove the gskikm.jar file from \$JAVA_HOME/jre/lib/ext.
5. Copy the local_policy.jar file to \$JAVA_HOME/jre/lib/security.
6. Copy the US_export_policy.jar file to \$JAVA_HOME/jre/lib/security.
7. Depending on your setup, do one of the following:

Configure Java Runtime Environment 1.5 (platforms other than Solaris and HP-UX)

Using a text editor, open \$JAVA_HOME/jre/lib/security/java.security and add the IBM CMS security provider. For example:

```
security.provider.1=com.ibm.jsse2.IBMJSSEProvider2
security.provider.2=com.ibm.spi.IBMCMSProvider
security.provider.3=com.ibm.crypto.provider.IBMJCE
security.provider.4=com.ibm.security.jgss.IBMJGSSProvider
security.provider.5=com.ibm.security.cert.IBMCertPath
security.provider.6=com.ibm.security.sasl.IBMSASL
```

Configure Java Runtime Environment 1.5 with FIPS support (platforms other than Solaris and HP-UX)

Using a text editor, open \$JAVA_HOME/jre/lib/security/java.security and add the IBM CMS security provider and the IBM JCE FIPS security provider. For example:

```
security.provider.1=com.ibm.jsse2.IBMJSSEProvider2
security.provider.2=com.ibm.spi.IBMCMSProvider
security.provider.3=com.ibm.crypto.fips.provider.IBMJCEFIPS
security.provider.4=com.ibm.crypto.provider.IBMJCE
security.provider.5=com.ibm.security.jgss.IBMJGSSProvider
security.provider.6=com.ibm.security.cert.IBMCertPath
security.provider.7=com.ibm.security.sasl.IBMSASL
```

Configure Java Runtime Environment 1.5 with PKCS#11 crypto hardware support (platforms other than Solaris and HP-UX)

- a. Obtain the pkcs#11 native support libraries from your crypto card vendor.
- b. Using a text editor, open \$JAVA_HOME/jre/lib/security/java.security and add the IBM CMS security provider. For example:

```
security.provider.1=com.ibm.jsse2.IBMJSSEProvider2
security.provider.2=com.ibm.spi.IBMCMSProvider
security.provider.3=com.ibm.crypto.provider.IBMJCE
security.provider.4=com.ibm.security.jgss.IBMJGSSProvider
security.provider.5=com.ibm.security.cert.IBMCertPath
security.provider.6=com.ibm.security.sasl.IBMSASL
```

Configure Java Runtime Environment 1.5 with FIPS support and PKCS#11 crypto hardware support (platforms other than Solaris and HP-UX)

- a. Obtain the pkcs#11 native support libraries from your crypto card vendor.
- b. Using a text editor, open \$JAVA_HOME/jre/lib/security/java.security and add the IBM CMS security provider and the IBM JCE FIPS security provider. For example:

```
security.provider.1=com.ibm.jsse2.IBMJSSEProvider2
security.provider.2=com.ibm.spi.IBMCMSProvider
security.provider.3=com.ibm.crypto.fips.provider.IBMJCEFIPS
security.provider.4=com.ibm.crypto.provider.IBMJCE
security.provider.5=com.ibm.security.jgss.IBMJGSSProvider
security.provider.6=com.ibm.security.cert.IBMCertPath
security.provider.7=com.ibm.security.sasl.IBMSASL
```

Configure Java Runtime Environment 1.5 (Solaris and HP-UX platforms)

Using a text editor, open \$JAVA_HOME/jre/lib/security/java.security and add the IBM CMS security provider. For example:

```
security.provider.1=com.ibm.security.jgss.IBMJGSSProvider
security.provider.2=sun.security.provider.Sun
security.provider.3=com.ibm.spi.IBMCMSProvider
security.provider.4=com.ibm.crypto.provider.IBMJCE
security.provider.5=com.ibm.jsse2.IBMJSSEProvider2
security.provider.6=com.ibm.security.cert.IBMCertPath
security.provider.7=com.ibm.security.sasl.IBMSASL
```

Read the file located at \$JAVA_HOME/README_FIRST.

