



# IBM Directory Server Version 4.1 Client Readme

**Note**

Before using this information and the product it supports, read the general information under "8.0 Notices" on page 25.

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## Preface

This file contains a description of the IBM<sup>®</sup> Directory Server Client SDK Version 4.1. This Software Developer's Kit (SDK) provides LDAP application development support for the following operating systems:

- AIX<sup>®</sup> 4.3.3.X
- AIX 5L Version 5.1
- HP-UX 11.0
- Solaris 7 or higher
- Linux Operating System from Red Hat Version 7.1 or higher, SuSE Linux Version 7.2 or higher, or TurboLinux Version 6.5 or higher.
- Windows NT<sup>®</sup> Workstation/Server 4.0 on Intel with service pack 4 or higher, Windows<sup>®</sup> 2000, or Windows 98.



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## 1.0 Product description

The IBM Directory Server Client SDK consists of the following components for developing C applications:

- Client libraries that provide a set of C-language APIs.
- C header files
- Documentation
- Sample programs
- Executable versions of the sample programs

The following component is provided for developing Java™ applications that use Sun Microsystems's Java Naming and Directory Server Interface (JNDI) (7). This permits Java applications to access Lightweight Directory Server Access Protocol (LDAP) compliant directory servers:

- A set of class files for the LDAP service provider

The LDAP libraries (C and JNDI) enable the programmer to develop applications that can access an LDAP-compliant Directory Server, including, but not limited to the following:

- IBM Directory Server V4.1
- IBM SecureWay® Directory Server V3.1.1.5, V3.2, V3.2.1, and V3.2.2
- eNetwork LDAP Directory Server V2.1
- eNetwork X.500 Directory Server for AIX
- iPlanet V5.1

The LDAP API provides typical Directory Server functions such as read, write and search. The client can authenticate itself to the Directory Server using a password and Distinguished Name (DN) (simple) or one of the Simple Authentication and Security Layer (SASL) mechanisms (CRAM-MD5, GSSAPI or EXTERNAL).

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### 1.1 C applications

The client SDK includes tools to build your own LDAP application (LDAP Version 2 or LDAP Version 3). Note that the client SDK for C also provides support for Secure Sockets Layer (SSL), which provides data confidentiality (encryption) on connections protected by SSL. SSL support is enabled when the IBM Global Security Kit, Version 5.0.4.X (GSKit) is installed. GSKit is optional software that is included with the IBM Directory Server package.

**Note:** See Section 3.0 for some very important details regarding the use of SSL with Version 4.1 of the IBM Directory Server Client SDK.

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### 1.2 Java applications

The client SDK also provides support for Java applications. The Java client SDK is an implementation of Sun's JNDI.





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## 2.0 On-line documentation

In addition to the Readmes, on-line documents including the Release Notes, the Administration Guide, the Programming Reference are provided in pdf and html format. The Directory Server Management Tool online helps are provided in html format.

**Note:** The Directory Management Tool is now a separately installable package.

The IBM Directory Server Version 4.1 uses the JNDI client from Sun Microsystems. For information about the JNDI client, go to the Sun Microsystems Web site at <http://java.sun.com/products/jndi/1.2/javadoc/index.html>

**Note:** To view or print the pdf documentation you can download a free copy of the Adobe Acrobat Reader from the Adobe Web site: <http://adobe.com>.

For Windows systems:

### **The Release Notes**

file:\installation Directory Server\web\language\readme\relnote.pdf or relnote.htm For English, *language* is enUS1252.

### **The Administration Guide**

file:\installation path\web\language\config\admin\_gd.pdf or admin\_gd.htm.

### **The C Programming Reference**

file:\installation path\web\language\doc\progref.pdf or progref.htm.

### **The Directory Server Management Tool**

file:\installation Directory Server\web\language\dmtdparent.htm.

For AIX systems:

### **The Release Notes**

file:/usr/ldap/web/language/readme/relnote.pdf or relnote.htm. For English, *language* is en\_US.

### **The Administration Guide**

file:/usr/ldap/web/language/config/admin\_gd.pdf or admin\_gd.htm.

### **The C Programming Reference**

file:/usr/ldap/web/language/doc/progref.pdf or progref.htm.

### **The Directory Server Management Tool**

file:/usr/ldap/web/language/dmtdparent.htm.

For Solaris systems:

### **The Release Notes**

file: /opt/IBMldaps/language/readme/relnote.pdf or relnote.htm. For English, *language* is en\_US.

