



IBM DB2® Universal Database™
DB2 Problem Determination Tutorial Series

Installation Problem Determination

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Installation Problem Determination

About this tutorial

Tutorial objectives

The objective of this tutorial is to guide you through examples on how to do problem determination (PD) related to the following areas:

- DB2 installation,
- FixPak upgrades,
- Instance creation or update, and
- Problems starting DB2 due to license issues

Upon the completion of this tutorial, you will have the basics PD skills to troubleshoot problems in the above areas.

Audience and assumption

This tutorial is intended for those who are already familiar with the use of DB2 and who want to focus on problem determination techniques where installation errors are concerned. The prerequisite is that you should already have a basic knowledge of the DB2 installation process.

Pre-tutorial setup

In order to follow some of the examples in this tutorial, you should have access to either a UNIX (AIX or Linux) or Windows system, along with the DB2 V7.2 installation code.

Tutorial conventions used

The following conventions are used throughout this tutorial:

- When a tool or utility is first mentioned it will be shown in bold text.
- All command statements and their outputs will be shown in a monospace font.
- Some examples will show specific command options which may change over time, which will always be documented in DB2 UDB documentation.

About the author

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DB2 installation problem determination

Overview

This section will cover different techniques on how to troubleshoot installation problems in both UNIX and Windows environments. You will also have the opportunity to use these techniques in your test environment as you go through the section.

Confirm the installation prerequisites are met

First of all, you will need to identify whether the problem is really with the DB2 installer. Before installing DB2, you should check to make sure that your environment meets the minimum hardware and software requirements as described in the *Quick Beginnings* books. This will eliminate any installation failure due to certain criteria not met in your environment.

If your system does not meet the minimum requirements as described in the *Quick Beginnings* books, then the DB2 installer could fail. For example, a failure could occur for a simple reason such as not having enough disk space, not having the prerequisite software installed, or kernel parameters not being set according to minimum requirements.

Once you have eliminated the environment or non-DB2 factors, you can focus on the techniques available through the DB2 installer.

Troubleshooting installation problems in UNIX®

In a UNIX (AIX or Linux) environment, you could install DB2 using either the **db2setup** or **db2_install**. It is important for you to know which method was used for installation when a problem occurs. Since most issues are related to db2setup, this section focuses only on the db2setup.

By default, db2setup generates the following diagnostic log files in /tmp:

```
-rw-r--r--  1 root      system      22659 Nov 15 02:44 db2setup.log
```

If there is a problem during the installation, then you need to review the db2setup.log file and look for the first reported error. For example,

```
restore: 0511-138 Cannot write to file
./usr/lpp/db2_07_01/lib/libdb2e.a.
Restore : There is not enough space in the file system.
0503-700 inurest:  Error in restoring files
0503-037 inurest:  Failure on system call to execute command
/usr/sbin/restbyname -S -xYAqf/cdroms/db2//db2_07_01.db2 -Z
/tmp/inutmp_ZmF7a/sorted.al.
/usr/lib/inst1/instal: There is not enough space in the file system.
```

From the above example, you can see the first error message is 0511-138 Cannot write to file ./usr/lpp/db2_07_01/lib/libdb2e.a. followed by There is not enough space in the file system. This could be an indication that the /usr directory on the target file system could be full. You should check how much free space is available in the /usr directory by using **df -k**. Here is an example of the output:

```
Filesystem      1024-blocks      Free %Used      Iused %Iused Mounted on
/dev/hd4         16384            3612   78%       2194   27% /
/dev/hd2        1556480          69232  96%       17684   5% /usr
/dev/hd9var      32768            9220  72%        586    8% /var
```

If the problem is not obvious, then you will need to run db2setup with the -d option. The -d option will run the DB2 installation in debug mode, which will provide you with additional diagnostic information.

