



IBM Directory Server Version 4.1 Server Readme

Note

Before using this information and the product it supports, read the general information under "8.0 Notices" on page 33.

Preface

This README file contains a description of the IBM® Directory Server Version 4.1. This product is available on the AIX®, Linux, HP-UX, Solaris, Windows NT®, and Windows® 2000 platforms. The server readme (server.pdf, server.htm, or server.txt) and a separate readme file describing the IBM Directory Server Client SDK (client.pdf, client.htm, or client.txt) can be found in the following directories:

- for AIX: /usr/ldap/language/readme/<filename>. (For English, *language* is en_US.)
- for Linux: /usr/ldap/web/language/readme/<filename>. (For English, *language* is en_US.)
- for Windows platforms: *installation directory*\web\language\readme\<filename>. (For English, *language* is enUS1252.)
- for Solaris: /opt/IBMldaps/web/language/readme/<filename>. (For English, *language* is en_US.)
- for HP-UX: /usr/IBMldap/web/language/readme/<filename>. (For English, *language* is en_US.)

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1.0 Product description

The IBM Directory Server V4.1 consists of the following components:

- **slapd**: the server executable
- Command line import/export utilities
- A server administration tool with a Web-browser based interface for configuration and administration of the directory
- A Java™ Virtual Machine-based Directory Management Tool and on-line user guide
- On-line Administration Helps
- On-line Lightweight Directory Access Protocol (LDAP) Programming References (C-client SDK and Server Plug-ins)
- IBM Directory Server Client Software Development Kit (SDK) that includes C runtime libraries and Java classes

It includes an LDAP Version 3 server that supports IETF LDAPv3 (RFC 2251) protocol, schema, RootDSE, UTF-8, referrals, Simple Authentication and Security Layer (SASL) authentication mechanism and related specifications. In addition, it includes support for Secure Socket Layer (SSL), replication, access control, client certificate authentication, CRAM MD5 authentication, change log, password encryption, server plug-ins, enhanced search capability for compound Relative Distinguish Name (RDN), Web-based server administration GUI, LDAP V3 schema definitions, IBM common schema definitions, schema migration and performance improvements.

This version translates messages for Group 1 national languages on Windows NT, AIX, Linux, and Solaris operating systems including Brazilian Portuguese, French, German, Italian, Spanish, Japanese, Korean, Simplified Chinese, Traditional Chinese. In addition, this product on AIX also translates messages for Czech, Polish, Hungarian, Russian, Catalan and Slovakian.

The directory provides scalability by storing information in the IBM DB2 Universal Database™ (UDB). DB2® is packaged with the directory product.

Note: You may only use the DB2 component in association with your licensed use of the IBM Directory Server.

2.0 On-line documentation

In addition to the readmes, on-line documents including the Release Notes, QuickStart, the Installation and Configuration Guide for Multiplatforms, the Administration Guide, the Tuning Guide, the C-Client SDK Programming References, the Server Plug-in Reference are provided in pdf and html formats. The Administration Helps and the Directory Management Tool online helps are provided in html format.

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/>

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

For Windows systems:

The Release Notes

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

QuickStart

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

The Installation and Configuration Guide for Multiplatforms

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

The Administration Guide

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

The IBM Directory Server Tuning Guide

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

The C Programming Reference

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

The Server Plug-ins Reference

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

The Administration Helps

file:\installation path\web\language\help\parent.htm. This document also can be accessed remotely via a Web browser from the Administration Web page at http://hostname:ldap_server_port/ldap by clicking on the question mark at the top-right corner of the screen and the help index.

The Directory Management Tool

file:\installation directory\web\language\dmt\dparent.htm

For AIX systems:

The Release Notes

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

QuickStart

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

The Installation and Configuration Guide for Multiplatforms

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

The Administration Guide

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

The IBM Directory Server Tuning Guide

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

The C Programming Reference

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

The Server Plug-ins Reference

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

The Administration Helps

file:/usr/ldap/web/*language*/help/parent.htm. This document also can be accessed remotely via a Web browser from the Administration Web page at http://hostname:ldap_server_port/ldap by clicking on the question mark at the top-right corner of the screen and the help index.

The Directory Management Tool

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

For Solaris systems:

The Release Notes

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

QuickStart

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

The Installation and Configuration Guide for Multiplatforms

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

The Administration Guide

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

The IBM Directory Server Tuning Guide

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

The C Programming Reference

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

The Server Plug-ins Reference

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

The Administration Helps

file:/opt/IBMldaps/web/*language*/help/parent.htm. This document also can be accessed remotely via a Web browser from the Administration Web page at http://hostname:ldap_server_port/ldap by clicking on the question mark at the top-right corner of the screen and the help index.

The Directory Management Tool

file:/opt/IBMldaps/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.

QuickStart

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

The Installation and Configuration Guide for Multiplatforms

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

The Administration Guide

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

The IBM Directory Server Tuning Guide

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

The C Programming Reference

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

The Server Plug-ins Reference

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

The Directory Management Tool

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

For HP-UX systems:

The Release Notes

file:/usr/IBMldap/web/language/readme/relnote.pdf or relnote.htm. For English, *language* is en_US.

QuickStart

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

The Installation and Configuration Guide for Multiplatforms

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

The Administration Guide

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

The IBM Directory Server Tuning Guide

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

The C Programming Reference

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

The Server Plug-ins Reference

file:/usr/IBMldap/web/language/doc/plugin.pdf or plugin.htm

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

3.0 Additional hardware and software requirements

At this time there are no additional requirements. See your Installation and Configuration Guide for system requirements.