### **The Administration Guide**

file:/opt/IBMldaps/web/language/config/admin\_gd.pdf or admin\_gd.htm.

### **The C Programming Reference**

file:/opt/IBMldaps/web/language/program/progref.pdf or progref.htm.

**The Directory Server Management Tool**

file:/opt/IBMdaps/web/*language*/dmt/dparent.htm.

For Linux systems:

**The Release Notes**

file:/usr/ldap/web/*language*/readme/relnote.pdf or relnote.htm. For English, *language* is en\_US.

**The Administration Guide**

file:/usr/ldap/web/*language*/config/admin\_gd.pdf or admin\_gd.htm.

**The C Programming Reference**

file:/usr/ldap/web/*language*/doc/progref.pdf.

**The Directory Server Management Tool**

file:/usr/ldap/web/*language*/dmt/dparent.htm.

For HP-UX systems:

**The Release Notes**

file:/usr/IBMdap/web/*language*/readme/relnote.pdf or relnote.htm. For English, *language* is en\_US.

**The Administration Guide**

file:/usr/IBMdap/web/*language*/config/admin\_gd.pdf or admin\_gd.htm.

**The C Programming Reference**

file:/usr/IBMdap/web/*language*/doc/progref.pdf.

**The Directory Management Tool**

file:/usr/IBMdap/web/*language*/dmt/dparent.htm.

Further information is available on the Web. Find the IBM Directory Server page at <http://www-4.ibm.com/software/network/directory/> for general information and announcements.

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## 3.0 Important considerations for secure LDAP (using SSL)

The LDAP libraries and utilities provided with the client SDK utilize the SSL libraries, if present. The SSL libraries are provided as part of IBM's GSKit 5.0.4.X. If GSKit has been installed, the LDAP library will dynamically load the SSL libraries and use them to enable support for SSL. If GSKit has not been installed, and the SSL libraries are not available, the LDAP library is fully functional, with the exception of SSL support.

**Note:** Version 4.1 of the IBM Client SDK requires that GSKit 5.0.4.X be installed for SSL support.

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### 3.1 SSL tools

GSKit includes tools for managing the SSL key database file. The mkkf utility used with older versions of the LDAP client SDK has been replaced by the following program:

`gsk5ikm` a Java GUI application for managing the keyring database and generating certificate requests.

The `gsk5ikm` utility is used to manage keys and certificates in files with a new format. The `gsk5ikm` utility can be used to migrate a pre-existing keyring file, as created with `mkkf`, to the new format used by `gsk5ikm`. The `gsk5ikm` utility can also be used to create a `key.class` file for use with JNDI applications. This permits JNDI applications to implement server authentication and server-client authentication when connecting to an LDAP server when using SSL to create secure connections.

See the SSL sections in the on-line, html-based LDAP Programming Reference for more information about using `gsk5ikm`.

By using SSL with server authentication, the LDAP application can use simple LDAP authentication (USERID and password) over a secure, encrypted communication connection. SSL thus provides for the establishment of a secure connection between the LDAP client application and the LDAP server. In addition, SSL provides data confidentiality (encryption) on connections protected by SSL. Authentication of servers to the clients is accomplished with X.509 certificates.

**Note:** The IBM Directory Server also uses GSKit to enable support for SSL.

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### 3.2 Using `gsk5ikm` on AIX

The `gsk5ikm` korn shell script on AIX is trying to find a file '`$JAVA_HOME/sh/jre`' that no longer exists. To use this java utility you must issue the following commands:

1. `export JAVA_HOME=/usr/ldap/java`
2. `export LIBPATH=/usr/ldap/java/bin:/usr/ldap/java/bin/classic:$LIBPATH`
3. If it does not already exist, create the following soft link:  
`ln -s /usr/ldap/java/bin/java /usr/ldap/java/bin/jre`
4. `/usr/bin/gsk5ikm -nojre`

**Note:** If you have already updated the LIBPATH variable, you can omit step 2 of this procedure.

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## 4.0 Directory Management Tool

The Directory Management Tool is intended for use with IBM Directory Server on AIX, Windows systems, Solaris, Linux, and AS/400® operating systems. It might work with some other LDAP directories, but such use is not supported. The Directory Management Tool for the latest IBM Directory Server release (4.1) works with, and is supported for earlier SecureWay 3.x releases. However, the converse is not true. Use the latest Directory Management Tool when communicating with the latest level of the IBM Directory Server.