Using the same example, when you run db2setup with -d, you will notice an additional diagnostic file called db2setup.trc created inside the /tmp directory. For example:

```
-rw-r--r--  1 root      system    224261 Nov 15 03:30 db2setup.trc
```

You should examine the db2setup.trc file for additional debug information. Here is an example of the db2setup.log:

```
| | | | | +- EXIT from <DB2IShell::Peek()>
| | | | | +- ENTRY into <DB2IShell::GetExecuteOutput()>
| | | | | | executeCode = (int) '1'
| | | | | | output = (str) 'Restoring files, please wait.
249 files restored.'
| | | | | +- EXIT from <DB2IShell::GetExecuteOutput()>
| | | | | +- ENTRY into <DB2IMessage::SetMessage(,)>
| | | | | | mcode = (int) '16795003'
| | | | | +- EXIT from <DB2IMessage::SetMessage(,)>
.
.
.
| | | | | +- ENTRY into <DB2IShell::Peek()>
| | | | | | wrc = (int) '0'
| | | | | +- EXIT from <DB2IShell::Peek()>
| | | | | +- ENTRY into <DB2IShell::GetExecuteOutput()>
| | | | | | executeCode = (int) '1'
| | | | | | output = (str) '250 files restored.
restore: 0511-138 Cannot write to file
./usr/lpp/db2_07_01/lib/libdb2.a.
Restore : There is not enough space in the file system.
0503-700 inurest: Error in restoring files
0503-037 inurest: Failure on system call to execute command
/usr/sbin/restbyname -S -xYAqf/cdrom/db2//db2_07_01.client -Z /
tmp/inutmpxooKya/sorted.al.'
| | | | | +- EXIT from <DB2IShell::GetExecuteOutput()>
| | | | | +- ENTRY into <DB2IMessage::SetMessage(,)>
```

As you can see from above, the 249th file was written to the target directory without any error, but when the installer got to the 250th file, it failed with the error message 0511-138 Cannot write to file ./usr/lpp/db2_07_01/lib/libdb2.a. You should check to see whether the /usr file system is out of space.

Once you have identified the problem, you could correct it and proceed with the installation. This time it might complete successfully. However, there are cases where db2setup might not continue even after the problem has been corrected due to an earlier failure.

For example, you could get a message saying DBI1507E An instance of the DB2 Installer is already started.

```
+--- Error -----+
|
| DBI1507E An instance of the DB2 Installer is already started.
|
| Explanation: An error was detected when attempting to start up
| the DB2 Installer. Another instance of the DB2 Installer is still
| running.
|
| User Response: Terminate all instances of the DB2 Installer and
| restart the install process. If the problem persists, remove the
| lock file /tmp/.db2inst.lck and restart the DB2 Installer.
|
|                               [   OK   ]
+-----+-----+
```

When this happens, you need to terminate the previous DB2 installer and restart the installation process. If the problem persists, check inside the /tmp directory and look for the lock file called .db2inst.lck. For example:

```
-rw-r--r--  1 root    system      0 Nov 15 02:38 .db2inst.lck
```

If the .db2inst.lck file exists, delete it before restarting db2setup.

It is also worth noting that there might be more than one db2setup.log* diagnostic log in /tmp. It is important for you to review the correct one.

Troubleshooting installation problems in Windows®

In the Windows environment, the DB2 installer is called **setup**. By default, it generates a diagnostic log called db2.log inside the *Install drive*:\DB2LOG directory where *Install drive* is the target drive letter where DB2 is installed. First, you should examine the db2.log and identify the installation problem. Here is an example of the db2.log output:

```
-----  
Setup Log File Opened 2002-02-26 09:22:12  
-----  
Version: 7, Release: 1, Modification: 0, Service Level: 0  
Querying the system...  
Windows NT Version:4.0  
Using Explorer Shell.  
The logged on user ("DOMAIN01\domuser6") does not have the necessary "User  
Rights" to validate the username DOMAIN01\domuser6, or any other usernames.  
The following "User Rights" are required:  
"Act as part of the operating system",  
"Create a token object",  
"Increase quotas",  
"Replace a process level token".  
This message will not be shown again when validating usernames.  
Setup will continue with the install.  
Products to Install:
```

Since the db2.log file does not get overwritten each time setup runs, you need to identify the timestamp when the setup problem occurs. You could see from the above example that the domain user ID called domuser6, which is part of the domain DOMAIN01, does not have the proper user rights to perform the installation setup.

Now, you need to verify whether the domain user domuser6 is part of the Local Administrators group. If not, you should add domuser6 to Local Administrators group. You also need to check that the DB2 registry variable called DB2_GRP_LOOKUP is set to LOCAL. This allows group enumeration to be done locally.

