

## Quick Beginnings for DB2 Servers

**Note**

Before using this information and the product it supports, read the general information under Appendix C, "Notices," on page 261.

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## **Part 1. Installing DB2 Servers**



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# Chapter 1. Before you install

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## DB2 servers and IBM data server clients

A DB2<sup>®</sup> database system consists of a DB2 server and IBM<sup>®</sup> data server clients.

A DB2 server is a relational database management system (RDBMS) that delivers data to its IBM data server clients. You need to install a DB2 server if you plan to use a database that resides on this computer. For more information about DB2 servers, go to <http://www-306.ibm.com/software/data/db2/9/editions.html>

An IBM data server client is an application that allows you to run commands and SQL statements against a DB2 server, connect to a remote DB2 server and access its databases. The following types of IBM data server clients are available:

- IBM Data Server Client
- IBM Data Server Runtime Client
- IBM Data Server Driver for ODBC, CLI, and .NET

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## DB2 installation methods

This topic provides information about DB2 installation methods. The following table shows the installation methods that are available by operating system.

*Table 1. Installation method by operating system.*

Installation method	Windows <sup>®</sup>	Linux <sup>™</sup> or UNIX <sup>®</sup>
DB2 Setup wizard	Yes	Yes
Response file installation	Yes	Yes
db2_install command	No	Yes
Payload file deployment	No	Yes

The following list describes DB2 installation methods.

### DB2 Setup wizard

The DB2 Setup wizard is a GUI installer available on Linux, UNIX, and Windows operating systems. The DB2 Setup wizard provides an easy-to-use interface for installing DB2 products and for performing initial setup and configuration tasks.

The DB2 Setup wizard can also create DB2 instances and response files that can be used to duplicate this installation on other machines.

**Note:** For non-root installations on Linux and UNIX platforms, only one DB2 instance can exist. The DB2 Setup wizard automatically creates the non-root instance.

On Linux and UNIX platforms, an X server is required to display the DB2 Setup wizard.

### Response file installation

A response file is a text file that contains setup and configuration values. The file is read by the DB2 setup program and the installation is performed according to the values that have been specified.

A response file installation is also referred to as a silent installation.

One benefit of this installation method is that you can create a response file without performing an installation. This feature can be useful to capture the options required to install the DB2 product. The response file can be used at a later time to install the DB2 product according to the exact options you specified.

Another advantage to response files is that they provide access to parameters that cannot be set using the DB2 Setup wizard.

On Linux and UNIX operating systems, if you embed the DB2 installation image in your own application, it is possible for your application to receive installation progress information and prompts from the installer in computer-readable form. This behavior is controlled by the INTERACTIVE response file keyword.

There are a number of ways to create a response file:

#### **Using the response file generator (Windows platforms)**

On Windows, you can use the response file generator to create a response file that replicates an existing installation. For example, you might install an IBM data server client, fully configure the client, then generate a response file to replicate the installation and configuration of the client to other computers.

#### **Using the DB2 Setup wizard**

The DB2 Setup wizard can create a response file based on the selections you make as you proceed through the DB2 Setup wizard. Your selections are recorded in a response file that you can save to a location on your system. If you select a partitioned database installation, two response files will be generated, one for the instance-owning computer and one for participating computers.

You can export a client or server profile with the `db2cfexp` command to save your client or server configuration, and then easily import the profile using the `db2cfimp` command. A client or server profile exported with the `db2cfexp` command can also be imported during a response file installation using the `CLIENT_IMPORT_PROFILE` keyword.

You should export the client or server profile after performing the installation and cataloging any data sources.

#### **Customizing the sample response files that are provided for each DB2 product**

An alternative to using the response file generator or the DB2 Setup wizard to create a response file is to manually modify a sample response file. Sample response files are provided on the DB2 product DVD. The sample response files provide details about all the valid keywords for each product.

#### **db2\_install command (Linux and UNIX platforms only)**

The `db2_install` command installs *all* components for the DB2 product you specify with the English interface support. You can select additional languages to support with the `-L` parameter. You cannot select or deselect components.

Although the `db2_install` command installs all components for the DB2 product you specify, it does not perform user and group creation, instance creation, or configuration. This method of installation might be preferred in

cases where configuration is to be done after installation. If you would rather configure your DB2 product while installing it, consider using the DB2 Setup wizard.

On Linux and UNIX operating systems, if you embed the DB2 installation image in your own application, it is possible for your application to receive installation progress information and prompts from the installer in computer-readable form.

This installation methods requires manual configuration after the product files are deployed.