4.0 Installation, configuration, and migration

See the Installation and Configuration Guide for information about the installation of individual components and the migration from a Version 3.1.1.5, a Version 3.2 or a Version 3.2.X server to a V4.1 server. This guide is separately provided in the package to be viewed before the product is installed. This guide is also available from the IBM Directory Web site <http://www-4.ibm.com/software/network/directory/library/>.

Follow the steps described in the Installation section and the Configuration section for a quick setup of the server, loading a sample database and managing the directory content.

Note: There have been some changes to the default settings for V4.1. For example the default entry cache size has changed from 1000 to 25000 and LDAP_CONCURRENTRW now defaults to ON. Although your previous settings are migrated to V4.1, you can take advantage of the new default settings. They are included in the V4.1 `slapd32.conf` file as commented text. To use these default settings, remove the hash (#) marks. For more information about these settings see the *IBM Directory Server Version 4.1 Tuning Guide*.

4.1 InstallShield GUI issues for UNIX[®] systems

The following items apply to the InstallShield Multi Platform (ISMP) tool:

Note: The InstallShield GUI is not available on the TurboLinux 6.5, Linux S/390[®] or the HP-UX platforms.

4.1.1 Installation and removal procedures are not interchangeable

If the IBM Directory Server installation is done using the InstallShield GUI, the removal must also be done using the InstallShield GUI. You cannot use the native package commands such as `installp` or `RPM`, to remove the IBM Directory Server.

To remove the IBM Directory Server:

1. Open the IBM Directory Server installation directory.
`cd <installation directory>/_uninst`
2. Issue the uninstall command:
`./uninstall`

Note: You can also use this procedure for Windows platforms instead of the Add/Remove program which requires you to remove each component separately.

4.1.2 The AIX platform progress panel cannot be seen

On the AIX platform, the progress bar might be behind the full screen panel when files are being installed. You can minimize the large panel so that the progress indicator panel can be seen.

4.1.3 Space and memory requirements

To use the InstallShield GUI you need to have at least 256M of memory and 400M of **/tmp** space.

5.0 Restrictions, known problems, troubleshooting, and additional information

5.1 Server Administration

The following information applies to the Server Administration Graphical User Interface (GUI)

5.1.1 Using Server Administration to reconfigure a database with the backup option fails

On the AIX platform, reconfiguring a database using Server Administration (click **Database -> Configure**) fails if you select the **Backup to** option. If you want to reconfigure and back up your database, you must perform two separate operations:

1. Back up your directory (click **Database -> Db2 backup**).
2. Reconfigure your database (click **Database -> Configure** with the **do not backup the current data** option).

On the Windows NT platform, reconfiguring a database using Server Administration (click **Database -> Configure**) fails if you select the **Backup to** option and your user-specified path for the database backup files contains spaces. If you want to reconfigure and back up your database, ensure that your path for the database backup files does not contain any spaces.

Note: If the LDAP install directory path contains spaces, the configuration and backup operation work, but you do not see any status messages in the Server Administration status box for the backup portion. Configuration messages are displayed.

5.1.2 Server Administration fails to stop the IBM Directory Server (Windows NT and Windows 2000 operating systems only)

The Web-based Server Administration starts, stops and restarts the server as a service on Windows NT and Windows 2000 platforms. In Version 4.1, if you run **slapd.exe** as an application (from a console), Server Administration detects that it is running, but cannot stop or restart it. To stop the server you must press **<CTRL>-C** at the console in which it is running.

5.1.3 Server Administration displays blank page in Web browser (Windows NT and Windows 2000 operating systems only)

Make sure that the system environment variable, **LANG**, matches the name of a folder under *<install path>\LDAP\NLS\msg*. For example: "enus1252" for US English. **LANG** might be changed by other applications installed after LDAP, specifically DCE for Windows.

5.1.4 The server does not start after deleting schema files

In the Server Administration **Settings -> Schema -> Files** section, you can choose to remove the schema files that are loaded at setup. Extreme caution must be used because the files must be removed in pairs:

- For AIX and Solaris platforms:
 - /etc/ldapschema/V3.ibm.at *and* /etc/ldapschema/V3.ibm.oc
 - /etc/ldapschema/V3.user.at *and* /etc/ldapschema/V3.user.oc
- For Windows NT and Windows 2000 platforms:
 - /etc/V3.ibm.at *and* /etc/V3.ibm.oc
 - /etc/V3.user.at *and* /etc/V3.user.oc

If you remove only one of the files in the pair, you cannot restart the server.

If you have removed one file from the pair and cannot restart the server, you must go back to the **Settings -> Schema -> Files** panel and add back the file that you have removed. To do this, type the path and file name in the field and click **Update**.

5.1.5 Installation directory name

The name of the installation directory where V4.1 is installed must not have special characters, such as "-" and ".". If you do not choose the default location for the software installation, choose a name such as "ldap" or "ldapdir". Do not choose a name such as "ldap-dir" or "ldap.dir".

5.1.6 Installation on Windows NT backup domain controller (Windows NT platform only)

Installation of V4.1 software for a Windows NT backup domain controller is not supported at this time.

5.2 Directory Management Tool

The following information applies to the Directory Management Tool.

5.2.1 Java versions for the Directory Management Tool

The Directory Management Tool runs using the version of the Java Virtual Machine that is included with IBM Directory Server. If you want to run the Directory Management Tool using a newer version of the Java Virtual Machine, set the environment variable ENV_JAVA=1. If this variable is set, the Directory Management Tool searches until it finds a working version of the Java Virtual Machine. If no version is found, the Directory Management Tool runs with the Java Virtual Machine version included with the IBM Directory Server.