If the error message in the db2.log file is not obvious, for example:

```
-----  
Setup Log File Opened 10-20-2002 13:22:22  
-----  
Querying the system...  
Windows NT Version:5.0  
Using Explorer Shell.  
Failed to query DB2 path from the registry.
```

then you should run setup with the `_trace` option to generate an installation trace file called db2.trc inside the \DB2LOG directory. Here is an example of the db2.log:

```
-----  
Setup Log File Opened 10-30-2002 13:08:20  
-----  
A debug tracing has been started. Trace file C:\DB2LOG\db2.trc has been  
created.  
Querying the system...
```


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Windows NT Version:5.0
Using Explorer Shell.

Note the db2.trc file location, C:\DB2LOG\db2.trc. Now you need to examine the db2.trc file. Here is an example of the db2.trc file:

```
[9:39:3:750] =>SetupInstall
[9:39:3:750] =>SetupScreen
[9:39:3:781] <=SetupScreen
[9:39:3:781] =>CheckRequirements
[9:39:3:781] =>IsIBMAntiVirusRunning
[9:39:3:796] <=IsIBMAntiVirusRunning
[9:39:3:796] <=CheckRequirements
[9:39:3:812] =>CheckDB2Requirements
[9:39:3:812] =>GetDB2PathFromReg
[9:39:3:812] <=GetDB2PathFromReg
[9:39:3:812] <=CheckDB2Requirements
.
.
.
.
[9:40:24:796] =>RequiredSpace
[9:40:24:875] =>ConvertToMbString
[9:40:24:875] <=ConvertToMbString
[9:40:24:875] <=RequiredSpace
[9:40:24:890] <=CustomDialog
[9:40:24:890] =>DeselectItems
[9:40:24:953] <=DeselectItems
[9:40:25:46] =>InitInstanceList
```

From the above example, the symbol => indicates the entering of the function, and the symbol <= indicates the exiting of the function. Based on this information, you should notice that the installation is still executing inside the function called InitInstanceList when the error occurs. At this point, you should contact IBM support and provide them with the diagnostic data for further analysis.

Diagnostic data specific to DB2 UDB EEE

To avoid unnecessary problems with DB2 UDB EEE installation, refer to the pre-installation checklists in the *DB2 UDB Enterprise - Extended Edition for UNIX Quick Beginnings* or the *DB2 UDB Enterprise - Extended Edition for Windows Quick Beginnings* books prior to installing DB2 UDB EEE.

In the event of a DB2 UDB EEE installation problem, collect the /tmp/db2setup.log and /tmp/db2setup.trc files (in the UNIX environment) or the \DB2LOG\db2.log and \DB2LOG\db2.trc files (in the Windows environment).

You should also make sure that the same DB2 code level is installed in the DB2 UDB EEE environment to avoid any post-installation problem.

DB2 instance creation and update problem determination

Overview

In this section, you will learn how to debug problems with instance creation and update.

In UNIX (AIX, Linux, etc) environments, you must run the **db2iupdt** script after a FixPak upgrade. For Windows, db2iupdt is shipped only with DB2 UDB EEE and is required only for the partitioned database environment. Since most instance creation and update problems happen in the UNIX environment, this section focuses only on the UNIX platform.

To approach this type of problem, you have to determine whether the instance creation problem is during the installation or after DB2 is already installed. If the problem is during installation using db2setup, you need to review the db2setup.log file along with the db2icrt.log. Otherwise, if the problem is during the execution of the **db2icrt**, you only need to troubleshoot using the db2icrt.log file.

Troubleshooting instance creation problems in UNIX

If the problem with instance occurs during DB2 installation, then you need to review the /tmp/db2setup.log file and identify the first error message. For example, you might find the error message DBI1082E The file or directory /home/db2inst1/sqlllib already exists, as in the following db2setup.log:

```
Log started at Thu Nov 21 21:33:18 EST 2002

The log file can be found in /tmp/db2setup.log.

Command to be executed:

/usr/lpp/db2_07_01/instance/db2icrt -a SERVER -u db2fenc1 db2inst1

Output log of the above command:
DBI1082E The file or directory /home/db2inst1/sqlllib already exists.

Explanation: A file or directory that the command needs to
create already exists.

User Response: Examine the specified file or directory. If the
file or directory exists as a result of a previous successful
completion of the command then no action is required. Otherwise,
you will need to either rename or remove the specified file or
directory before trying the command again.
```

Or, you could also check the db2icrt log file in /tmp/db2icrt.log.pid. For example:

```
DBI1082E The file or directory /home/db2inst1/sqlllib already exists.

Explanation: A file or directory that the command needs to
create already exists.
```

User Response: Examine the specified file or directory. If the file or directory exists as a result of a previous successful completion of the command then no action is required. Otherwise, you will need to either rename or remove the specified file or directory before trying the command again.

