



IBM Directory Server Version 5.1 Client Readme

Note

Before using this information and the product it supports, read the general information under "Notices" on page 19.

Preface

This file contains a description of the IBM[®] Directory Server Client SDK Version 5.1. This Software Developer Kit (SDK) provides LDAP application development support for the following operating systems:

- AIX[®] 4.3.3, 5.1, or 5.2
- HP-UX 11i
- Solaris 7, 8, or 9
- Linux Operating System from Red Hat Version 7.2 or 7.3, Red Hat Linux Advanced Server v2.1, UnitedLinux, SuSE Linux Version 7.2, 7.3, or 8.0
- On Linux for S/390[®], Linux Operating System from Red Hat Version 7.1, UnitedLinux, SuSE Linux Version 7.0, Turbolinux 6.5
- Windows NT[®] 4.0 with Service Pack 6 or higher, Windows[®] 2000, or Windows XP

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Product description

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

- Client libraries that provide a set of C-language APIs.
- C header files for building and compiling LDAP applications
- Documentation that describes the programming interface and the sample programs
- Sample programs in source form
- Executable versions of the sample programs:
 - `ldapmodrtn.exe`: LDAP modify relative distinguished name
 - `ldapdelete.exe`: LDAP delete
 - `ldapmodify.exe`: LDAP modify
 - `ldapsearch.exe`: LDAP search
 - `ldapadd.exe`: LDAP add (a renamed version of `ldapmodify`)
 - `ldapchangepwd`: LDAP change password

The sample programs are provided in the following locations:

- AIX: `/usr/ldap/examples`
- HP-UX: `/usr/IBMldap/examples`
- Solaris: `/opt/IBMldapc/examples`
- Linux and Linux for S/390: `/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.

The LDAP C libraries 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, V5.1
- 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).

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 6.0.3 (GSKit) is installed. GSKit is optional software that is included with the IBM Directory Server package.

Note: See “Considerations for secure LDAP (using SSL)” on page 5 for important details regarding the use of SSL with Version 5.1 of the IBM Directory Server Client SDK.

Online documentation

In addition to the Readme file, online documents including the Administration Guide and the Programming Reference are provided in PDF and HTML format.

The IBM Directory Server Version 5.1 supports the use of 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:

Administration Guide

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

C-Client SDK Programming Reference

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

For AIX systems:

Administration Guide

file:/usr/ldap/web/language/config/admin_gd.pdf or admin_gd.htm

C-Client SDK Programming Reference

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

For Solaris systems:

Administration Guide

file:/opt/IBMldaps/web/language/config/admin_gd.pdf or admin_gd.htm

C-Client SDK Programming Reference

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

For Linux systems:

Administration Guide

file:/usr/ldap/web/language/config/admin_gd.pdf or admin_gd.htm

C-Client SDK Programming Reference

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

For HP-UX systems:

Administration Guide

file:/usr/IBMldap/web/language/config/admin_gd.pdf or admin_gd.htm

C-Client SDK Programming Reference

file:/usr/IBMldap/web/language/doc/progref.pdf

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

Considerations for secure LDAP (using SSL)

Version 5.1 of the IBM Client SDK requires that GSKit 6.0.3 be installed for SSL support. The LDAP libraries and utilities provided with the client SDK use the SSL libraries, if present. The SSL libraries are provided as part of the IBM GSKit 6.0.3. If GSKit has been installed, the LDAP library dynamically loads the SSL libraries and uses 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.

By using SSL with server authentication, an LDAP application can use simple LDAP authentication (user ID 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 server component also uses GSKit to enable support for SSL.

See the *IBM Directory Server Version 5.1 C-Client SDK Programming Reference* and the *IBM Directory Server Version 5.1 Installation and Configuration Guide* for information about GSKit.

Installing the IBM Directory Server clients

Use the following sections to install an IBM Directory Server client on different operating system platforms.

For information about installing the server or the Web Administration Tool, see the *IBM Directory Server Version 5.1 Installation and Configuration Guide*.

Installing Windows clients

Use this procedure to install clients on Windows platforms. This procedure is for installing the client only. If you want to install other components, such as the server or the Web Administration Tool, see the *IBM Directory Server Version 5.1 Installation and Configuration Guide*.

Note: If the InstallShield GUI is used to install, it must be used to uninstall as well. See the *IBM Directory Server Version 5.1 Installation and Configuration Guide* for information about uninstalling.

The 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**.

To install the IBM Directory Server 5.1 client on Windows platforms:

1. On the computer where you are installing the IBM Directory Server, stop any programs that are running and close all windows. If you have open windows, the initial IBM Directory Server installation window might be hidden behind other windows.
2. If you are installing from a CD, insert the CD in your CD-ROM drive. If the CD-ROM does not automatically start the installation program, click **Start->Run**.
3. 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. If you downloaded a zip or tar file, go to the directory where you unzipped or untarred the file.
4. In the \ismp folder, double-click the **setup.exe** icon.

The language window is displayed.