#### **Payload file deployment (Linux and UNIX only)**

This method is an advanced installation method that is not recommended for most users. It requires the user to physically install payload files. A payload file is a compressed tarball that contains all of the files and metadata for an installable component.

This installation methods requires manual configuration after the product files are deployed.

**Note:** DB2 product installations are no longer operating system packages on Linux and UNIX platforms. As a result, you can no longer use operating system commands for installation. Any existing scripts that you use to interface and query with DB2 installations will need to change.

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## **Supported DB2 interface languages**

DB2 language support for DB2 interfaces can be categorized into server group languages and client group languages. Server group languages will translate most messages, help, and DB2 graphical interface elements. Client group languages will translate the IBM Data Server Runtime Client component, which will include most messages and certain help documentation.

Server group languages include: Brazilian Portuguese, Czech, Danish, Finnish, French, German, Italian, Japanese, Korean, Norwegian, Polish, Russian, Simplified Chinese, Spanish, Swedish, and Traditional Chinese.

Client group languages include: Arabic, Bulgarian, Croatian, Dutch, Greek, Hebrew, Hungarian, Portuguese, Romanian, Slovak, Slovenian, and Turkish.

Do not confuse languages supported by the DB2 product with languages supported by the DB2 interface. Languages supported by the DB2 product means the languages in which data can exist. These languages are a superset of languages supported by the DB2 interface.

### **Displaying the DB2 Setup wizard in your national language (Linux and UNIX)**

The `db2setup` command queries the operating system to determine the existing language settings. If the language setting of your operating system is supported by `db2setup`, then that language will be used when displaying the DB2 Setup wizard.

If your system uses the same code pages but different locale names than those supported by the DB2 interface, you can still see the translated `db2setup` by setting your `LANG` environment variable to the appropriate value by entering the following command:

**bourne (sh), korn (ksh), and bash shells:**

```
LANG=<locale>  
export LANG
```

**C shell:**

```
setenv LANG <locale>
```

where *locale* is a locale supported by the DB2 interface.

## Language identifiers for running the DB2 Setup wizard in another language

If you want to run the DB2 Setup wizard in a language different from the default language on your computer, you can start the DB2 Setup wizard manually, specifying a language identifier. The language must be available on the platform where you are running the installation.

On Windows operating systems, you can run `setup.exe` with the `-i` parameter to specify the two-letter language code of the language the installation is to use.

On Linux and UNIX operating systems, it is recommended that you set the **LANG** environment variable to display the DB2 Setup wizard in your national language.

*Table 2. Language identifiers*

Language	Language identifier
Arabic (available on Windows platforms only)	ar
Brazilian Portuguese	br
Bulgarian	bg
Chinese, Simplified	cn
Chinese, Traditional	tw
Croatian	hr
Czech	cz
Danish	dk
Dutch	nl
English	en
Finnish	fi
French	fr
German	de
Greek	el
Hungarian	hu
Italian	it
Japanese	jp
Korean	kr
Norwegian	no
Polish	pl
Portuguese	pt
Romanian	ro

Table 2. Language identifiers (continued)

Language	Language identifier
Russian	ru
Slovak	sk
Slovenian	sl
Spanish	es
Swedish	se
Turkish	tr

## Changing the DB2 product interface language (Windows)

The interface language of DB2 is the language that appears in messages, help, and graphical tool interfaces. When installing DB2, you have the option of installing support for one or more languages. If, at some time after installation, you want to change the interface language for DB2 to one of the other installed interface languages, use the steps outlined in this task.

Do not confuse languages supported by a DB2 product with languages supported by the DB2 interface. Languages supported by a DB2 product means the languages in which data can exist. These languages are a superset of languages supported by the DB2 interface.

The DB2 interface language you want to use must be installed on your system. The DB2 product interface languages are selected and installed when you install a DB2 product using the DB2 Setup wizard. If you change the interface language of a DB2 product to a supported interface language that has not been installed, the DB2 product interface language will default to the operating system language first, and if that is not supported, English.

Changing the interface language for a DB2 product on Windows requires that you change the default language setting for your Windows operating system.