**Note:** With the IBM Directory Server Version 4.1 release, the Directory Management Tool is a separately installable package. However, the Directory Management Tool requires the C-client SDK package.

The IBM Directory Server Directory Management Tool provides a Java Virtual Machine-based graphical user interface that enables you to manage information stored in LDAP directory servers. You can use this tool to:

- Connect to one or more LDAP directory servers by way of SSL or non-SSL connections
- View a log file of Directory Management Tool operations
- Display server properties, status, and rebind to the server
- Add, edit and delete schema attributes and object classes
- List schema attributes and object classes by name, type, or inheritance
- List, add, edit and delete Directory Server entries
- List, add, edit and delete Access Control Lists (ACLs)
- Search the Directory Server tree including saving custom searches

For more information on using and configuring Directory Management Tool, see the Directory Management Tool on-line documentation (load `dpagent.htm` with your preferred web browser).

**Note:** The Directory Management Tool does not start on the Japanese version of Linux Red Hat 7.1 operating system. Trying to start the Directory Management Tool results in an 'mprotect' error message.

To start Directory Management Tool, simply type **dmtool**.

- On AIX platforms, the Directory Management Tool is softlinked at `/usr/bin/dmtool`.
- On Solaris platforms, the Directory Management Tool is softlinked at `/usr/bin/dmtool`.
- On Linux platforms, the Directory Management Tool is softlinked at `/usr/bin/dmtool`.
- On Windows platforms, the **dmtool.exe** is located in `ldaphome\bin` where `ldaphome\bin` is the path where the IBM Directory Server is installed. You can also start it from **Start>Programs>IBM Directory Server Version 4.1**.

To automatically run the Directory Management Tool with its default configuration file, start it in the `ldaphome\bin` subdirectory.

**Note:** The Directory Management Tool is not supported on HP-UX clients.

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## 4.1 NLS problem with the Directory Management Tool on SuSE Linux 7.2

On the SuSE Linux 7.2 version of the Linux operating system, the Directory Management Tool panels are displayed in English, even if you have set your locale variable to a language other than English. This is a known problem. The SuSE Linux 7.2 version of the Linux operating system is not officially supported by Java 1.3, which is included in the IBM Directory Server Version 4.1 release.

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## 4.2 Directory Server limitations

At the present time the Directory Management Tool, depending on the resources available, has a performance limitation of 100,000 entries. Using the tool with directories having greater than 100,000 entries might lessen the performance of the tool.

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## 4.3 Attribute syntax length

Syntax length is not a mandatory field. It defaults to 240 bytes for a string and 256 bytes for a binary. A string can range from a minimum of 1byte to a maximum of 32700 bytes. The maximum for a binary is 2 GB.

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## 4.4 Environment variables needed for Directory Management Tool when running Traditional Chinese

On the Solaris 8 operating system with the default Traditional Chinese locale (zh\_TW.Big5) if you are running the Directory Management Tool, you need to add the following to your profile:

```
export LANG=zh_TW
export LC_ALL=zh_TW
```

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## 5.0 Installing the IBM Directory Server clients

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### 5.1 Installing the Windows clients

Use this procedure to install the Windows clients. You can also use the InstallShield GUI to install the UNIX-based clients, except for the Linux S/390®, TurboLinux 6.5 and HP-UX clients. They must be installed using the appropriate system utilities.

**Note:** If the InstallShield GUI is used to install on UNIX® platforms, it must be used to uninstall as well. See the *IBM Directory Server Version 4.1 Installation and Configuration Guide for Multiplatforms* for details on uninstalling.

#### 5.1.1 Common installation using InstallShield GUI

InstallShield GUI has two installation options: Typical and Custom. If you want to accept the default settings, select Typical during installation. If you are an experienced user and want to customize your installation, select Custom.

##### 5.1.1.1 Typical installation

Typical installation uses default settings and is recommended for new users.