DBI1079I Output is saved in the log file /tmp/db2icrt.log.21778.

First, you need to verify whether db2inst1 is already created as an instance by previous version of DB2. If not, then you could remove the /home/db2inst1/sqllib directory. Once you have removed the directory, you could try to create the instance with db2setup again. If the instance user ID and group ID have already been created, you can use the db2icrt script to create the instance. For example,

```
/usr/lpp/db2_07_01/instance/db2icrt -a SERVER -u db2fenc1 db2inst1
```

Note: the db2icrt will fail if neither the instance user ID nor the group ID exists on the UNIX system.

Troubleshooting instance update problems in UNIX

To identify an instance update issue, you should first check the diagnostic log file /tmp/db2iupdt.log.pid. For example, you might try to update the instance called db2inst1 with the **db2iupdt** script by running:

```
/db2iupdt -u db2fenc1 db2inst1
```

But, it fails with DBI1122E Instance db2inst1 cannot be updated. Now, you should check the /tmp/db2iupdt.log. Here is an example of db2iupdt.log:

```
DBI1122E Instance db2inst1 cannot be updated.
```

```
Explanation: An attempt was made to update an instance. This instance cannot be updated because:
```

- o This "db2iupdt" command cannot be used to update this instance.
- o The instance is still active.

```
User Response: Ensure that you are using the correct version of the "db2iupdt" command. Also ensure that there are no db2 processes running at the instance. Retry the command.
```

```
DBI1079I Output is saved in the log file /tmp/db2iupdt.log.22322.
```

```
Explanation: All processed and failed operations have been saved into this log file.
```

```
User Response: Do not modify this file in any way. This file is for IBM Technical Support reference.
```

Based on the above message, there are two possible causes of the instance update problem. To debug this further, you could run `db2iupdt` with the `-d` debug option and the UNIX redirect option. For example:

```
db2iupdt -d -u db2fenc1 db2inst1 2>&1 | tee db2icrt.debug.out
```

The output file is called `db2icrt.debug.out`. Open the log file and search for the text string `DBI1122E`. Here is an example of the `db2icrt.debug.out` file:

```
+ /usr/bin/echo ## exit function chk_version
+ /usr/bin/tee -a /tmp/db2iupdt.log.21886
## exit function chk_version
+ return 199
DB2INSTVER=199
DB2IPRDDIR=UNKNOWN
+ [ 199 -ne 71 ]
+ display_msg /usr/lpp/db2_07_01/msg/en_US/db2install.cat 122 DBI1122E
Instance %s cannot be updated.\n db2inst1
+ set -x
+ unset catname msgid deftmsg msgstr warnmsg infomsg
catname=/usr/lpp/db2_07_01/msg/en_US/db2install.cat
msgid=122
deftmsg=DBI1122E Instance %s cannot be updated.\n
warnmsg=1
infomsg=1
```

From the above output, the `chk_version()` function returns 199. Now you should check the scripts inside the `/usr/lpp/db2_07_01/instance` directory. There are several places where the `chk_version()` function is called. In particular, the `chk_version()` called inside the `db2iutil` file at line 3078 which returns the above message. You should open the `db2iutil` file and go to line 3078 as indicated below:

```
# Get which version of DB2 in use by this instance
chk_version ${INSTNAME?}
DB2INSTVER=$? # DB2 version for the instance INSTNAME
DB2IPRDDIR=${db2proddir?} # Product dir of DB2 used by this instance
```

The comment suggests that the "DB2 version of the instance" and the "Product dir of DB2 used" do not match, so this means the instance was not created with the correct version of DB2; therefore, the instance update failed.

To resolve this issue, follow these steps:

1. Confirm that `db2iupdt` is running from the correct install directory that is `/usr/lpp/db2_07_01/instance` for V7.
2. Issue `/usr/lpp/db2_07_01/instance/db2ilist` to confirm the instance is defined under V7.
3. Re-install the right level of DB2 if it is missing.
4. As a last resort, drop the instance with `db2idrop` and recreate it with `db2icrt`.