Setting the ENV_JAVA=1 variable causes the following:

For the AIX platform, the Directory Management Tool searches for the Java Virtual Machine in the following directories:

- The directory specified by the JAVAHOME environment variable
- /usr/java130/jre
- /usr/java_dev2/jre

For Windows NT and Windows 2000 platforms, the Directory Management Tool searches for the following registry keys:

- "Software\JavaSoft\Java Runtime Environment"
- "Software\JavaSoft\Java Development Kit"
- "Software\IBM\Java3 Runtime Environment"
- "Software\IBM\Java3 Development Kit"
- "Software\IBM\Java2 Runtime Environment"
- "Software\IBM\Java2 Development Kit"

For the Solaris platform , the Directory Management Tool searches for the Java Virtual Machine in the following directories:

- /usr/java
- /opt/java
- /usr/java1.3/jr
- /opt/java1.3/jre

5.2.2 Directory Management Tool password considerations

If you create your own dmt.conf file and choose to include the password in that file, you might want to protect your password. Change the world access permissions so that the dmt.conf file is not readable.

For UNIX systems, in the directory that contains the dmt.conf file, type:

```
chmod 700 dmt.conf
```

For Windows NT systems:

1. Click **My Computer**-><disk>-><directory> (where disk and directory specify the location of the dmt.conf file).
2. Right click **dmt.conf**.
3. Click **Properties**->**Security**->**Permissions**.
4. On the Directory Permissions menu click **Everyone**.
5. From the Type of Access: drop-down menu click **No Access**.
6. Click **OK**.
7. Click **OK**.

For Windows 2000 systems:

1. Click **My Computer**-><disk>-><directory> (where disk and directory specify the location of the dmt.conf file).
2. Right click **dmt.conf**.
3. Click **Properties**->**Security**.
4. In the **Name** field, click **Everyone**.
5. In the **Permissions** field, click **Full Control Deny**.
6. Click **OK**.

5.2.3 Directory Management Tool does not start on the Japanese version of Linux Red Hat 7.1

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.

5.2.4 Directory limitations

At the present time the Directory Management Tool 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. See the *IBM Directory Server Version 4.1 Tuning Guide* for the latest information.

5.2.5 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.

5.2.6 Directory Management Tool cannot display simplified Chinese

In order for the Directory Management Tool to display simplified Chinese, you must perform the following steps:

1. Find file **font.properties.zh** in *<LDAP installation directory>/jer/lib*.
2. Copy and rename the file to **font.properties.zh.5.0**.
3. 2) Open the file **font.properties.zh.5.0** and change line 153 from:

```
filename.\u5b8b\u4f53=simsun.ttf
```

to

```
filename.\u5b8b\u4f53=simsun.ttc
```

4. Save the file and restart the IBM Directory Server Directory Management Tool.

5.2.7 Out of memory error message on Linux S/390 and SuSE Linux 7.2

If running the Directory Management Tool on a Linux S/390 machine using the SuSE Linux 7.2 distribution receives an "Out of Memory" error condition, the root cause is the level of Java support that is currently loaded on the machine. This error message is the result of Java Runtime Environment (JRE) 1.3.0 being loaded in that customer environment. The Directory Management Tool for IBM Directory Server 4.1 is not supported on Linux S/390 with Linux kernel 2.4 and Java JRE 1.3.0.

5.2.8 Use a \ to escape DNs with double quotations, space or backslash

When using the Directory Management Tool to add an entry with a DN that includes double quotations, spaces or backslashes, you must use a backslash (\) to escape the characters. For example:

Table 1.

What you want to add	What you enter using the Directory Management Tool
cn=aaa\bbb,o=ibm,c=us	cn=aaa\\bbb
cn=aaa"bbb,o=ibm,c=us	cn=aaa\\"bbb

For information about the JNDI compositeName syntax go to <http://java.sun.com/j2se/1.3/docs/api/javax/naming/CompositeName.html>.

Note: you cannot use the Directory Management Tool to add, edit, or delete an entry that has a space character at the end of the entry. This is because

LdapName implements compound names for LDAP v3 as specified by RFC 2253.(<http://www.ietf.org/rfc/rfc2253.txt>). In rfc.2253, the term whitespace is undefined. So when the input string "cn=Space Space\ " gets converted to an **LdapName**, it is trimmed to become "cn=Space Space\" (no more whitespace at the end).

5.3 Network Authentication Service

The following information applies to the IBM Network Authentication Service (formerly referred to as Kerberos):

5.3.1 slapd does not start with Kerberos (Windows 2000 operating system only)

When running IBM Directory 4.1 with the IBM Network Authentication Service on Windows 2000 servers, you must be using the latest 1.1 release of the Network Authentication Service code, otherwise the directory server (slapd) does not start after installation.

To check the level of Network Authentication Service code:

1. Go to the system Registry.
2. Expand **HKEY_LOCAL_MACHINE --> SOFTWARE --> IBM**
3. Click either **IBM Network Authentication Service** or **Privacy Authentication**.
4. Click **CurrentVersion**. The **VersionNumber** must be **1.1** or greater. A VersionNumber string similar to **r1dev0xx** indicates a version of the NAS product that probably does not work.

If you are running a Windows 2000 server as a domain controller and you want to use a different KDC, you need to follow these steps:

1. Find out the host name and domain name for your machine. Click **Start --> Settings --> Control Panel --> System** and click the **Network Identification** tab.
2. Add the domain mapping into the **krb5.conf** file. If your domain name is **mymachine.company.com** and the realm that you want to use is **MYREALM.COMPANY.COM**, add the following into the **krb5.conf** file:

```
[domain_realm]
.mymachine.company.com = MYREALM.COMPANY.COM
```

Note the additional dot in front of the domain name.

3. Create a principal in the MYREALM KDC for the directory server. If your host name is **somename.mymachine.company.com**, the principal name is **LDAP/somename.mymachine.company.com**.
4. Create a keytab file that includes that principal, and transfer it to your machine. Configure the directory server to use this keytab file.