To change the DB2 product interface language on Windows operating systems:

1. Through the Control Panel, select **Regional and Language Options**.
2. On the **Regional Options** tab under **Standards and formats**, select the appropriate language. On Windows Vista, use the **Formats** tab for this step.
3. On the **Regional Options** tab under **Location**, select the location that corresponds to the appropriate language.
4. On the **Advanced** tab under **Language for non-Unicode programs** select the appropriate language. On Windows Vista, on the **Administrative** tab, under **Language for non-unicode programs**, click **Change system locale** and select the appropriate language. You will then be asked to reboot, click **Cancel**.
5. On the **Advanced** tab under **Default user account settings**, check the **Apply all settings to the current user account and to the default user profile** box. On Windows Vista, on the **Administrative** tab under **reserved accounts**, click **Copy to reserved accounts** and check the accounts that you want to copy the language settings to.
6. You will be asked to reboot before these changes come into effect.

Refer to your operating system help for additional information about changing the default system language.

## Changing the DB2 interface language (Linux and UNIX)

The interface language of the DB2 product is the language that appears in messages, help, and graphical tool interfaces. When installing your DB2 product, you have the option of installing support for one or more languages. If, at some time after installation, you want to change the interface language to one of the other installed interface languages, use the steps outlined in this task.

Do not confuse languages supported by the DB2 product with languages supported by the DB2 interface. Languages supported by the DB2 product, that is, languages that *data* can exist in, are a superset of languages supported by the DB2 interface.

Support for the DB2 interface language you want to use must be installed on your system. DB2 interface language support is selected and installed when you install DB2 using the DB2 Setup wizard. If you change the interface language of the DB2 product to a supported interface language that has not been installed, the DB2 interface language will default to the operating system language. If the operating system language is not supported, English is used as the DB2 interface language.

DB2 interface language support is selected and installed when you install your DB2 product using the DB2 Setup wizard or by using the National Language Package.

To check which public locales are available in your system, run the `$ locale -a` command.

To change the DB2 interface language, set the LANG environment variable to the desired locale.

For bourne (sh), korn (ksh), and bash shells:

```
LANG=<locale>  
export LANG
```

For C shell:

```
setenv LANG <locale>
```

For example, to interface with the DB2 product in French, you must have the French language support installed and you must set the LANG environment variable to a French locale, for example, `fr_FR`.



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## Chapter 2. Installation prerequisites

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### Disk and memory requirements

#### Disk requirements

The disk space required for your product depends on the type of installation you choose and the type of file system you have. The DB2 Setup wizard provides dynamic size estimates based on the components selected during a typical, compact, or custom installation.

Remember to include disk space for required databases, software and communication products.

On Linux and UNIX operating systems, 2 GB of free space in the /tmp directory is recommended.

#### Memory requirements

At a minimum, a DB2 database system requires 256 MB of RAM. For a system running just a DB2 product and the DB2 GUI tools, a minimum of 512 MB of RAM is required. However, 1 GB of RAM is recommended for improved performance. These requirements do not include any additional memory requirements for other software that is running on your system.

When determining memory requirements, be aware of the following:

- DB2 products that run on HP-UX Version 11i for Itanium-based systems require 512 MB of RAM at a minimum.
- For IBM data server client support, these memory requirements are for a base of five concurrent client connections. You will need an additional 16 MB of RAM per five client connections.
- Memory requirements are affected by the size and complexity of your database system, as well as by the extent of database activity and the number of clients accessing your system.

For DB2 server products, the self-tuning memory feature simplifies the task of memory configuration by automatically setting values for several memory configuration parameters. When enabled, the memory tuner dynamically distributes available memory resources among several memory consumers including sort, the package cache, the lock list and buffer pools.

- On Linux operating system, SWAP space at least twice as large as RAM is recommended.

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### Java software support for DB2 products

You require the appropriate level of IBM Software Development Kit (SDK) for Java™ listed below to use Java-based tools and to create and run Java applications, including stored procedures and user-defined functions.

If the IBM SDK for Java is required by a component being installed and the SDK for Java is not already installed in that path, the SDK for Java will be installed if you use either the DB2 Setup wizard or a response file to install the product.

The SDK for Java is not installed with the IBM Data Server Runtime Client or the IBM Data Server Driver for ODBC, CLI, and .NET.

The following table lists the installed SDK for Java levels for DB2 products according to operating system platform:

Operating System Platform	SDK for Java level
AIX® 5	SDK 5 Service Release 5
HP-UX for Itanium-based systems	HP SDK for J2SE HP-UX 11i platform, adapted by IBM for IBM Software, Version 5 Service Release 5
Linux on x86	SDK 5 Service Release 5
Linux on AMD64/EM64T	SDK 5 Service Release 5
Linux on zSeries®	SDK 5 Service Release 5
Linux on POWER™	SDK 5 Service Release 5
Solaris Operating System	SDK 5 Service Release 5
Windows x86	SDK 5 Service Release 5
Windows x64	SDK 5 Service Release 5

**Note:**

1. Although the table above lists the installed SDK for Java levels, SDK 1.4.2 to SDK 5 is also supported. The SDK for Java levels can be downloaded from the developerWorks® web page at: <http://www.ibm.com/developerworks/java/jdk/index.html> . For a list of the supported levels of the SDK for Java, see the table below entitled DB2 Database for Linux, UNIX, and Windows support for SDKs for Java.