For DB2 UDB EEE, you could issue `db2iupdt` from any physical node, but you need to ensure that each physical node has the same level of DB2 code installed. Otherwise, you will run into problems

later on. If db2iupdt fails in a DB2 UDB EEE environment, isolate which node is having the problem. That is, the node where you executed the db2iupdt. Once you have identified the node, check the /tmp/db2iupdt.log.file. You could run db2iupdt on a different physical node to see if the problem persists or not. You could also run db2iupdt with the -d debug option on the node where db2iupdt failed and compare with the one that ran successfully.

DB2 FixPak upgrade problem determination

Overview

In this section, you will learn how to debug problems with FixPak upgrades on both UNIX and Windows platforms. You will be able to use these debug techniques in your test environment as you go through this section.

Confirm that instructions in the FixPak readme file were followed

Since most of FixPak upgrade problems can be avoided by simply following the steps as outlined in the FixPak readme, you should review it prior to doing the FixPak upgrade.

As a general rule, you need to do the following things before installing a FixPak:

- Check to make sure there is enough disk space on your system.
- Stop all database instances, including DAS as well as the license daemon.
- For UNIX, clean up any DB2 processes and IPC resources left behind with **ipclean** and **ipcrm**.
- For AIX only, unload the DB2 libraries with **/usr/sbin/slibclean** as root.

If you are downloading the FixPak image from the official IBM FTP site, make sure that the size of the downloaded image is the same as the one on the FTP site. If they are different, transfer it again or order the FixPak image on CD from IBM.

If the FixPak upgrade problem persists, then you will need to use the techniques described in the next few panels.

Troubleshooting FixPak upgrade problems in UNIX

Starting with FixPak 6, for AIX you can still use either SMIT or **installFixPak** to start the FixPak installation process. By default, **installFixPak** will commit all of the updated filesets. If you do not wish to commit the updates, then you should issue **installFixPak** with the **-a** option to indicate that you want to apply rather than commit the FixPak.

Also beginning with FixPak 6, for Solaris and other UNIX platforms, the old scripts called **installallpatch** (Solaris) and **installpatch** (other UNIX) have also been replaced by **installFixPak**, which is the recommended method for FixPak installation.

As an example of a FixPak update problem, you could receive the following message from the console after you issue the **installFixPak** with the **-a** option:

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```
0503-030 inusave: There is not enough space on the system to continue.
/usr/lib/instl/update: There is not enough space in the file system.
```

```
0503-464 installp: The installation has FAILED for the "usr" part
of the following filesets:
db2_07_01.adt.rte 7.1.0.68
```

```
installp: Cleaning up software for:
db2_07_01.adt.rte 7.1.0.68
```

```
Finished processing all filesets. (Total time: 5 mins 2 secs).
```

```
+-----+
+-----+ Summaries: +-----+
+-----+
+-----+
```

Installation Summary

Name	Level	Part	Event	Result
db2_07_01.xlic	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.tspf	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.spb	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.repl	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.pext	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.ldap	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.jdbc	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.gs	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.dj	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.db2.rte	7.1.0.68	USR	APPLY	FAILED
db2_07_01.db2.rte	7.1.0.68	USR	CLEANUP	SUCCESS
db2_07_01.db2.engn	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.das	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.cs.sna	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.cs.rte	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.cs.ipx	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.cs.drda	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.conn	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.cnvucs	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.client	7.1.0.68	USR	APPLY	FAILED
db2_07_01.client	7.1.0.68	USR	CLEANUP	SUCCESS
db2_07_01.cj	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.cdb	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.adt.samples	7.1.0.68	USR	APPLY	SUCCESS
db2_07_01.adt.rte	7.1.0.68	USR	APPLY	FAILED
db2_07_01.adt.rte	7.1.0.68	USR	CLEANUP	SUCCESS

The message indicates the db2_07_01.db2.rte, db2_07_01.client, and db2_07_01.adt.rte filesets failed to update to the 7.1.0.68 level due to file-system-full condition. Once you have added more space to the /usr file system, then you can reissue the `installFixPak -a`. **Note:** only the failed filesets are installed.

If there is any problem during the FixPak upgrade, then you will need to identify the error in the diagnostic file. For AIX, the diagnostic log is called `smit.log`. For Solaris and HP-UX, it is called `db2installallpatch.log` and is located under the /tmp directory, for example `/tmp/db2installallpatch.log.7.1.0.60`.

For DB2 UDB EEE, you must apply the same DB2 code on all physical nodes during a FixPak upgrade; otherwise, you will run into problems later on.

Troubleshooting FixPak upgrade problems in Windows

FixPak installation problems can occur because DB2 is still running. Verify that all DB2 services and processes have been terminated. For example, you could receive the following message during the FixPak install in the \DB2LOG\db2.log:

```
-----  
Setup Log File Opened 2002-11-22 01:31:56  
-----  
Version: 7, Release: 2, Modification: 7, Service Level: WR21311  
Querying the system...  
Windows 2000 Version  
Using Explorer Shell.  
DB2 is currently running and locked by the following process(es):  
  
db2jds.exe (PID=620)  
db2licd.exe (PID=660)  
db2sec.exe (PID=672)  
IWH2LOG.EXE (PID=1184)  
db2syscs.exe (PID=1344)  
db2syscs.exe (PID=1364)  
db2syscs.exe (PID=1396)  
IWH2SERV.EXE (PID=1372)  
  
Click No to exit setup. (Recommended)
```

To check whether any of the DB2 services are still running, issue the command `net start | find /i "db2"`. If the result is empty, then all DB2 services are stopped. Otherwise, you need to select **Control Panel -> Administrative Tools -> Services** and terminate all the DB2-related services.

To make sure that no DB2 processes are still running, you could use the Windows Task Manager and terminate any processes accordingly. If any of the DB2 DLLs are still loaded and used by other processes, then you could use a third-party tool to identify processes that are still using any of the DB2 DLLs.

Again, for DB2 UDB EEE you must apply the same DB2 code on all physical nodes during a FixPak upgrade; otherwise, you will run into problems later on.

If the FixPak installation is falling due to other problems, then you will need to run setup with the `_trace` option to generate additional diagnostic information before contacting IBM support.

DB2 licensing problem determination

Overview

This section covers different techniques that can be used to troubleshoot DB2 licensing-related issues. If you like, you can try these in your test environment.

To identify whether you have a license problem, you should check the SQL code returned by DB2. The SQL code has corresponding text message associated with it, so you will see whether the problem is related to DB2 license or not.

Before you start debugging the license problem, you should have a better understanding of it, so you should ask yourself these questions:

1. What is the SQL error code? Check the *Message Reference* guide for further explanation and take the corrective action.
2. Is the license for a new installation? If this is a new installation, then you will need to verify that the DB2 license key matches with the version and product of DB2.
3. If this is not a new installation, has something else changed in the system? For example, perhaps there has been a change to the operating system (OS) or to file permissions, or perhaps a DB2 FixPak upgrade was installed.
4. Did you install the permanent DB2 license key? This is important because your DB2 server could be running in "Try-and-Buy" mode if the permanent license key has not been installed, and you cannot start DB2 because the "Try-and-Buy" mode has expired.

For example, let's say you receive the following SQL code

```
SQL8007W  There are "90" day(s) left in the evaluation period for the product "DB2
Enterprise Edition".  For evaluation license terms and conditions, refer to the
IBM Evaluation Agreement in the EVALUATE.AGR file, located in the following
directory: "C:\PROGRA~1\SQLLIB". SQL1026N  The database manager is already active.
```

According to the *Message Reference*, SQL8007W indicates, "A valid license key has not been installed for this product. The evaluation period will expire after the specified number of days."

In this example, you would first make sure that you have installed the license key for "DB2 Enterprise Edition." You could use the license management tool to do so. (The license management tool is discussed next.) If the license key is not installed, then you need to install it. Second, find out if there is any change made to the OS. Note: finding out what has changed will give you a better idea as to what could have caused the DB2 licensing error.

How to troubleshoot licensing problems

In order to verify that you have a valid DB2 license, use the license management tool called **db2licm**. To find out how to use it, run `db2licm` with the `-h` option to display help information.

Run `db2licm` on your test system to list all the products with license information. If it does not return the corresponding license information for the product, then this could mean either there is no valid DB2 license key installed or there is a potential permission problem with the `nodelock` file.

To confirm whether a valid DB2 license is installed, compare the license key inside the `nodelock` file with the license key file (for example, `db2entr.lic` is the license key file for DB2 UDB EE) that comes with the product CD. Here are the different locations for the `nodelock` file based on the platforms:

- AIX - `/var/ifor`
- HP-UX, Linux and Solaris - `/var/lum`
- Windows - `\Program Files\SQLLIB\license`

Inside the `nodelock` file, comments line start with `#`, and the license key is usually preceded and followed by a comment line. For example,