5.4 DB2

The following information applies to the IBM Universal Database (DB2):

5.4.1 User files in the default database instance directory are removed

Users should not put anything in to the default database directory (for AIX and Linux platforms: `/home/ldapdb2`, for Windows NT and Windows 2000 platforms:

c:\ldapdb2, for Solaris platforms: /export/home/ldapdb2). This directory as well as the ldapdb2 ID are reserved by the IBM Directory Server. User files in this database directory might be deleted.

5.4.2 Binary attachment size

Currently an entry with a large binary attachment might generate an 'Operations Error' error message.

If your entries need to include large binaries (for example up to 3 MB), you need to increase the size of the query heap. Use the DB2 **update** command to increase the query heap size. Issue the following command:

```
db2 update dbm cfg using query_heap_sz 2000
```

Stop and restart DB2 to initialize the change.

If you need to include binary attachments larger than 3 MB, you will need to increase the query heap size accordingly.

5.4.3 Two versions of DB2 on local machine might disable slapd and the DB2 functions on the Server Administration GUI

If you are installing IBM Directory Server on a machine where two version of DB2 are installed, a conflict in the **libdb2.a** library can disable the slapd process from starting.

Third-Party products can set links for **/usr/lib/libdb2.a** to either of the installed DB2 versions. When IBM Directory Server is started, it first searches the **/usr/lib** directory for the **libdb2.a** link.

If this first link is found, it uses this library for accessing DB2. If this link does not match the version of DB2, which the IBM Directory Server is configured to use, then the slapd process fails to start. If this link is not found, the slapd process then searches **/usr/ldap/lib**, to find the correct link.

You need to set the environment variable LIBPATH to point to the appropriate library file for the DB2 version configured for the IBM Directory Server.

1. Start a new login session.
2. Export LIBPATH=/usr/ldap/lib
3. Start the slapd process.

5.5 Bulkload

The following information applies to the **bulkload** utility:

5.5.1 Reattempting a bulkload after a failure

If an attempt to load a database using bulkload fails and you decide to drop the database, before you can try bulkload again with a new database, you must do two things:

- Remove the **ldapimport** directory that is located in the default **temp** directory or the directory you specified using the LDAPIMPORT environment variable or using the bulkload **-L** option.
 - For UNIX platforms: `rm -f ldapimport`
 - For Windows platforms: `rd ldapimport`

- Delete the **bulkload_status** file from the `<ldap installation directory>\etc\` directory.
 - For UNIX platforms: `rm bulkload_status`
 - For Windows platforms: `del bulkload_status`

5.6 AIX specific information

The following information applies to the AIX operating system only:

5.6.1 Application Support on AIX for 64-bit Applications

The IBM Directory Server Version 4.1 C-API now has a 64-bit enabled library for building 64-bit LDAP applications. This library is named **libibmldap64n.a** and is located in directory `/usr/ldap/lib` with the soft link, `/usr/lib/libibmldap64.a -> /usr/ldap/lib/libibmldap64n.a` for the AIX 4.3.3 platform or in the directory `/usr/ldap/lib/aix5` with the soft link `/usr/lib/libibmldap64.a -> /usr/ldap/lib/aix5/libibmldap64n.a` for AIX 5L™ Version 5.1 or greater platform .

Two libraries are needed because AIX platforms use different 64-bit XCOFF formats for executables or object modules on AIX 4.3.3 and AIX 5L Version 5.1 platforms . An application built with an AIX 4.3.3 64-bit XCOFF format does not run on an AIX 5L Version 5.1 system. Likewise a 64-bit application built to run on an AIX 5L Version 5.1 system does not run on an AIX 4.3.3 system.

At this time, the CRAM-MD5 SASL plug-in is a separate dynamically loadable shared object for 32 and 64 bit LDAP applications. To correctly select and load the appropriate 64-bit module, the environmental variable **IBMLDAP_CONF** must be set to a location other than `/etc`. At this new location, you need to create a copy of the `/etc/ldap.conf` file and replace the following entry:

```
plugin sasl CRAM-MD5 ldap_plugin_sasl_cram-md5 ldap_plugin_init
```

with:

```
plugin sasl CRAM-MD5 ldap_plugin_sasl_cram-md5_64    ldap_plugin_init
```

Additional information for building 64-bit applications for AIX can be found in the documentation for VisualAge® C/C++ Professional for AIX Version 5.0.

Note: See the AIX `/usr/lpp/bos/README` for the latest information on 64-bit applications and support.

5.6.2 Adjusting user process resource limits for the IBM Directory Server

You might need to adjust the UNIX ulimit settings for the process running the IBM Directory Server (slapd). The "nofiles" (descriptors) setting limits the number of concurrent connections to the server, because each connection requires an open socket descriptor. If your clients receive a "DSA Busy" error message from the server, try increasing the nofiles limit. You can reset the limit with the **ulimit** command. For example, to set the limit to 32,000 use:

```
ulimit -n 32000
```

To view all of the current limits, use:

```
ulimit -a
```

Another limit to consider when configuring the IBM Directory Server is the memory limit. On AIX platforms, this setting limits the ability of the process to use physical memory. If your machine has at least 256 MB of memory, set the memory limit to 240 MB.

```
ulimit -m 240000
```

Set the ulimit for coredump (blocks) to a large enough value to ensure that a complete core file can be dumped in the event of a problem with the server. The AIX platform default setting, 2097151, in most cases is sufficient.

