

IBM Tivoli Directory Server Version 6.2

Administration and maintenance



This module focuses on IBM Tivoli® Directory Server Version 6.2 Administration and Maintenance.

Administration and maintenance

- Keep current with Tivoli Directory Server, DB2®, and GSKit recommended levels
- Maintain performance
- Perform regular backups

There are three things to remember when administrating and maintaining your environment. First, stay current with the Tivoli Directory Server, DB2, and GSKit patches. Second, maintain your performance by regularly running runstats and indexing attributes. And, as always, perform regular backups in case of catastrophic failure.

Administration and maintenance

- Stay current with Tivoli Directory Server fix packs and co-requisite product fixes
- Recommended fixes:
<http://www-01.ibm.com/support/docview.wss?rs=767&uid=swg27009778>
- The recommended levels by release are available and include the latest recommendations for GSKit and DB2

You can find the latest recommended fix levels for Tivoli Directory Server and co-requisite product fixes in the Recommended Fixes document. This document has the latest recommended patch levels for Tivoli Directory Server, GSKit, and DB2.

Recommended fixes for Tivoli Directory Server (LDAP)

Product documentation

Abstract

A comprehensive list of recommended, generally available (GA) fixes for IBM® Tivoli® Directory Server releases.

Tables are organized by version in the order they were released.





Content

Recommended fixes table of contents:

- 
- ↓ [Version 6.2](#)
 - ↓ [Version 6.1](#)
 - ↓ [Version 6.0](#)

Here is what you see when you visit the recommended fixes site. Under content, find the series of links for each release. After you click the link to the version you need, a table is displayed with details about the latest fixes for the selected release. The table also has fix details for the DB2 and GSKit versions that you are looking for and any exceptions.

Administration and maintenance

Version 6.2			
Fix	Level	Released	Comments
 Fixpack 1	6.2.0.3	8 APR 2009	Readme
Other optional V6.1 fixes		Released	Comments
 DB/2 9.5 Fix Pack 3a (except for Solaris, the latest tested level is DB2 v9.5 FP3 for Solaris)		06 JAN 2009	ITDS lies on top of DB/2 and was upgraded to the latest tested DB/2 Fixpak. Please follow post installation steps after DB/2 patch install.
DB/2 9.1 FP 6 (except for Solaris, the latest supported level is DB/2 9.1 FP5 see technote: Do not use DB2 9.1 FP6 with ITDS)		14 OCT 2008	
 GSKIT 7.0.4.20		n/a	All GSKIT releases can be downloaded from this site. You will need to be a registered user of IBM.COM to access. If you have not registered, you can do so here .
Additional information			
 For a complete listing of fixes for version 6.2, see the latest Readme			

As you can see on the slide, there is an exception for the Solaris platform because of a known issue. Next, apply a Tivoli Directory Server fix pack, a DB2 fix pack, and upgrade the GSKit version.

Administration and maintenance

The fix pack Technote shows the current fixes included and provides an abstract.

IBM Tivoli Directory Server, Version 6.2.0-TIV-ITDS-FP0001

Downloadable files

Abstract

Fix pack 1 for IBM Tivoli Directory Server 6.2

Download Description


APARs from 6.2.0-TIV-ITDS-FP0001 (6.2.0.3 / 5.0003)

APAR IO10324 (CMVC 106346)
bulkload/ldif2db fails if attr value length is > 4096 in a line

After you click the link to the version 6.2 fix pack 1, you see the version and fix pack numbers. All of the APAR abstracts added to this fix pack are also listed.

Administration and maintenance

Scroll to the bottom of the Web page to access the download links for the fix pack and readme. Select either the FTP or DD (Download Director) option for your platform.




URL	LANGUAGE	SIZE(Bytes)
6.2.0-TIV-ITDS-FP0001.README	US English	468186

Download package

[What is DD?](#)

Download	RELEASE DATE	LANGUAGE	SIZE (Bytes)	Download Options	
6.2.0-TIV-ITDS-AIX-FP0001.tar	4/9/2009	Language Independent	262901760	FTP	DD
6.2.0-TIV-ITDS-HPUXIA64-FP0001.tar	4/9/2009	Language Independent	349614080	FTP	DD
6.2.0-TIV-ITDS-Linux32-FP0001.tar	4/9/2009	Language Independent	168171520	FTP	DD
6.2.0-TIV-ITDS-LinuxX64-FP0001.tar	4/9/2009	Language Independent	168488960	FTP	DD



Scroll to the bottom of the page to view a table that lists the fix pack links per platform and a link to the readme.