To begin installing IBM Directory Server 4.1:

1. Insert the CD in your CD-ROM drive. If the CD-ROM does not automatically start, click **Start->Run**. Depending on whether you are installing locally from a CD or remotely from the network, select the drive for your CD-ROM or for the appropriate network path and then select the package you want to install. Double-click the **Setup.exe** icon. The Language panel is displayed.
2. Select the language you want to use during IBM Directory Server installation. Click **OK**.
3. If a previous version of IBM Directory Server client is not installed on your system, go to step 4. If a previous version of IBM Directory Server is installed on your system, See the *IBM Directory Server Version 4.1 Installation and Configuration Guide for Multiplatforms* for details on migration and uninstallation.
  - **If you have a current version of IBM Directory Server and/or IBM Directory Server Client SDK installed on your system:** You must save the current data and configuration. Click **Yes** to save the current data and configuration, or **No** to cancel the installation.
  - **If you have a previous version of the IBM Directory Server Client SDK:** You are asked if you wish to continue with the installation. Click **Yes** or **No**.
4. To continue with installation, click **Next**.
5. After reading the the Software license, select **I accept the terms in the license agreement**.
6. Click **Next**. Any preinstalled components and corresponding version levels display. Click **Next**.
7. Select the language you want to use in IBM Directory Server 4.1. Click **Next**.
8. To install to the default directory, click **Next**. You can specify a different directory by clicking the **Browse** button.

**Note:** If you are using a UNIX system, this panel will not appear. Go directly to step 9.

9. Select **Typical** installation. Click **Next**.
10. The following list displays:
  - Client SDK 4.1
  - DMT 4.1 and Java 1.3
  - Server 4.1

Select the Client SDK 4.1. You can also select DMT 4.1 and Java 1.3, if you want to install the Directory Management Tool on your client.

**Note:** If you have an earlier version of a feature installed on your machine, you must install the most current version of the feature.

11. Click **Next**.
12. Click **Next**. A screen summarizing the components selected for installation and configuration displays. If you wish to change any of your selections, use the **Back** button. To begin installation, click **Next**.
13. After the files are installed, the Client readme opens.
14. If you are using Windows system, restart your computer. You must restart your system to complete the IBM Directory Server configuration. You are unable to use the IBM Directory Server product until this is accomplished.
15. Click **Start>Programs>IBM Directory Server 4.1**.

### 5.1.1.2 Custom installation

Custom installation is for experienced users who want to customize their installation.

1. Insert the CD in your CD-ROM drive. If the CD-ROM does not automatically start, click **Start->Run**. Depending on whether you are installing locally from a CD or remotely from the network, select the drive for your CD-ROM or for the appropriate network path and then select the package you want to install. Double-click the **Setup.exe** icon. The small language panel displays.
2. Select the language you want to use during IBM Directory Server installation. Click **OK**.
3. If a previous version of IBM Directory Server client is installed on your system, you are asked if you want to continue with the installation. Click **Yes** to install over the previous version of the IBM Directory Server client or **No** to exit the install.
4. To continue with installation, click **Next**.
5. After reading the the Software license, select **I accept the terms in the license agreement**. Click **Next**.
6. Any preinstalled components and corresponding version levels display. Click **Next**.
7. Select the language you want to use in IBM Directory Server 4.1. Click **Next**.
8. To install to the default directory, click **Next**. You can specify a different directory by clicking the **Browse** button.
9. Select **Custom** installation.
10. Click **Next**. This panel displays the following install components:
  - Client SDK 4.1
  - DMT 4.1 and Java 1.3
  - Server 4.1
  - IBM HTTP Server 1.3.19



- DB2<sup>®</sup> V7.2
- GSKit 5 (SSL packages only.)

The components that are not yet installed are preselected. You can choose to reinstall the Server or the Client, if they were previously installed.

**Note:** You can deselect and not install the Server 4.1 component and the GSKit 5 component. If you are installing only an IBM Directory Server Client, you can deselect and not install the Directory Management Tool and Java subcomponent.

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

11. Click **Next**.
12. Installation now has enough information to begin installing. A panel appears containing the following information, depending on your selections:
  - Files will be installed to the following directory C:\Program Files\IBM\LDAP (or to the drive path that you provided)
  - GSKIT 5 will be installed in C:\Program Files\IBM\GSK5

Click **Back** to change any of your selections. Click **Next** to begin installation.

13. After the files are installed, the appropriate Readme or Readmes open.
14. If you are using a Windows system, select whether to restart your computer now or later and click **Finish**.

---

## 5.2 Installing the AIX clients

**Note:** If you have a preexisting version of LDAP from a vendor other than IBM, you must remove it before installing the IBM Directory Server. If you attempt to install the IBM Directory Server without removing the other vendor's version, the resulting file name conflicts might prevent either version from working.