```
#  
<You will see the actual license key here.>  
#[admin_comment] "IBM Toronto Lab" "DB2 Enterprise Edition" "2145844800" "0" "1"
```

If the license key is not yet installed, use `db2licm` to install it. If the license key does match the one on the product CD, check whether there is a permission problem with the `nodelock` file.

In UNIX, you should verify the file permission for the `nodelock` is set to `rw-r--r--` and owned by root. In AIX, the `/usr/lib/netls/conf/nodelock` should be a symbolic link to `/var/ifor/nodelock`. If the link is missing, then you will need to create it with **ln**.

If the license problem persists after you have tried to correct it, then you will need to provide IBM with the additional information as described in the next three panels within this section.

Collect diagnostic data in UNIX

In UNIX, you need to collect the following diagnostic information:

1. Take a DB2 trace of the license error along with the `db2diag.log` at `diaglevel 4`. If you are not familiar with the DB2 trace function, then you should look at the "DB2 Problem Determination Tools" tutorial in this series of tutorials.

2. Issue `db2licm -l` as root. For example:

```
adm56125@cf01n001:/usr/lpp/db2_07_01/adm ./db2licm -l
Product Name                = "DB2 Enterprise - Extended Edition"
Product Password            = "DB2UDBEEE"
Version Information         = "7.2"
Expiry Date                 = "Permanent"
Concurrent Connect User Policy = "Disabled"
Registered Connect User Policy = "Disabled"
Enforcement Policy         = "Soft Stop"
Number of processors        = "1"
Number of licensed processors = "1"
Annotation                  = ""
Other information           = ""
```

3. Issue `db2licm -l` as the instance owner. Confirm that the outputs of this step and the previous step are the same. If they are different, then look for a file permission problem for the `nodlock` file. For example:

```
Product Name                = "DB2 Enterprise - Extended Edition"
Product Password            = "DB2UDBEEE"
Version Information         = "7.2"
Expiry Date                 = "02/19/03 (Try & Buy)"
Concurrent Connect User Policy = "Disabled"
Registered Connect User Policy = "Disabled"
Enforcement Policy         = "Soft Stop"
Number of processors        = "1"
Number of licensed processors = "1"
Annotation                  = ""
Other information           = ""
```

4. List the DB2 products installed:
 - For AIX, issue `lspp -al`
 - For HP-UX, issue `/usr/sbin/swlist`
 - For Linux, issue `rpm -qa`
 - For Solaris, issue `pkginfo -l;`
5. Take a copy of the `nodlock` file
 - For AIX, the file is called `/var/ibm/nodlock`
 - For HP-UX, Linux and Solaris, the file is called `/var/lum/nodlock`

Collect diagnostic data in Windows

In Windows, you need to collect the following diagnostic data:

1. Take a DB2 trace of the license along with `db2diag.log` as `diaglevel 4`. For more information on how to take a DB2 trace, refer to the "DB2 Problem Determination Tools" tutorial in this series.

2. Issue `db2licm -l`. For example:

```
Product Name           = "DB2 Enterprise Edition"  
Product Password      = "DB2UDBEE"  
Version Information    = "7.2"  
Expiry Date           = "02/19/2003 (Try & Buy)"  
Concurrent Connect User Policy = "Disabled"  
Registered Connect User Policy = "Disabled"  
Enforcement Policy    = "Soft Stop"  
Number of processors  = "1"  
Number of licensed processors = "1"  
Annotation            = ""  
Other information     = ""
```

3. Take a copy of the `\DB2LOG\db2.log` file.
4. Take a copy of the `\Program Files\SQLLIB\license\nodelock` file.

Diagnostic data specific to EEE

In DB2 UDB EEE on both UNIX and Windows, you will need to provide the following diagnostic data when reporting problems to IBM:

1. DB2 trace should be taken from the node where the license problem is occurring.
2. For UNIX, issue `db2licm -l` as root and as the instance owner. For Windows, issue `db2licm -l` as the instance ID.
3. List the DB2 products installed on both the good and the bad systems.
4. Take a copy of the nodelock file from the good and the bad systems.

Summary

What you should now know

Now that you have completed this tutorial, you will have the basic PD skills on how to debug DB2 problems in the areas of installation, FixPak upgrade, instance creation and update as well as licensing.

For more information

For more information regard to troubleshooting DB2 in general, you can refer to the V7.2 documentation called *IBM DB2 Universal Database Troubleshooting Guide Version 7* or other DB2 Problem Determination tutorials in different areas which are also available online.