This link is very important. The readme contains a description of all of the cumulative fixes. It also includes installation instructions and other important information.

Administration and maintenance

The Readme contains the following information:

- A description of all the cumulative fixes that are included and the APAR abstracts
- Version information
- Tested platforms
- Installation instructions for both the Tivoli Directory Server packages and deployment of the latest war file for the Web Administration tool

In addition to a cumulative APAR history, the readme contains information about: the latest tested platforms and combinations, the installation instructions for the Tivoli Directory Server fix level, the instructions for deploying the latest WAR file into the eWAS, instructions for verifying the installation, and instructions for uninstalling.

Applying the Tivoli Directory Server fix pack

- Stop the ITDS server instance
- Stop the Administration server
- Stop the Web admin

```
==> idsslapd -l ldapdb2 -k
```

```
GLPSRV176I Terminated directory server instance 'ldapdb2' normally.
```

```
==> idmdiradm -l ldapdb2 -k
```

```
GLPADM034I Stopped Admin server instance: 'ldapdb2'.
```

```
==> /opt/IBM/ldap/V6.2/appsrv/profiles/TDSWebAdminProfile/bin/stopServer.sh server1
```

```
ADMU0116I: Tool information is being logged in file
```

```
    /opt/IBM/ldap/V6.2/appsrv/profiles/TDSWebAdminProfile/logs/server1/stopServer.log
```

```
ADMU0128I: Starting tool with the TDSWebAdminProfile profile
```

```
ADMU3100I: Reading configuration for server: server1
```

```
ADMU3201I: Server stop request issued. Waiting for stop status.
```

```
ADMU4000I: Server server1 stop completed.
```

The instance name, ldapdb2, is used in the following examples. To confirm the name of the instance configured in your environment, issue an `idsilist -a` command.

Next, install the Tivoli Directory Server fix pack.

Stop the server and the administrative server using the commands shown on the slide.

Then, stop the Web Administration tool by going into

`appsrv/profiles/TDSWebAdminProfile/bin` and issue the `stopServer.sh server1` command.

You can confirm that server1 has stopped by viewing the output messages.

Applying the Tivoli Directory Server fix pack

```
==> ls
6.2.0-TIV-ITDS-AIX-FP0001.tar
==> tar -xf 6.2.0-TIV-ITDS-AIX-FP0001.tar
==> cd 6.2.0-TIV-ITDS-AIX-FP0001
==> ls
idsinstall images  whitepages
```

Now, download the fix level by using either the download director or ftp. After the download is complete, copy the file to the system where you are installing the fix pack. Extract the tar file by using the tar -xf command. A directory with the same name will be created. In this example, the directory is 6.2.0-TIV-ITDS-AIX-FP0001.

In that directory are three listings: idsinstall, images, and whitepages.

Applying the Tivoli Directory Server fix pack

==> ./idsinstall -u -f

```
Updating package=idsldap.cltbase62 to version=06.02.0000.0003
Updating package=idsldap.msg62.en_US to version=06.02.0000.0003
Updating package=idsldap.clt32bit62 to version=06.02.0000.0003
Updating package=idsldap.clt_max_crypto32bit62 to version=06.02.0000.0003
Updating package=idsldap.clt64bit62 to version=06.02.0000.0003
Updating package=idsldap.clt_max_crypto64bit62 to version=06.02.0000.0003
Updating package=idsldap.cltjava62 to version=06.02.0000.0003
Updating package=idsldap.srvbase64bit62 to version=06.02.0000.0003
Updating package=idsldap.srv_max_cryptobase64bit62 to version=06.02.0000.0003
Updating package=idsldap.srvproxy64bit62 to version=06.02.0000.0003
Updating package=idsldap.srv64bit62 to version=06.02.0000.0003
Updating package=idsldap.webadmin62 to version=06.02.0000.0003
Updating package=idsldap.webadmin_max_crypto62 to version=06.02.0000.0003
All packages were installed successfully!
See the log file: /tmp/idsinstall_04-15-09_14-00-49.log for more details
```

To install the fix pack, use the `idsinstall` script. Issue a `./idsinstall` command with `-u` and `-f` flags. The fix pack updates all of the installed Tivoli Directory Server packages in your environment to the most current level. If for any reason there is a failure, it is listed in the installation log, which is displayed with the output of the command.