You can use InstallShield (the preferred installation method) or either `smit` or `installp` from a command prompt to install the IBM Directory Server. If you use the InstallShield to install, you *must* use the InstallShield to uninstall.

**Note:** You do not need to install security functions if you are not going to use them. You can provide encryption by installing a Global Security Kit (GSKit), which is available on the CD.

For more detailed information on AIX installation procedures and commands, see the *IBM Directory Server Version 4.1 Installation and Configuration Guide for Multiplatforms*.

The following instructions assume that you are installing from a CD-ROM with the device name `/dev/cd0`.

### 5.2.1 SMIT installation

To install IBM Directory Server using `smit`:

1. Log on as `root`

2. Insert the compact disc that contains the IBM Directory Server Version 4.1 into the CD-ROM drive or download the files from the IBM Directory Server Web site at:

<http://www-4.ibm.com/software/network/directory/downloads/>

3. At the command prompt, type the following:

```
smit install
```

and press the Enter key. 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 the LATEST Available Software**.
6. Click **List** beside the **INPUT device/Directory Server for software** field.
7. Select the appropriate CD-ROM drive or the directory containing the IBM Directory Server images.
8. Move your cursor to **Software to install**. Do *one* of the following:
  - Type `ldap` to install all the ldap filesets (or `ldap.server`, or `ldap.client`, if appropriate).
  - Click **List** to list all the filesets on the compact disc, and then click the filesets that you want to install, including different translations of IBM Directory Server messages.

**Note:** SMIT by default installs translated messages based on the language you configured into your AIX system.

For this example the non-SSL package is used. If you select the list option, you see:

```
> ldap.client                                     ALL
  4.1.0.0 IBM Directory Client DMT
  4.1.0.0 IBM Directory Client Java
  4.1.0.0 IBM Directory Client Runtime (No SSL)
  4.1.0.0 IBM Directory Client SDK
> ldap.html.en_US                                 ALL
  4.1.0  IBM Directory Server HTML Install/Config Guide - U.S. Engli
  4.1.0  IBM Directory Server HTML man Pages - U.S. English
> ldap.server                                     ALL
  4.1.0  IBM Directory Server  Administrative Interface
  4.1.0  IBM Directory Server  Framework
  4.1.0  IBM Directory Server  Runtime (No SSL)
```

**Note:** The `ldap.html` packages are language specific. The `ldap.html.en_US` package is used as one example.

When you finish selecting filesets, click **OK**.

9. Click **OK**. The message "Are You Sure?" is displayed.
10. Click **OK** to start the installation.
11. Check the installation summary at the end of the output to verify successful installation of the filesets.
12. Click **Done**.
13. Exit SMIT by pressing **F12** or by clicking **Cancel** until you are back to a command prompt. Verify that IBM Directory Server was installed successfully by typing the following at a command prompt:

```
lslpp -L | grep ldap
```

The output displayed lists all the filesets starting with ldap. This includes the client, html, and message filesets. For example:

```
ldap.client.adt 4.1.0.0 C IBM Directory Client SDK
ldap.client.dmt 4.1.0.0 C IBM Directory Client DMT
ldap.client.java 4.1.0.0 C IBM Directory Client Java
ldap.client.rte 4.1.0.0 C IBM Directory Client
ldap.html.en_US.config 4.1.0.0 C IBM Directory HTML
ldap.html.en_US.man 4.1.0.0 C IBM Directory HTML man
ldap.msg.en_US 4.1.0.0 C IBM Directory Messages
```

## 5.2.2 Command line installation

To install IBM Directory Server from a command prompt:

1. Log on as *root*.
2. Insert the compact disc that contains the IBM Directory Server Version 4.1 into the CD-ROM drive or download the files from the IBM Directory Server Web site at:

<http://www-4.ibm.com/software/network/directory/downloads/>

3. Determine which IBM Directory Server packages you need. For the server and client, the package name is `ldap.server`, and for just the client, the package name is `ldap.client`. For all packages, including all language translations of the message files and documentation, the package name is `ldap`.
4. Determine which language versions of the message files and documentation you need. To see the language versions that are available, type the following command:

```
installp -ld /dev/cd0 | grep ldap
```

A list all of the installable IBM Directory Server packages is displayed.