5.6.3 Netscape problem with AIX Maintenance Patch 50

If you used AIX Maintenance Patch 50 for AIX 4.3.3 to install the required patches to support Java JRE 1.3, the Netscape browser might not start. If you have a libpthreads or libc_r.a problem trying to start the Netscape browser on AIX 4.3.3, then try the following:

1. Enter:

```
cd /usr/netscape/communicator/lib433/
```
2. If there is a 'libc.a' file there, rename it to something else.
3. Make a link to the system libc.a:

```
ln -s /usr/lib/libc.a
```

5.6.4 gsk5ikm does not run

The gsk5ikm korn shell script on AIX platforms 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.

5.6.5 JavaScript™ errors when opening help from Netscape Communicator 4.51

Netscape Communicator 4.51 for AIX might cause JavaScript errors when opening IBM directory help files. To avoid these errors use Netscape Communicator Version 4.7 or higher.

5.6.6 Starting slapd at boot time on AIX

The configuration currently does not provide an option for starting the LDAP server at system boot time. However, this can be achieved by manually adding a line to inittab:

```
ldapd:2:once: /bin/slapd > /dev/console 2>&1 #autostart LDAP/DB2 Services
```

Note: This applies to all UNIX operating systems.

5.6.6.1 DBCS exceptions

For a IBM Directory Server created on an AIX system that has a double byte code set (DBCS) primary locale and has its database created in a local code page, the IBM Directory Server can be automatically started at boot time by adding the following statement:

```
ldap:2:once:/bin/slapd -f /etc/slapd32.conf >/dev/console 2>&1, to /etc/inittab
```

This is sufficient for most locales with exception of the DBCS locales where the IBM Directory Server has been configured in a local (Non-UTF8) code page. In this case, create an executable script with the following contents and appropriate line added to the /etc/inittab using the **mkkitab** command.

Create an executable slapd start script, (example /etc/rc.ldap) with the following contents:

```
#!/bin/ksh
export LANG=<Primary Locale>
export LC_ALL=<Primary Locale>
/bin/slapd -f /etc/slapd32.conf
```

Add an appropriate entry into /etc/inittab using the **mkkitab** command as root user:

```
mkkitab "ldap:2:once:<script name> >/dev/console 2>&1"
```

Note: If the **mksecldap** command has already been run the 'ldapd' entry might already exist in /etc/inittab. Therefore, the sample uses 'ldapd' **Ident.** and issue the command:

```
chitab "ldap:2:once:<script name> >/dev/console 2>&1"
```

5.6.7 A SIGILL 4 illegal instruction is issued when exiting the Directory Management Tool

This problem occurs if you exit from the Directory Management Tool on a machine that has the IBM Directory Server installed. This causes the creation of a core file and a javacore file that take up space in your directory. You can safely remove these files to restore the space in your directory.

To avoid this problem on a server machine you must launch the Directory Management Tool from a logged-in user other than **root**.

5.6.8 Locale setting for Simplified Chinese for GUI applications

For Simplified Chinese, you need to set the locale to Zh_CN for Graphical User Interface (GUI) application usages such as Server Administration.

For the Directory Management Tool and the **ldapxcfg** utility you need to issue the following commands in the session where these utilities are invoked:

```
export LANG=Zh_CN
export LC_ALL=Zh_CN
```

5.6.9 Web browser problem on double-byte languages

With double-byte languages on AIX platforms, the text for the buttons in the Server Administration utility are displayed incorrectly because of a known problem with the Netscape Web browser.

5.7 Windows specific information

The following information applies to the Windows NT and Windows 2000 operating systems:

5.7.1 Replication CLI error

If you have a master server configured to do replication during updates, you might see an error like the following in the slapd error log:

```
"[IBM][CLI Driver] CLI0157E Error opening a file.  SQLSTATE=S1507"
```

This problem can be resolved by adding the following stanza to the `\sqllib\db2cli.ini` file:

```
[COMMON]  
TempDir=x:\<your-directory>\
```

where `"x:\<your-directory>\"` specifies an existing directory on a drive that has space available. DB2 writes temporary files to this directory. The amount of space required depends on the size of the directory entries that you are adding or updating, but generally does require more space than the size of the largest entry you are updating. The trailing slash (`'\'`) is required.

5.7.2 Cannot access a file on a network drive

When backing up the directory database using Server Administration, if the (Lightweight Directory Interchange Format (LDIF) file provided is on a network drive at the server machine, the file path might not be found. This is because of the Web server running as a Windows NT service. It does not recognize that the network drive has been added after the Windows NT system startup.

5.7.3 Replication fails on a single processor MP machine

The Directory Server replication fails on a single processor MP machine which has a multiprocessor NT kernel installed and was originally configured with two or more processors.

5.7.4 Do not remove write permission from the SSL key database File

The slapd server does not start if it cannot open this file with both read and write permissions.

5.7.5 Reinstalling DB2 with a nondefault userid and password fails

The following information applies only to Windows NT and Windows 2000 operating systems.

If you have a version of DB2 that is earlier than 7.1 or want to upgrade to the 7.2 level that is included with the IBM Directory Server Version 4.1, you must first uninstall your existing version of DB2. Ensure that you also remove the `db2admin` userid because it is not removed by the uninstalling process.

5.7.6 Removing incompatible versions of DB2

If you have an incompatible level of DB2 existing on your machine, during the installation of the IBM Directory Server you are prompted to stop the installation process and remove the existing level of DB2. Rather than removing your version of DB2, try to upgrade it first.

To upgrade your level of DB2 follow the directions in *Upgrading to a new version of DB2 UDB*, located on the IBM Directory Server Web site (<http://www-4.ibm.com/software/network/directory/library>).

If you must remove your existing level of DB2 and install the level of DB2 included with the IBM IBM Directory Server Version 4.1, you must first back up your database before removing the existing copy of DB2, otherwise your data will be lost.