Deploying the new WAR file

```
==> cd /opt/IBM/ldap/V6.2/idstools
==> ./deploy_IDSWebApp
...
/opt/IBM/ldap/V6.2/appsrv/profiles/TDSWebAdminProfile/bin/startServer.sh server1
ADMU0116I: Tool information is being logged in file
        /opt/IBM/ldap/V6.2/appsrv/profiles/TDSWebAdminProfile/logs/server1/startServer.log
ADMU0128I: Starting tool with the TDSWebAdminProfile profile
ADMU3100I: Reading configuration for server: server1
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server server1 open for e-business; process id is 413732
```

This slide shows how to deploy the WAR file.

This step is sometimes overlooked when installing fixes for Tivoli Directory Server, but it is an important step. It updates the Web Admin tool to the latest fix level being applied to the components.

Every time a fix pack is installed, the latest WAR file is placed in the idstools directory. Change directories the idstools directory of the TDS install path and issue the `./deploy_IDSWebApp` script.

This command is the same one that was originally used to deploy the WAR file. If you chose a custom installation path, you need to specify that path with this command. To view the parameters, issue the command with a `-?` or look into the online documentation for an example. After all the messages have finished outputting, you see a new process ID has been assigned and is running.

Confirming that the new war file has been applied

```
==> cd /opt/IBM/Idap/V6.2/idstools
==> ./deploy_IDSWebApp -v
/opt/IBM/Idap/V6.2/idstools/deploy_IDSWebApp:
  Command Version: 01.15
  Command Date: 08/26/2008
/opt/IBM/Idap/V6.2/appsrv/profiles/TDSWebAdminProfile/installedApps/DefaultNode/IDSWebApp.war.ear/IDSWebApp.war:
  <app-version>5.0003</app-version>
  <build-date>Thu 03/05/2009</build-date>
You can compare against the version information in the Fixpack Readme or the Fixes by Version technote:
http://www-01.ibm.com/support/docview.wss?rs=767&uid=swg21252238
-----
README
-----
Date: April 8, 2009
Fix: 6.2.0-TIV-ITDS-FP0001
VRMF: 6.2.0.3
Webadmin: 5.0003
```

To confirm that the new WAR file has been applied, go into idstools and issue the same script as earlier, specifying a -v for version. The program outputs an application version and build date. You can confirm the version and build date by checking the fix pack readme or the VRMF document link in the Recommended Fixes document.

Downloading DB2 fix packs

DB2 Version 9.5 fix packs & client downloads for AIX -- (DB2 64-bit)

[Downloadable files](#) | [Update](#) | [Fix Pack](#)

Abstract

Fix pack downloads for DB2® Version 9.5 for AIX® (64-bit).

Content

64-bit DB2 Products for AIX®™ Operating Systems - All fix packs and client code for DB2 9.5

Note: Users with Internet Explorer please review this [flash](#) document for FTP download.

Choose other platform Fix Packs and Clients

- AIX -- (DB2 64-bit)

Go

Fix Pack releases available from this page:



[3b](#) | [3a](#) | [3](#) | [2a](#) | [2](#) | [1](#)

In this step, you are reaching the DB2 fix packs from the link in the Recommended Fixes document. Install the latest recommended level, fix pack 3a, by selecting it from the list and then selecting the platform.