Note: If the installation program exits without displaying the language window, it might be caused by one of the following:

- Backlevel video drivers. Update your video drivers to correct this.
 - Not enough space in the directory specified by the TEMP environment variable. Be sure that you have at least 100 MB of free space in this directory.
5. Select the language you want to use during IBM Directory Server installation. Click **OK**.

Note: This is the language used in the installation program, not in the IBM Directory Server. You choose the language used in the IBM Directory Server in step 11 on page 8.

6. On the Welcome window, click **Next**.
7. If you have a previous version of the IBM Directory Client SDK installed on your system, you are asked if you want to continue with the installation. Click **Yes** to install over the previous version of IBM Directory Client SDK, or click **No** to exit the installation program.
8. After reading the Software license agreement, click **I accept the terms in the license agreement**.
9. Click **Next**. Any preinstalled components and corresponding version levels are displayed. Click **Next**.
10. To install to the default directory, click **Next**. You can specify a different directory by clicking **Browse**.

Note: Do not use special characters, such as hyphen (-) and period (.) in the name of the installation directory. If you do not use the default location, use a name such as **ldap** or **ldapdir**. Do not use a name such as **ldap-dir** or **ldap.dir**.

11. Select the language you want to use in IBM Directory Server 5.1. Click **Next**.
12. Click **Typical** or **Custom**, and click **Next**.
13. A list of available components is displayed. Select **Client SDK 5.1** and click **Next**.
14. A window summarizing the components selected for installation and configuration is displayed.
If you want to change your selection, click **Back**. To begin installation, click **Next**.
15. After the files are installed, the Client README file opens. Click **Next**.
16. Select to restart your computer now or later and click **Finish**.

You have completed installation.

Installing UNIX[®] clients with the InstallShield GUI

Use the following procedure to install UNIX-based clients with the InstallShield GUI, except on the following platforms:

- UnitedLinux
- Linux for S/390
- HP-UX

Clients on these platforms must be installed using the appropriate system utilities.

This procedure is for installing the client only. If you want to install other components, such as the server or the Web Administration Tool, see the *IBM Directory Server Version 5.1 Installation and Configuration Guide*.

Note: If the InstallShield GUI is used to install, it must be used to uninstall as well. See the *IBM Directory Server Version 5.1 Installation and Configuration Guide* for information about uninstalling.

The 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**.

To install the IBM Directory Server 5.1 client on UNIX platforms:

1. If you are installing from a CD, insert the CD in the CD-ROM drive. Go to the root directory on your CD. If you downloaded a zip or tar file, go to the directory where you unzipped or untarred the file. Invoke setup. A language window is displayed.
2. Select the language you want to use during IBM Directory Server installation. Click **OK**.

Note: This is the language used in the installation program, not in the IBM Directory Server. You choose the language used in the IBM Directory Server in step 6.

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

Attention: If you have a version of IBM Directory Server already installed on your system, a message is displayed telling you that you must remove it before installing.

4. After reading the Software license agreement, click **I accept the terms in the license agreement** and click **Next**.
5. Any preinstalled components and corresponding version levels are displayed. Click **Next**.
6. Select the language you want to use in IBM Directory Server 5.1. Click **Next**.
7. Click **Typical** or **Custom**, and click **Next**.
8. A list of available components is displayed. Select **Client SDK 5.1** and click **Next**.
9. A window summarizing the components selected for installation and configuration is displayed. If you want to change your selections, click **Back**. To begin installation, click **Next**.
10. After the files are installed, the Client README file opens. Click **Next**.
11. Click **Finish**. Installation is complete.

You have completed installation.

Installing 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 the InstallShield GUI or either **smit** or **installp** from a command prompt to install the IBM Directory Server. If you use the InstallShield GUI to install, you must also use it 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 5.1 Installation and Configuration Guide*.

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

SMIT installation

To install IBM Directory Server using **smit**:

1. Log on as **root**.
2. Insert the CD that contains the IBM Directory Server Version 5.1 into the CD-ROM drive or go to the directory where you untarred the file.
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. 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.client` to install the client.
 - Click **List** to list all the filesets on the CD, and then click the filesets that you want to install, including different translations of IBM Directory Server messages.

Note: By default SMIT 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, for example:

```
> ldap.client ALL
   5.1.0.0 IBM Directory Client Runtime (No SSL)
   5.1.0.0 IBM Directory Client SDK

> ldap.html.en_US ALL
   5.1.0.0 IBM Directory HTML Install/Config Gd-U.S. English
   5.1.0.0 IBM Directory HTML Man Pages - U.S. English
```

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

Select the filesets you want to install and 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. To exit SMIT, press F12 or click **Cancel** until you are back to a command prompt. To verify that IBM Directory Server was installed successfully, type 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	5.1.0.0	C	IBM Directory SDK
ldap.client.rte	5.1.0.0	C	IBM Directory Client
ldap.html.en_US.config	5.1.0.0	C	IBM Directory HTML
ldap.html.en_US.man	5.1.0.0	C	IBM Directory HTML man
ldap.msg.en_US	5.1.0.0	C	IBM Directory Messages

Command line installation

To install IBM Directory Server from a command prompt:

1. Log in as **root**.
2. Insert the CD that contains the IBM Directory Server Version 5.1 into the CD-ROM drive go to the directory where you untarred the file.
3. Determine which IBM Directory Server packages you need. For the client only, 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. When installation is complete, 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:

```
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	5.1.0.0	C	F	IBM Directory SDK
ldap.client.rte	5.1.0.0	C	F	IBM Directory Client Runtime

7. If you want to include security functions, install GSKit 6.0.3. See “Installing GSKit on AIX”.

Installing GSKit on AIX

If you installed an SSL-enabled version of IBM 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` on 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 **Package gskak** 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`, type the following at a command prompt:

```
installp -acgXd gskak.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.