1. Save your data. Use the **db2ldif** utility to export the data into an ldif file.
2. If you are using the default database, remove the currently configured database by issuing the following command:

```
ldapucfg -d
```
3. Click **Start->Settings->Control Panel->Add/Remove Programs**.
4. Select IBM DB2 and click **Add/Remove**.
5. Follow the direction issued by the Uninstall Wizard.
6. Verify that the DB2 files and instance has been removed. If there are any remaining files, you must either rename them or remove them manually.
7. Start the IBM Directory Server Version 4.1 installation.
8. Restore your database. Use the **ldif2db** utility or the **bulkload** utility to import the data from the ldif file.

Note: The IBM Directory Server migration utility only migrates your schema and server configuration information to the 4.1 level of the IBM Directory Server. DB2 migration is a separate process.

5.8 Solaris specific information

The following information applies to the Solaris operating system only:

5.8.1 Kerberos authentication is not supported

In this release Kerberos authentication not supported for the Solaris platform. Consequently, although the Kerberos panel is displayed when Kerberos is selected under the Server Administration Security selection, none of the functions are available. Similarly, in the Server Administration Replication section the Kerberos buttons for authentication in the **Add a replica** and **Edit a replica** do not work.

5.8.2 Using Chinese BIG5 locale

To run the IBM Directory Server in the zh_TW.BIG5 locale on the Solaris Operating Environment Software™, you must set the following after configuring your database:

```
/export/home/1dapdb2/sq11ib/adm/db2set DB2CODEPAGE=950  
/export/home/1dapdb2/sq11ib/adm/db2set DB2COUNTRY=88
```

To view the following documentation for zh_TW.BIG5 locale, replace zh_TW.BIG5 with zh_TW in the path specification:

- Installation/Configuration Guide

- Directory Management Tool Guide
- C Programming Reference
- Server Plug-ins Reference

5.8.3 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
```

5.8.4 Traditional Chinese help files display in English

On Solaris 8, you need to change the language variable setting in the session where Directory Management Tool is invoked to **zh_TW**, not in the root **.profile** file.

5.8.5 Directory Management Tool help files do not display

If you are running the Directory Management Tool locally, the Directory Management Tool help files might not display. You need to enable client access control so that clients can connect from any host. Issue the following commands at the local machine console:

```
xhost + <hostname>
dmt
```

This applies to both Solaris 7 and Solaris 8 operating systems

5.8.6 Locales setting instructions for Server Administration and Directory Management Tool usages

On Solaris 8, for Group 1 languages (Brazilian Portuguese, French, German, Italian, and Spanish) and double-byte languages (Japanese, Korean, Simplified Chinese, and Traditional Chinese), different GUI applications require different locales in order for them to work correctly with the language that is set on the machine.

For Server Administration, use the following locales to invoke the Server Administration correctly.

Table 2.

Language	Locale
Brazilian Portuguese	pt_BR.ISO8859-1
French	fr_FR.ISO8859-1
German	de_DE.ISO8859-1
Italian	it_IT.ISO8859-1
Spanish	es_ES.ISO8859-1
Japanese	ja_JP.PCK
Korean	ko
Simplified Chinese	zh
Traditional Chinese	zh_TW.BIG5

For the Directory Management Tool, in the session where the Directory Management Tool is invoked, export the following locales to invoke the Directory Management Tool correctly in each language.

Table 3.

Language	Locale
Brazilian Portuguese	pt or pt_BR
French	fr
German	de or de_DE
Italian	it
Spanish	es

For double-byte languages, you must issue the following commands in the session where the Directory Management Tool is invoked:

Japanese

```
export LANG=ja_JP.PCK
export LC_ALL=ja_JP.PCK
```

Korean

```
export LANG=ko
export LC_ALL=ko
```

Simplified Chinese

```
export LANG=zh
export LC_ALL=zh
```

Traditional Chinese

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

5.9 Linux specific information

The following information applies to the Linux operating systems only:

5.9.1 Missing file when loading DB2 V7.1 on RedHat 7

Installing DB2 V7.1 requires a system library file called `libncurses.so.4` that is needed by the `db2setup` command. RedHat 7.0 has a later version of that file, but because `db2setup` requires version 4, you must do the following to create a symbolic link:

```
cd /usr/lib ln -sf libncurses.so libncurses.so.4
```

5.9.2 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.

5.9.3 Errors doing bulkload of sample.ldif (Red Hat 7.1 only)

If you do a bulkload on Red Hat 7.1, you receive the following error:

```
SQL2044N An error occurred while accessing a message queue. Reason code: "1".
```

To avoid this error, change the value in the `/proc/sys/kernel/msgmni` file from 16 to 50.

5.9.4 Bulkload failure on Linux platforms

If you are logged in as root, and you want to run a bulkload, make sure the `DB2INSTANCE` and `LD_LIBRARY_PATH` environment variables are not set. If any DB2 environment variables are set when you run bulkload, bulkload will fail.

5.9.5 Japanese help files display in English

When using the Directory Management Tool, you need to change the language variable setting in the session where Directory Management Tool is invoked, to `ja_JP`.

5.9.6 Removing one language package removes NLS directory

If you have more than one language package installed and you remove one of the packages, the entire `usr/ldap/nls` directory is also removed.

5.9.7 Support for Linux for S/390

This release supports Linux for S/390. SuSE Linux is supported with the 2.2.16 kernel, plus the 2.4 kernel. TurboLinux is supported with the 2.2.19 kernel.

5.10 HP-UX specific information

The following information applies to the HP-UX platform.

5.10.1 Installing the Java Virtual Machine

When you install the Java Virtual Machine using `swinstall`, you need to supply the full path to it as `/cdrom/java/rte_13102os11.depot`.

5.10.2 Installing DB2

You can install DB2 directly from the CD by going into the `udb72` subdirectory and issuing the `db2setup` command. You can also follow the DB2 installation information located at http://www.developer.ibm.com/library/data/install_HP-UX.html.

5.10.3 Installing

Follow the instructions in the *IBM Directory Server Version 4.1 Installation and Configuration for Multiplatform Guide*.

Note: `swinstall` does not automatically read the CD. You need to supply the full path to the install image. The path to the SSL enabled client-server package is `/cdrom/ldap41_us/hpux11_ibmldap41servers.depot`.

You can install the following packages:

non-SSL server/client
`hpux11_ibmldap41server.depot`

SSL server/client
`hpux11_ibmldap41servers.depot`

non-SSL client only
`hpux11_ibmldap41client.depot`

SSL client only
hpux11_ibmldap41clients.depot

5.10.4 Installing GSKit

GSKit is available from the gskit directory. Follow the instructions in the *IBM Directory Server Version 4.1 Installation and Configuration for Multiplatform Guide*.

5.10.5 After installing

After you have completed the installation process, you need to set the following environment variable:

```
NLSPATH = /usr/lib/ns1/%L/%N
```

5.11 General considerations for all platforms

The following items apply to the IBM Directory Server and are not platform specific.

5.11.1 Do not include DBCS characters in the administrator passwords

DBCS Characters in the Administrator Passwords are not supported.

5.11.2 Do not change DB2 table name or syntax length in schema files

After all DB2 tables are created with some data loaded to the server, changes made to attribute table names or maximum (syntax) length values do not cause the table that has been created to change. If there is no data in the attribute table, it is possible to modify the table name and attribute syntax size from Directory Management Tool after the IBM Directory Server is started. In this case, the database table is changed to the new size and name.

5.11.3 Moving ldif files across platforms

If db2ldif is used to create a file on a Windows NT machine, and the data is copied to AIX or Solaris platforms in binary using FTP, then each line ends with an extraneous carriage return character (Ctrl-M when viewed in an editor such as vi).

If the file is provided to ldif2db on UNIX, the utility loads only the first entry or none of the entries. This might occur when populating replicas on different platforms. To avoid the problem, copy the text file in ASCII mode.

6.10.4 DB2 column name restrictions

If a DB2 column name of a new user attribute in the schema configuration file causes a problem, a DB2 reserved word might have been picked. To resolve the problem, use a different name.

6.10.5 Server startup slow with GSKit when machine is mounted as a networked drive

The problem happens when GSKIT SSL is used and the Windows NT machine is mounted as a networked drive and the drive is in your path. The server takes an additional 3-7 minutes to start. The cause of the problem appears to be that the

server sends a QPathInfo SMB message and is getting an undefined error back. The server continues to try to send the QPathInfo message in a loop until it times out.

5.11.6 Server Administration fails with remote drives in path on the server machine

The problem is caused by remote drives being referenced in the PATH statement before local drives. The cause of the problem appears to be the inability of processes running as a SYSTEM service to properly access remote drives. The solution to this problem is to make sure that in the PATH statement the directories on local drives are specified before any directories that are located on remote drives.

5.11.7 Not enough storage in APP_CTL_HEAP heap

If you encounter the following error when using an extremely complex filter in a ldapsearch operation:

```
Error code -1 from odbc string:" SQLFetch "  
ldap_search: Operations error
```

and find this message from the database error log file

installation directory\tmp\cli.errors:

```
12/02/98 15:11:28 native retcode = -973; state = "57011";  
message = "[IBM][CLI Driver][DB2/NT] SQL0973N Not enough storage  
is available in the "APP_CTL_HEAP" heap to process the statement.  
SQLSTATE=57011: Virtual storage or database resource is not available.
```

Increase the database heap size needs from a command window (on Windows NT, from a DB2 command window by typing **db2cmd** first):

```
db2 update db cfg for databasename using APP_CTL_HEAP_SZ 256
```

where *databasename* is the database name for ldap. The default size is 64 (of 4k blocks).

5.11.8 Unable to restart the replication master server

If you have a problem with starting a replication master server on a Windows NT multiprocessor, look at the **cli.errors** and **slapd.errors** files in *installation path*/tmp directory.

If you find the following messages in **slapd_errors**:

```
Error code -1 from odbc string:" SQLFetch "  
Error code -1 from odbc string:" SQLGetData "
```

and in **cli.errors**:

```
native retcode = -973; state = "57011"; message = "[IBM][CLI Driver]  
[DB2/NT] SQL0973N Not enough storage is available in the "APP_CTL_HEAP"  
heap to process the statement. SQLSTATE=57011"  
native retcode = -99999; state = "24000"; message = "[IBM][CLI Driver]  
CLI0115E Invalid cursor state. SQLSTATE=24000"
```

The problem is that DB2 is running out of heap space. Fetch is returning a message about APP_CTL_HEAP_SZ being too small. This problem might be because a large number of updates (for example, 5,000 change entries) to be replicated to the replica servers, possibly after a replica server shutdown and restart followed by a master server shutdown and restart.

Increasing the APP_CTL_HEAP_SZ (for example from 64 to 256) solves this problem.

5.11.9 Replication errors with many entries loaded by **ldif2db** in master

If you are adding a large number of entries using **ldif2db**, and the entries are not replicated because of an error. If you find a log entry in file *installation directory*\tmp\cli.errors (on most UNIX systems, /tmp/cli.error and on Solaris /var/ldap/cli.error) about APP_CTL_HELP being too small, increase APP_CTL_HEAP_SZ from a command window (on Windows NT, from a DB2 command window by typing **db2cmd** first) to fix the problem:

```
db2 update db cfg for dbname using APP_CTL_HEAP_SZ 256
```

5.11.10 Configuration error codes

The configuration program might report error codes as a result of database configuration. The following are the error codes that might be reported and what they mean.

- 76 - The instance you specified does not exist.
Verify the instance that was input actually exists and retry.
- 84 - A database configuration error occurred.
Look in slapd.errors for more information.

5.11.11 Finding the product build date

These files on the following platforms contain the date of the product build:

- AIX platforms: /usr/ldap/readme/buildno.txt
- Windows platforms:
installation directory/web/readme/buildno.txt
- Solaris platforms: /opt/IBMldaps/readme/buildno.txt
- Linux platforms: /usr/ldap/web/readme/buildno.txt
- HP-UX platforms: /usr/IBMldap/web/readme/buildno.txt

5.11.12 LDIF files generated by **db2ldif** can not be loaded by **ldapadd**

The LDIF files generated by earlier (pre-v3.2) versions of **db2ldif** contains operational ACL attributes and can not be used by **ldapadd**. **ldapadd** does not recognize the old inherit-on-create operational attribute and so cannot be used in place of the **ldif2db** to load the data dumped from a V2 server. Use the **ldif2db** utility as described in the migration documentation.

5.11.13 Changing font size for **ldapxcfg** panels

If you are not satisfied with the font size of the **ldapxcfg** panels, you may change the default font size as follows:

- Change to the directory where LDAP was installed. For example, on AIX platforms:

```
cd /usr/ldap
```
- Change to the subdirectory **cd config**
- Edit the file **ldapguide.sgs**
- Change the "text-size" from 14 to a valid desired value (12 works well on some locales) and save the file.

This change should take effect the next time **ldapxcfg** is started.

5.11.14 On Server Administration in IE5, pressing Enter key takes user back one screen

In Internet Explorer 5, on some Server Administration screens with both "Back" and "Next" buttons, or "Back" and "Finish" buttons, users must click on the "Next" or "Finish" button to proceed to the following screen. If the user presses the Enter key on the keyboard, he is taken back one screen instead of forward and any input he entered on the screen is lost.

5.11.15 Usability: adding groups and roles from Server Administration

On the create group (and role) panels, there is a field marked **Relative Group DN** which appears in between the **suffix list** and the field for **Common Name**. This field should be filled in with the new DN except the suffix. For example, if the defined suffix is 'c=US'. The Full DN of the new entry is 'ou=Austin, o=IBM, c=US'. The **Relative Group DN** field should contain 'ou=Austin, o=IBM'. The suffix which is appended to this Relative DN is selected in the suffixes list just above this field.

Note: There may be only one suffixed defined, in which case there is not a list, just an entry.

5.10.16 Approximate matching not supported in double-byte languages

The IBM Directory Server does not support approximate matching for double-byte languages (Korean, Japanese, Chinese, and so forth). At this time this is a permanent restriction.

6.0 Web server notes

6.1 Microsoft® IIS Web server

The following information applies to the Microsoft IIS Web server:

6.1.1 Fail to reconfigure the Microsoft IIS Web server

The Microsoft Personal Web Manager does not always correctly update the registry for the MS IIS virtual roots. If IBM Directory Server is reinstalled to a different location and re-configured for MS IIS, but the `http://localhost/ldap` URL fails to work, remove the /ldap virtual root from the Microsoft Personal Web Manager by clicking the **Advanced** icon, selecting the /ldap virtual root and clicking **Remove**. After removing the LDAP virtual root, reconfigure IIS for LDAP again and then restart the IIS server.

6.2 IBM HTTP server

The following information applies to the IBM HTTP server:

6.2.1 Log on problem in secondary window

There is a problem with the Microsoft IE browser which appears to be a log on problem, but it is really a cookie problem. If you are using the secondary directory entry window to display an entry, and get the message "You are not logged on ..." when in fact you are logged on to the server in the primary IBM Directory Server window, the browser cookie has been lost. The only remedy to the problem is to close down all non-LDAP occurrences of the browser that might have set a cookie. About 5 seconds after doing so, reopen the secondary window and the log on problem should be gone.

6.2.2 Web server caching problem

A server caching problem might occur. Typically the problem shows up as extra text at the top of the second directory entry screen but other unexplained behavior, such as being unable to change the error log path, has been reported. To correct these problems, in the Web server configuration file, located in `ibmhttp path\conf\httpd.conf` comment out the lines starting with "Afpa". This includes:

- #AfpaEnable
- #AfpaCache on
- #AfpaLogFile "d:/ibmhttp/logs/afpalog" V-ECLF

6.3 Lotus® Domino™ server

The following information applies to the Lotus Domino server:

6.3.1 Unable to locate JS32.DLL problem

If you are going to be using SSL, add the Lotus Domino installation directory to the PATH environment variable.

7.0 Performance considerations

7.1 LDAP directory server

- Use the Directory Management Tool to improve search performance, by specifying "indexes" for all attributes which are to be searched.
- Use "optimizing" action whenever the database has been modified significantly. This action updates the statistics. Use it after the IBM Directory Server is initially populated. To perform the optimize action, from the Server Administration , select **Database-> DB2 optimize**.

See the *IBM Directory Server Version 4.1 Administration Guide* for additional information.

7.2 DB2

You might want to allocate as much as 75% of the machine memory to the DB2 database buffer pool. You can use the DB2 database system monitor to calculate the buffer pool hit ratio, which can help you tune your buffer pool for your specific environment. The "optimizing" action must be used after changing any db2 configuration parameters.

Refer to the DB2 Database Tuning Parameter section of the Installation and Configuration Guide. The DB2 Database System Monitor Guide and Reference is a good reference for overall db2 tuning information. For further information on tuning DB2, refer to the Web site:
<http://www.software.ibm.com/data/db2/library>.

See also the *IBM Directory Server Version 4.1 Performance Tuning Guide* for additional information.

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