Downloading DB2 fix packs

3a	V9.5 Fix Pack 3a for AIX5 (64 bit)	Note: Flash! IBM response to V9.5 HIPER APARs .	
	DB2 Connect Personal Edition		
	Language Independent	↓	FTP
	DB2 National Language Package		
	Language Independent	↓	FTP
	DB2 Query Patroller		
	Language Independent	↓	FTP
	DB2 Server Fix Pack Enterprise Server Edition Workgroup Server Edition Express Edition Personal Edition DB2 Connect Server		
	Language Independent	↓	FTP
	DB2 Spatial Extender		
	Language Independent	↓	FTP
	DB2 Universal Fix Pack		

PTF number: U823474
 Build level: s081210
 Prerequisite: V9.5 GA
 Signature: 9.5.0.3a
 Release Date: 06 Jan 2009

Fix List (APARs): [html](#) | [text](#)
[System Prerequisites](#)

[Readmes \(html\)](#)

[Release Notes \(html\)](#)

[Fix Pack Summary](#)

When you select fix pack version 3a, you are directed to a table that is lower in the document. When you select the package for the DB2 fix pack, you have the option to download the readme as well.

Following the DB2 fix pack post installation steps is critical. You must complete the post installation steps to start the server after a DB2 fix pack installation.

Applying DB2 fix packs

<http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/topic/com.ibm.db2.luw.qb.server.doc/doc/t0024956.html>

```
==> ls
v9.5fp3a_aix64_server.tar.gz
==> gunzip v9.5fp3a_aix64_server.tar.gz
==> tar -xf v9.5fp3a_aix64_server.tar
==> ls
server          v9.5fp3a_aix64_server.tar
==> cd server
==> ls
db2      db2_install  db2setup  installFixPack
db2_deinstall db2prereqcheck doc
==> ./installFixPack -b /opt/IBM/db2/V9.5
```

where:
-b Specifies the path where the DB2 install path.

Next are the post installation steps for DB2.

First, download and extract fix pack version 3a and extract the file. Next, go into the server directory and enter an ls command.

You have several options. Because you are updating an existing installation, use the installFixpack command, and enter a -b command to specify the base installation path. Some applications only support a certain level of DB2. Check with the application documentation or support to determine the latest levels supported.

If you are unsure of your current DB2v9 installation path, issue the /usr/local/bin/db2ls command on UNIX® platforms to confirm. The db2ls command is not available on Windows®.

Applying DB2 fix packs

```
==> ./installFixPack -b /opt/IBM/db2/V9.5
```

DBI1017I installFixPack is updating the DB2 product(s) installed in location /opt/IBM/db2/V9.5.

DB2 installation is being initialized.

Total number of tasks to be performed: 41

Total estimated time for all tasks to be performed: 1731

Task #1 start

Description: Stopping DB2 Fault Monitor

Estimated time 10 second(s)

Task #1 end

Task #2 start

Description: Preparing the system

Estimated time 120 second(s)

Task #2 end

...

When you issue the `installFixpack` command, several messages similar to the ones in the DB2 installation are displayed, such as tasks solicited and estimated time to completion.

Applying DB2 fix packs

...

Task #41 start

Description: Updating the db2ls link

Estimated time 1 second(s)

Task #41 end

Task #42 start

Description: Updating existing DB2 instances

Estimated time 60 second(s)

Task #42 end

The execution completed successfully.

For more information see the DB2 installation log at

"/tmp/installFixPack.log.417902"

When the installation is complete, review the installation log to check for any errors.

Post DB2 fix pack installation

<http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/topic/com.ibm.db2.luw.qb.server.doc/doc/t0024995.html>

1. Identify the instances associated with this installation:
Issue <db2 install home>/instance/db2ilist

2. Update instances to use the new DB2 level:

For each instance, issue the command:

```
<db2 install home>/ instance/db2iupdt iname
```

where **iname** represents the instance name and **DB2DIR** represents the location where the DB2 copy is installed

```
root@l2aix /opt/IBM/db2/V9.5/instance
==> ./db2ilist
ldapdb2
==> ./db2iupdt ldapdb2
DB11070I Program db2iupdt completed successfully.
```

Next are the post installation steps for the DB2 fix pack.

These steps are critical. If you do not perform them, your server cannot start or connect to the database.

First, identify the instances associated with the installation. Go into the DB2 install home, CD to the instance directory, and issue a db2ilist command.

Second, update the instances to use the new DB2 level. For each instance, issue the command db2iupdt and then the instance name.

An example is shown. In this installation of DB2, you have only one instance associated with this installation, which is ldapdb2.

By issuing the db2iupdt command, you can specify that instance, which completed successfully. You can see the successful completion message as shown at the bottom of the slide.