Some examples of United States English-specific packages are:

```
ldap.html.en_US.man
ldap.msg.en_US
```

5. At the command prompt, install the required packages with the following command:

```
installp -acgXd /dev/cd0 <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**

### Examples:

To install only the IBM Directory Server client files, type:

```
installp -acgXd /dev/cd0 ldap.client
```

To install all of the IBM Directory Server filesets (including every language translation of messages), type:

```
installp -acgXd /dev/cd0 ldap
```

6. 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 IBM Directory Server was installed successfully by typing the following at a command prompt:

```
ls1pp -L | grep ldap
```

The output displayed lists all the filesets starting with ldap. This includes the client, html, and message filesets. For example:

```
ldap.client.adt 4.1.0.0 C IBM Directory SDK
ldap.client.dmt 4.1.0.0 C IBM Directory Client DMT
ldap.client.java 4.1.0.0 C IBM Directory Client Java
ldap.client.rte 4.1.0.0 C IBM Directory Client Runtime
ldap.html.en_US.config 4.1.0.0 C IBM Directory Install/Config
ldap.html.en_US.man 4.1.0.0 C IBM Directory Man Pages -U.S.
ldap.msg.en_US 4.1.0.0 C IBM Directory Messages -U.S.
```

7. If you want to include security functions, choose a Global Security Kit from the IBM Directory Server Version 4.1 compact disk.

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## 5.3 Installing the Solaris client

**Note:** If you have a preexisting version of LDAP from a vendor other than IBM, you must remove it before installing the IBM Directory Server. If you attempt to install the IBM Directory Server without removing the other vendor's version, the resulting file name conflicts might prevent either version from working.

You can use InstallShield (the preferred installation method) or either the admintool utility or pkgadd from a command prompt to install IBM Directory Server. If you use the InstallShield to install, you *must* use the installShield to uninstall.

**Note:** You do not need to install security functions if you are not going to use them. You can provide encryption by installing a Global Security Kit (GSKit).

### 5.3.1 Package dependencies

The following two IBM Directory Server packages are available for installation. Because of package dependencies, the order of installation is significant. Install the packages in the following order:

- IBMldapc IBM Directory Server Client
- IBMldapdj IBM Directory DMT
- IBMldixxx IBM Directory Server documentation (where xxx is language dependent)
- IBMldmxxx IBM Directory Messages (where xxx is language dependent)

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

- Client
- DMT
- Documentation and Messages

If the client package is not installed first, the installation fails.

## 5.3.2 Non-IBM version of LDAP on your system

During the installation of the client on Solaris Operating Environment Software Version 8, you might encounter the following message:

```
A non-IBM version of LDAP has been located on your system.
In order to use the command line version of the IBM supplied
files, the existing files (ldapadd, ldapdelete, ldaplist, ldapmodify,
ldapmodrdn, ldapsearch) must be relocated.
Specify the new directory in which to move the files
(/usr/bin/ldapsparc) [?,q]
```

Press **Enter** to accept the default directory (/usr/bin/ldapsparc), or type a new path name and press **Enter**, or type **q** and press **Enter** to quit.

After relocating the files, you might see these additional messages:

```
## Processing system information.
WARNING: /usr/bin/ldapadd <no longer a linked file>
WARNING: /usr/bin/ldapdelete <no longer a regular file>
WARNING: /usr/bin/ldapmodify <no longer a regular file>
WARNING: /usr/bin/ldapmodrdn <no longer a regular file>
WARNING: /usr/bin/ldapsearch <no longer a regular file>
## Verifying package dependencies.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
```

The following files are already installed on the system and are being used by another package:

```
/usr/bin/ldapadd
/usr/bin/ldapdelete
/usr/bin/ldapmodify
/usr/bin/ldapmodrdn
/usr/bin/ldapsearch
```

Do you want to install these conflicting files [y,n,?,q]

Type **y** and press **Enter** to continue the installation. The existing files are moved to the directory previously specified and the IBM Directory Server files are installed in the /usr/bin directory.

## 5.3.3 AdminTool installation

To install IBM Directory Server using the admintool utility:

1. Log in as root.
2. Insert the compact disc.
3. Type the following at a root command prompt:  
admintool&

The **Users** window is displayed.

4. Click **Browse -> Software**. The **Software** window is displayed.
5. Click **Edit -> Add**. The **Set Source Media** window is displayed.
6. Select **CD with Volume Management**. The CD-ROM path defaults to:  
/cdrom/cdrom0/
7. Change the path to /cdrom/cdrom0/ldap41\_us and click **OK**.
8. Click **OK**.
9. Select from the following list of installable packages:

IBM Directory Client  
IBM Directory DMT and Java  
IBM Directory Documentation (for all languages)  
IBM Directory Messages (for all languages)

Remember that you must install the IBMldapc package first.

10. Click **Add**.
11. You are asked if you want to use /opt as the base directory. If space permits, use /opt as the base installation directory. To accept /opt as the base directory, press **Enter**.

**Note:** With the installation of client package, the system prompts you with the notice,

This package contains scripts which will be executed with super-user permission during the process of installing the package.

These scripts create the IBM Directory Server user ID. Type **y** to continue.

After the package is installed, the **Software** window is displayed.

12. Repeat steps 6 through 10 for each additional package you want to install. If you are finished installing the packages, Select **File -> Exit** to exit the admintool utility.

### 5.3.4 Command line installation

To install IBM Directory Server from a command prompt:

1. Insert the compact disc.
2. At the command prompt, install the required packages with the following command:

```
pkgadd -d /cdrom/cdrom0/<subdirectory>
```

where <subdirectory> contains the IBM Directory Server packages. The following packages are available:

- |   |            |   |
|---|------------|---|
| 1 | IBMldapc   | IBM Directory Client<br>(sparc)4.1.0.0  |
| 2 | IBMldapdj  | IBM Directory DMT and Java<br>(sparc)4.1.0.0  |
| 3 | IBMldixxx  | IBM Directory Server documentation (where xxx is<br>language dependent)<br>(sparc)4.1.0.0 |
| 4 | IBMldm xxx | IBM Directory messages<br>(sparc)4.1.0.0  |

3. Specify the IBM Directory Server packages you want to install.

**Attention:** Do not use the system default of all. The system does not sequence the packages correctly and the installation fails.

The order in which the packages are listed is crucial. If package dependencies are not met, the installation fails.

- To install the client only, enter:

```
pkgadd -d /cdrom/cdrom0/<subdirectory> IBMldapc
```

- To install the client and documentation packages, enter:

```
pkgadd -d /cdrom/cdrom0/<subdirectory> IBMldapc IBMldixxx
```

---

## 5.4 Installing the Linux client

**Note:** Before installing the IBM Directory Server, you must remove any non-IBM versions of LDAP that might have been installed previously. If you try to install the IBM Directory Server over an existing non-IBM version of LDAP, such as OpenLDAP, the IBM Directory Server does not install correctly. If this occurs you must remove the IBM Directory Server and then reinstall it.

One method to determine if you have a previously installed version of LDAP is to issue the following command to query the installed packages:

```
rpm -qa | grep -i ldap
```

This command finds any installed applications containing the name ldap. This method works only if you have a version of LDAP that contains the string ldap in its application names.

You can use the InstallShield on all Linux platforms except Linux S/390 and TurboLinux 6.5.

The IBM Directory Server client for Linux operating systems is shipped in the following packages:

**Note:** If you are installing Linux on an S/390 system, the package names use the identifier **s390** instead of **i386**. For example, ldap-client-4.1-1.s390.rpm (no SSL)

- ldap-client-4.1-1.i386.rpm (no SSL)
- ldap-clientd-4.1-1.i386.rpm (SSL enabled)
- ldap-msg-xxx-4.1-1.i386.rpm (Where xxx is language dependent.)
- ldap-html-xxx-4.1-1.i386.rpm (Where xxx is language dependent.)
- ldap-javadmt-4.1-1.i386.rpm (no SSL)
- ldap-javadmtd-4.1-1.i386.rpm (SSL enabled)

**Note:** For TurboLinux Version 6.5, during the install, the install tool (rpm) thinks there is a dependency on the file **libstdc++.so.2.9** and cannot find it even though it is on the system. To fix this problem specify **--nodeps** (dash dash nodeps) in the rpm input parameters. For example:

```
rpm --nodeps -hiv ldap-client-4.1-1.i386.rpm
```

Specifying **--nodeps** bypasses dependency checking. It allows the code to be installed.

To install the IBM Directory Server client with **no-SSL**, you must:

1. Install the client:

```
rpm -hiv ldap-client-4.1-1.i386.rpm
```

2. Install the Directory Management Tool:

```
rpm -hiv ldap-javadmt-4.1-1.i386.rpm
```

3. Verify that the packages have been installed correctly:

```
rpm -qa | grep ldap
```

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

```
ldap-client-4.1-1
ldap-javadmt-4.1-1
```

4. Install the language-dependant messages or documents:

```
rpm -hiv ldap-msg-xxx -4.1-1.i386.rpm  
rpm -hiv ldap-html-xxx -4.1-1.i386.rpm
```

After installing the messages, you need to set the following environment variables:

```
export NLSPATH=/usr/share/i18n/msg/%L/%N  
export LANG=xxx  
LC_ALL=xxx
```

where xxx is the language. For example, en\_US for English.

To install the IBM Directory Server client with **encryption**, you must:

1. Install the client:

```
rpm -hiv ldap-clientd-4.1-1.i386.rpm
```

2. Install the Directory Management Tool:

```
rpm -hiv ldap-javadmtd-4.1-1.i386.rpm
```

3. Verify that the packages have been installed correctly:

```
rpm -qa | grep ldap
```

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

```
ldap-clientd-4.1-1  
ldap-javadmtd-4.1-1
```

4. Install the language-dependant messages or documents:

```
rpm -hiv ldap-msg-xxx -4.1-1.i386.rpm  
rpm -hiv ldap-html-xxx -4.1-1.i386.rpm
```

After installing the messages, you need to set the following environment variables:

```
export NLSPATH=/usr/share/i18n/msg/%L/%N  
export LANG=xxx  
LC_ALL=xxx
```

where xxx is the language. For example, en\_US for English.

---

## 5.5 Installing the HP-UX client

To install the HP-UX client, perform the following steps:

1. Type **swinstall** at a command prompt.
2. Select the IBM Directory 4.1 version you want to install. You can select from the following list:
  - LDAPClient
  - LDAPClient\_noSSL.

Selecting LDAPClient\_noSSL installs the client with SSL disabled.

**Note:** If you select an SSL-enabled version of IBM Directory, you must also install GSKit.

3. Click **Actions -->Mark For Install**.
4. Click **Actions -->Install (analysis)**...Analysis is complete when the Status field reads Ready.
5. Click **OK**.



6. Click **Yes** to begin installation. Installation is complete when the Status field reads **Done**.
7. Click **File --> Exit**.
8. Set and verify that the following path have been set in your .profile .  
SHLIB\_PATH=/usr/lib

For example, at a command prompt type:  
export SHLIB\_PATH=/usr/lib;\$SHLIB\_PATH



---

## 6.0 IBM Directory Server client SDK description

The IBM Directory Server Client SDK provides the tools required to develop LDAP applications, including the following:

- Two LDAP libraries (shared and non-shared)
- C header files for building and compiling LDAP applications
- Sample programs, in both source and executable form:

<code>ldapmodrdrn.exe</code>	LDAP modify relative distinguished name
<code>ldapdelete.exe</code>	LDAP delete
<code>ldapmodify.exe</code>	LDAP modify
<code>ldapsearch.exe</code>	LDAP search
<code>ldapadd.exe</code>	LDAP add (a renamed version of <code>ldapmodify</code> )
- LDAP programming information, which describes the programming interface and the sample programs. This information is supplied as pdf and html files. To browse the information, open the following file in your web browser:
  - AIX: `/usr/ldap/web/language/doc/progref.pdf` or `progref.htm`
  - AIX 5L Version 5.1: `/usr/ldap/web/language/doc/progref.pdf` or `progref.htm`
  - HP-UX: `/usr/ldap/doc/progref.pdf` or `progref.htm`
  - Solaris: `/opt/IBMldaps/web/language/program/progref.pdf` or `progref.htm`
  - Linux: `/usr/ldap/web/language/doc/progref.pdf` or `progref.htm`
  - Windows: `ldaphome\web\language\doc\progref.pdf` or `progref.htm`, where *ldaphome* is typically:  
`path = c:\Program Files\IBM\LDAP`

This is the default, depending on install target.



---

## 7.0 Sample programs

Sample C-client programs are provided in the following locations:

- AIX: `/usr/ldap/examples`
- AIX 5L Version 5.1: `/usr/ldap/examples`
- HP-UX: `/usr/ldap/examples`
- Solaris: `/opt/IBMldap/examples`
- Linux: `/usr/ldap/examples`
- Windows: `ldaphome\examples`

Included with the samples is a makefile for use with the sample programs, as well as a sample LDIF file.



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