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 the InstallShield GUI, the `admintool` utility, or `pkgadd` from a command prompt to install IBM Directory Server. If you use the InstallShield GUI to install, you must use the InstallShield GUI 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).

Package dependencies

The following IBM Directory Server client 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
- IBMldixxx IBM Directory Server documentation (where xxx is language dependent)
- IBMldmxxx IBM Directory Server messages (where xxx is language dependent)

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

- Client
- Documentation and Messages

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

Non-IBM version of LDAP on your system

During the installation of the client on Solaris Operating Environment Software, 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,
ldapmodrtn, 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/ldapmodrtn <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/ldapmodrtn
/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.

AdminTool installation

To install IBM Directory Server using the **admintool** utility:

1. Type the following at a root command prompt:

admintool&

The Users window is displayed.

2. Click **Browse** -> **Software**. The Software window is displayed.
3. Click **Edit** -> **Add**. The Set Source Media window is displayed.
4. Select **CD with Volume Management**. The CD-ROM path defaults to /cdrom/cdrom0/
5. Change the path to /cdrom/cdrom0/ldap51_us and click **OK**.
6. Click **OK**.
7. Select from the following list of installable packages:
 - IBM Directory Client
 - IBM Directory Documentation (for all languages)
 - IBM Directory Messages (for all languages)

Remember that you must install the IBMldapc package first.

8. Click **Add**.
9. 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.

10. Repeat steps 7 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.

Command line installation using pkgadd

To install IBM Directory Server from a command prompt:

1. At the command prompt, install the packages you want with the following command:

```
pkgadd -d /cdrom/cdrom0/ldap51_us pkglist
```

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

The following packages are available:

```
IBMldapc    IBM Directory Client  
(sparc) 5.1.0.0  
IBMldixxx   IBM Directory documentation  
(sparc) 5.1.0.0  
IBMldmxxx   IBM Directory messages  
(sparc) 5.1.0.0
```

where *xxx* is a specific language identifier. 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/ldap51 IBM1dapc
```

- To install the client and documentation packages, enter:

```
pkgadd -d /cdrom/cdrom0/ldap51 IBM1dapc IBM1dixxx
```

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 GUI on all Linux platforms except Linux for S/390 and UnitedLinux.

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

Intel-based Linux packages:

- ldap-client-5.1-1.i386.rpm (no SSL)
- ldap-clientd-5.1-1.i386.rpm (SSL enabled)
- ldap-msg-xxx-5.1-1.i386.rpm (Where xxx is language dependent.)
- ldap-html-xxx-5.1-1.i386.rpm (Where xxx is language dependent.)

Linux for S/390 packages:

- ldap-client-5.1-1.s390.rpm (no SSL)
- ldap-clientd-5.1-1.s390.rpm (SSL enabled)
- ldap-msg-xxx-5.1-1.s390.rpm (Where xxx is language dependent.)
- ldap-html-xxx-5.1-1.s390.rpm (Where xxx is language dependent.)

Note: The examples in this chapter use Linux Intel-based packages.

To install the IBM Directory Server client with no SSL:

1. Install the client by typing the following at a command prompt:

```
rpm -ihv ldap-client-5.1-1.i386.rpm
```

2. Verify that the package was installed correctly:

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

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

```
ldap-client-5.1-1
```

3. Install the language-dependent messages or documents:

```
rpm -ihv ldap-msg-xxx-5.1-1.i386.rpm
```

```
rpm -ihv ldap-html-xxx-5.1-1.i386.rpm
```

After installing the messages, 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:

1. Install the client:

```
rpm -hiv ldap-clientd-5.1-1.i386.rpm
```

2. Verify that the package was installed correctly:

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

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

```
ldap-clientd-5.1-1
```

3. Install the language-dependent messages or documents:

```
rpm -hiv ldap-msg-xxx-5.1-1.i386.rpm
rpm -hiv ldap-html-xxx-5.1-1.i386.rpm
```

After installing the messages, 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.

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 5.1 package you want to install. For the client, select from the following list:
 - **LDAPClient** to install the client only.
 - **LDAPClient_noSSL** to install the client only 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 has been set in your .profile .

```
SHLIB_PATH=/usr/lib
```

For example, at a command prompt type:

```
export SHLIB_PATH=/usr/lib;$SHLIB_PATH
```

9. To set the NLS environment variables, run the following command:

```
echo 'export NLSPATH=/usr/lib/nls/msg/%L/%N' >>~/.profile
```

Note: Be sure to include the tilde character before `/.profile`.

Appendix. Notices

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