Post DB2 fix pack installation

3. Update the system catalog objects in your databases to support the fix pack.

For each instance in the DB2 copy where you applied the fix pack, perform the following actions:

1. Log in as the instance owner
2. For each database, issue the following command:

```
db2updv95 -d dbname
```

where *dbname* represents the name of the database

```
==> su - ldapdb2
$ pwd
/home/ldapdb2/sqllib/bin
$ ./db2updv95 -d ldapdb2
```

Update the system catalog objects in your databases to support the fix pack.

For each instance in the DB2 copy where you applied the fix pack, perform the following actions:

Log in as the instance owner.

For each database, issue the db2updv95 command with the -d flag and database name.

If you have a change log database configured, that database will need these steps performed as well.

Post DB2 fix pack installation

DB2 Service Tools

I B M

db2updv95

This tool is a service utility designed to update a DB2 Version 9.5 database to the current fix pack level.

DB2 Universal Database™ Version 9.5, 5622-044 (c) Copyright IBM Corp. 2007

Licensed Material - Program Property of IBM

IBM DATABASE 2 Database update to current fix pack tool

db2updv95 completed successfully for database 'ldapdb2'.

The tool displays some messages. When the installation of the fix pack is complete, the completed successfully message is displayed.

Post DB2 fix pack installation

4. To bind the bind files, perform the following commands once for each database:

```
db2 terminate
db2 CONNECT TO dbname
db2 BIND path/db2schema.bnd BLOCKING ALL GRANT PUBLIC
SQLERROR CONTINUE
db2 BIND path/@db2ubind.lst BLOCKING ALL GRANT PUBLIC ACTION
ADD
db2 BIND path/@db2cli.lst BLOCKING ALL GRANT PUBLIC ACTION
ADD
db2 terminate
```

where *dbname* represents the name of a database to which the files must be bound and where *path* is the full path name of the directory where the bind files are located

Example: *INSTHOME*/sqlib/bnd where *INSTHOME* represents the home directory of the DB2 instance. db2ubind.lst and db2cli.lst contain lists of required bind files used by DB2 database products

Packages that are already bound return an SQL0719N error, which is expected

The fourth step is to bind the bind files, which requires performing a series of commands. Enter a DB2 terminate command, and a db2 CONNECT TO database name command. It is necessary to bind to the schema files and to bind to the bind files, then to terminate.

The DB2 instance home is represented by /home/ldapdb2 in these examples.

Post DB2 fix pack installation

```
==> su - ldapdb2
```

```
$ db2 terminate
```

```
$ db2 connect to ldapdb2
```

```
Database Connection Information
```

```
Database server      = DB2/AIX64 9.5.3
```

```
SQL authorization ID = LDAPDB2
```

```
Local database alias = LDAPDB2
```

```
$ db2 BIND /home/ldapdb2/sqllib/bnd/db2schema.bnd  
BLOCKING ALL GRANT PUBLIC SQLERROR CONTINUE
```

```
LINE  MESSAGES FOR db2schema.bnd
```

```
-----  
SQL0061W  The binder is in progress.
```

```
SQL0091N  Binding was ended with "0" errors and "0" warnings.
```

To terminate, issue the DB2 terminate command, then connect to the database. Next, issue the db2 BIND commands.

Specify the path to the db2schema.bnd, which is located in the DB2 instance home/sqllib/bnd directory. Binding to the schema files should complete successfully.

Post DB2 fix pack installation

```
$ db2 BIND /home/ldapdb2/sqllib/bnd/@db2ubind.lst BLOCKING  
ALL GRANT PUBLIC ACTION ADD
```

****Note this command may generate some errors but they can usually be safely ignored.**

```
$ db2 BIND /home/ldapdb2/sqllib/bnd/@db2cli.lst BLOCKING ALL  
GRANT PUBLIC ACTION ADD
```

```
LINE   MESSAGES FOR db2cli.lst
```

```
-----  
SQL0061W The binder is in progress.
```

```
SQL0091N Binding was ended with "0" errors and "0" warnings.
```

```
$ db2 terminate
```

```
DB20000I The TERMINATE command completed successfully.
```

```
$ exit
```

The second DB2 BIND is to bind to the bind files.

This command might generate some errors that can be safely ignored. The next command, db2 BIND to the db2cli.lst, completes as well.