Configure Java Runtime Environment 1.5 with FIPS support (IBM JRE for Solaris and HP-UX platforms)

Using a text editor, open \$JAVA_HOME/jre/lib/security/java.security and add the IBM CMS security provider and the IBM JCE FIPS security provider. For example:

```
security.provider.1=com.ibm.security.jgss.IBMJGSSProvider
security.provider.2=sun.security.provider.Sun
security.provider.3=com.ibm.spi.IBMCMSProvider
security.provider.4=com.ibm.crypto.fips.provider.IBMJCEFIPS
security.provider.5=com.ibm.crypto.provider.IBMJCE
security.provider.6=com.ibm.jsse2.IBMJSSEProvider2
security.provider.7=com.ibm.security.cert.IBMCertPath
security.provider.8=com.ibm.security.sasl.IBMSASL
```

Read the file located at \$JAVA_HOME/README_FIRST.

Configure Java Runtime Environment 1.5 with PKCS#11 crypto hardware support (IBM JRE for Solaris and HP-UX platforms)

- a. Obtain the pkcs#11 native support libraries from your crypto card vendor.
- b. Using a text editor, open \$JAVA_HOME/jre/lib/security/java.security and add the IBM CMS security provider. For example:

```
security.provider.1=com.ibm.security.jgss.IBMJGSSProvider
security.provider.2=sun.security.provider.Sun
security.provider.3=com.ibm.spi.IBMCMSProvider
security.provider.4=com.ibm.crypto.provider.IBMJCE
```

```
security.provider.5=com.ibm.jsse2.IBMJSSEProvider2
security.provider.6=com.ibm.security.cert.IBMCertPath
security.provider.7=com.ibm.security.sasl.IBMSASL
```

- c. Read the file located at \$JAVA_HOME/README_FIRST.

Configure Java Runtime Environment 1.5 with FIPS support and PKCS#11 crypto hardware support (IBM JRE for Solaris and HP-UX platforms)

- a. Obtain the pkcs#11 native support libraries from your crypto card vendor.

- b. Using a text editor, open \$JAVA_HOME/jre/lib/security/java.security and add the IBM CMS security provider and the IBM JCE FIPS security provider. For example:

```
security.provider.1=com.ibm.security.jgss.IBMJGSSProvider
security.provider.2=sun.security.provider.Sun
security.provider.3=com.ibm.spi.IBMCMSProvider
security.provider.4=com.ibm.crypto.fips.provider.IBMJCEFIPS
security.provider.5=com.ibm.crypto.provider.IBMJCE
security.provider.6=com.ibm.jsse2.IBMJSSEProvider2
security.provider.7=com.ibm.security.cert.IBMCertPath
security.provider.8=com.ibm.security.sasl.IBMSASL
```

- c. Read the file located at \$JAVA_HOME/README_FIRST.

Appendix R. Accessibility features for IBM Tivoli Directory Server

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use information technology products successfully.

Accessibility features

The following list includes the major accessibility features in IBM Tivoli Directory Server. You can use screen-reader software to hear what is displayed on the screen.

- Supports keyboard-only operation
- Supports interfaces commonly used by screen readers
- Keys are tactilely discernible and do not activate just by touching them
- Ports and connectors support the connection of industry-standard devices
- Supports the attachment of alternative input and output devices

Note: The IBM Tivoli Directory Server Information Center, and its related publications, are accessibility-enabled for the IBM Home Page Reader. You can operate all features using the keyboard instead of the mouse.

Keyboard navigation

This product uses standard Microsoft® Windows navigation keys.

Related accessibility information

Visit the *IBM Accessibility Center* at <http://www.ibm.com/able> for more information about IBM's commitment to accessibility.

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