Messages similar to those on the slide are displayed. Look for a binding ending with “0” errors, “0” warnings. Then, issue a db2 terminate command and an exit command. This concludes the post installation steps.

Note that the DB2 instance home is represented by /home/ldapdb2 in these examples.

Download GSKit patches

<http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/topic/com.ibm.db2.luw.qb.server.doc/doc/t0024995.html>

Tivoli GSKit & MQSecure Patches


Returning visitors	Not registered?
IBM ID: (usually e-mail address)* <input type="text"/> → Forgot your IBM ID? → Get an IBM ID Password* <input type="password"/> → Forgot your password?  Sign in	<p>If you do not have a universal IBM user ID, please register here, then return to sign in for this offering.</p> <p>To find out more about the benefits of having an IBM Registration ID, visit the IBM ID Help and FAQ.</p>

Next is the GSKit upgrade.

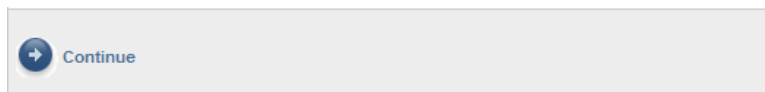
The link at the top of the slide shows where you can download GSKit patches. You must have an IBM ID to log in. If you do not have an IBM ID, you can register for one.

Apply GSKit fixes

Select the GSKit package from the list

	IBM Global Security Toolkit (GSKit V7.0.4.20) Version 7.0.4.20 Languages: All Lang per ESD/PA Media	All OS per ESD/PA Media Pks	download
---	---	--------------------------------	----------



Scroll to the bottom of the page and click **Continue**



After you log in, scroll through the packages until you find the recommended level. In this example, the level is 7.0.4.20. Select the package level and click Continue.

Apply GSKit fixes

Find the operating system and click the **Download now** buttons for both packages

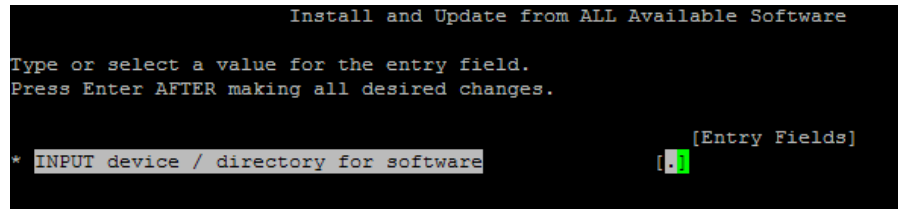
AIX	
IBM Global Security Kit (GSKit V7.0.4.20) for AIX 32-bit gskta.rte (10mb)	 Download now
IBM Global Security Kit (GSKit V7.0.4.20) for AIX 64-bit gksa.rte (9mb)	 Download now

Find the correct operating system and click the Download Now buttons for both packages. This updates gskta.rte and gksa.rte.

IBM is working to provide Java™ packages for these updates. After they become available, you can find them on the site.

Apply GSKit fixes

```
==> ls
gksa.rte gskta.rte
==> smitty install_all
Enter "." to indicate the current directory and hit Enter.
```



```
Install and Update from ALL Available Software

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software [Entry Fields]
[.]
```

On this slide, you see that the gskta.rte and gksa.rte files are copied to the system. Use the smitty install_all command to upgrade those packages.

Apply GSKit fixes

```

Install and Update from ALL Available Software

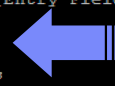
Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software
* SOFTWARE to install
PREVIEW only? (install operation will NOT occur)
COMMIT software updates?
SAVE replaced files?
AUTOMATICALLY install requisite software?
EXTEND file systems if space needed?
OVERWRITE same or newer versions?
VERIFY install and check file sizes?
DETAILED output?
Process multiple volumes?
ACCEPT new license agreements?
Preview new LICENSE agreements?

WPAR Management
  Perform Operation in Global Environment
  Perform Operation on Detached WPARs
    Detached WPAR Names
  Remount Installation Device in WPARs
  Alternate WPAR Installation Device

```

[Entry Fields]



The menu is the same one that is used to natively install the Tivoli Directory Server packages.

Use the AIX® system management interface tool (SMIT) to select and update the GSKit packages. Note that this is the same install method that is used when natively installing the Tivoli Directory Server on AIX.

Apply GSKit fixes

In the **Software to Install** field, select **F4** to list the packages. Select each package using the F7 key and press Enter.

```
SOFTWARE to install

Move cursor to desired item and press F7. Use arrow keys to scroll.
ONE OR MORE items can be selected.
Press Enter AFTER making all selections.

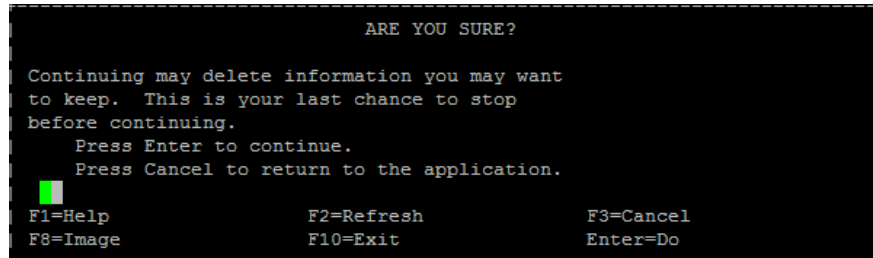
> gksa                                     ALL
+ 7.0.4.20 AIX Certificate and SSL Base Runtime ACME Toolkit

> gskta                                     ALL
+ 7.0.4.20 AIX Certificate and SSL Base Runtime ACME Toolkit
```

Use the F4 option to list the packages. Then use F7 to select the packages.

Apply GSKit fixes

Confirm your selection and press Enter to continue



Confirm the installation of these packages by pressing Enter. When installation completes, the command message OK is displayed, showing that both packages have been installed successfully.

Apply GSKit fixes

When SMIT finishes, the Command Status window indicates **OK** to confirm that the packages were installed successfully

```
COMMAND STATUS
Command: OK          stdout: yes          stderr: no
Before command completion, additional instructions may appear below.
[TOP]
geninstall -I "a -cgNqWx -J" -Z -d . -f File 2>&1
File:
I:gksa.rte          7.0.4.20
I:gskta.rte          7.0.4.20
```

Now, the installed Tivoli Directory Server packages are updated, the latest WAR file is deployed, and DB2 has been successfully upgraded along with the GSKit packages. Start the server and make sure that it is functioning correctly.

Start the server

You have just applied the latest recommended Tivoli Directory Server Fix pack, DB2 Fix pack and GSKit patches. You are now ready to start the server.

```
==> idsslapd -l ldapdb2 -n
```

```
GLPSRV041I Server starting.
```

```
GLPCTL113I Largest core file size creation limit for the process (in bytes): '-1'(Soft limit) and '-1'(Hard limit).
```

```
...
```

```
GLPCOM024I The extended Operation plugin is successfully loaded from liblog.a.
```

```
GLPCOM024I The extended Operation plugin is successfully loaded from libidsfget.a.
```

```
GLPSRV180I Pass-through authentication is disabled.
```

```
GLPCOM003I Non-SSL port initialized to 389.
```

You can confirm the server is running by issuing the following search command:

```
==> idslapsearch -p 389 -b " " -s base objectclass=* | grep -i ibm-slapdisconfigurationmode
```

```
ibm-slapdisconfigurationmode=FALSE
```

To start the Tivoli Directory Server server, issue the `idsslapd` command with the `-l` instance name and the `-n` flags. In this example, the Tivoli Directory Server instance name is `ldapdb2`. Messages are displayed as the server starts. Notice that the non-SSL port initialized to 389 and produced no errors. At this point, you can again confirm that the server is running by issuing an `ldapsearch` command.

Issue a base scope `idslapsearch` command with a `-b " " objectclass=*` and `grep` for “is in configuration only”. That check returns false, confirming that the server is running in normal operation mode.

Note in this example that you specified `-n` with the startup command, which indicates to not start the server in configuration only mode if an error is encountered. If you had not specified a `-n` and an error had been encountered, the server would not have started and gone into configuration only mode. If this happens, the search would indicate true indicating that the server is running in configuration only mode.

Maintain performance

- Performance Tuning and Capacity Planning Guide
<http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/topic/com.ibm.IBMDS.doc/tuning.htm>
- Perform regular runstats
 - If you have Tivoli Identity Manager or Tivoli Access Manager in the environment, use the runstats they provide
 - If you have a stand-alone Tivoli Directory Server, use the provided idsrstats
 - Latest IBM Tivoli Identity Manager tuning scripts
<http://www-01.ibm.com/support/docview.wss?rs=644&uid=swg27011444>
 - Latest Tivoli Access Manager tuning scripts
<http://www-01.ibm.com/support/docview.wss?rs=638&uid=swg24011930>
- Indexes
<http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/topic/com.ibm.IBMDS.doc/tuning06.htm#indexes>

To maintain optimum performance in your environment, refer to “Performance, Tuning and Capacity Planning Guide” that is provided with the Tivoli Directory Server release.

Performing regular runstats is always recommended. If you are using either Tivoli Identity Manager or Tivoli Access Manager, use the runstats script provided with that product respectively. The latest tuning scripts for IBM Tivoli Identity Manager and Tivoli Access Manager are available at the links provided here.

If you are running a stand-alone IBM Tivoli Directory Server, perform runstats using the Tivoli Directory Server provided idsrstats.

Indexing can also improve your performance. For additional information about indexing, please refer to the “Performance, Tuning and Capacity Planning Guide”.

Maintain performance

- Performance Tuning and Capacity Planning Guide

<http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/topic/com.ibm.IBMDS.doc/tuning.htm>

- **idsperftune**: Utilities to increase directory server performance

<http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/topic/com.ibm.IBMDS.doc/commandref06.htm#idsperftune>

- **idsdbmaint**: Tools to perform DB2 maintenance on the database associated with a directory server instance

<http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/topic/com.ibm.IBMDS.doc/commandref06.htm#idsdbmaint>

- Performance Data Collection ("MustGather")

<http://www-01.ibm.com/support/docview.wss?rs=767&uid=swg21270498>

- developerWorks® article on resolving slow queries

<http://www.ibm.com/developerworks/tivoli/library/t-tds-perf/>

As new applications are introduced into the environment, you might need to set new indexes.

Use the **idsperftune** utility to help you maintain the performance of your environment by tuning various caches, DB2 buffer pools, and other DB2 parameters. Run this tool multiple times to get adequate settings based on your workload.

The **idsdbmaint** utility enables users to perform DB2 directory instance maintenance. It also allows users to do index reorganization and DB2 row compression on tables, and DB2 table space conversion. This saves space and increases performance.

A component-level MustGather document for performance issues by IBM can help you address performance problems. This document shows step-by-step items that need to be collected to diagnose performance issues.

In addition, Developer Works has produced an article that describes how to resolve slow queries. The article highlights many tools that are provided in the IBM Tivoli Identity Manager tuning guide that can be used with the Tivoli Directory Server Audit log to analyze and resolve performance issues.

Performance tuning is an ongoing and iterative process.

Backing up your environment

- Directory Server backup and restore
http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/topic/com.ibm.IBMDS.doc/admin_gd21.htm#backup_restore
- Tivoli Directory Server provides two mechanisms for backing up and restoring complete directory server instance information: basic and enhanced. Access using **idsdbback** and **idsdbrestore** commands and Idapexop utility with the extended operations option – op_backuprestore.
- To back up the DB2 data but not Tivoli Directory Server-specific configurations such as the schema, use idsldif2db and idsdb2ldif commands.

The Tivoli Directory Server provides two mechanisms, basic and enhanced, for backing up and restoring complete directory server instance information. These mechanisms back up not only the directory server instance data on the DB2 database, but also the associated configuration and schema files for the directory server instance.

You can access these mechanisms using the **idsdbback** and **idsdbrestore** commands and the **Idapexop -op_backuprestore** utility.

As an alternative to the Tivoli Directory Server backup and restore mechanisms, you can use two other methods to back up DB2 data without backing up Tivoli Directory Server-specific configurations such as schema. These two methods are the **idsldif2db** and **idsdb2ldif** commands. If you use the **idsldif2db** and **idsdb2ldif** commands be sure to manually copy off your schema, **ibmslapddir.ksf** and configuration files.

Remember that performing regular backups of your environment is critical.

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