**Note:** For Windows operating system platforms, use the IBM Development Package for Eclipse downloads.

2. DB2 GUI tools only run on Linux on x86, Linux on AMD64/EM64T, Windows x86, and Windows x64.
3. On Windows x86 and Linux on x86:
  - the 32-bit SDK is installed
  - 32-bit applications and Java external routines are supported
4. On all supported platforms (except Windows x86, and Linux on x86):
  - 32-bit applications are supported
  - 32-bit Java external routines are not supported
  - 64-bit applications and Java external routines are supported

**Supported Java application development software**

The following table lists the supported levels of the SDK for Java. The listed levels and forward-compatible later versions of the same levels are supported

Because there are frequent SDK for Java fixes and updates, not all levels and versions have been tested. If your database application has problems that are related to the SDK for Java, try the next available version of your SDK for Java at the given level.

Non-IBM versions of the SDK for Java are supported only for building and running stand-alone Java applications. For building and running Java

stored procedures and user-defined functions, only the IBM SDK for Java that is included with the DB2 Database for Linux, UNIX, and Windows product is supported.

*Table 3. DB2 Database for Linux, UNIX, and Windows support for SDKs for Java*

<b>Operating system</b>	<b>Supported levels of the SDK for Java</b>
AIX	1.4.2 to 5
HP-UX for Itanium-based systems	1.4.2 to 5 <sup>1</sup>
Linux on POWER	1.4.2 to 5
Linux on x86	1.4.2 to 5 <sup>2</sup>
Linux on AMD64 and Intel® EM64T processors	1.4.2 to 5 <sup>2</sup>
Linux on zSeries	1.4.2 to 5
Solaris operating system	1.4.2 to 5 <sup>2</sup>
Windows on x86	1.4.2 to 5 <sup>2</sup>
Windows on x64, for AMD64 and Intel EM64T processors	1.4.2 to 5 <sup>2</sup>

**Note:**

1. The same levels of the SDK for Java that are available from Hewlett-Packard are supported for building and running stand-alone client applications that run under the IBM Data Server Driver for JDBC and SQLJ.
2. The same levels of the SDK for Java that are available from Sun Microsystems are supported for building and running stand-alone client applications that run under the IBM Data Server Driver for JDBC and SQLJ.

The following table lists the versions of the IBM Data Server Driver for JDBC and SQLJ that are available with DB2 database products.

*Table 4. Versions of IBM Data Server Driver for JDBC and SQLJ and DB2 Database for Linux, UNIX, and Windows fix pack levels*

<b>DB2 version and fix pack level</b>	<b>IBM Data Server Driver for JDBC and SQLJ version</b>
DB2 Version 9.1	3.1
DB2 Version 9.1 Fix Pack 1	3.2
DB2 Version 9.1 Fix Pack 2	3.3
DB2 Version 9.1 Fix Pack 3	3.4
DB2 Version 9.5	3.50, 4.0

## Installation requirements for DB2 servers and IBM data server clients (Windows)

To install a DB2 product, the following operating system, software, and hardware prerequisites must be met:

*Table 5. Windows workstation platforms*

Operating System	Prerequisites	Hardware	Notes
Windows XP Professional (32-bit and x64)	Windows XP Service Pack 2 or later	All Intel and AMD processors capable of running the supported Windows operating systems (32-bit and x64 based systems)	
Windows Vista Ultimate (32-bit and x64)	IBM Data Server Provider for .NET client applications and CLR server-side procedures require .NET 1.1 SP1 or .NET 2.0 framework runtime		
Windows Vista Business (32-bit and x64)			
Windows Vista Enterprise (32-bit and x64)	64-bit IBM data server provider for .NET applications are supported		

*Table 6. Windows server platforms*

Operating System	Prerequisites	Hardware	Notes
Windows 2003 Standard Edition (32-bit and x64)	Service Pack 1 or later. R2 is also supported	All Intel and AMD processors capable of running the supported Windows operating systems	
Windows 2003 Enterprise Edition (32-bit and x64)	IBM data server provider for .NET client applications and CLR server-side procedures require .NET 1.1 SP1 or .NET 2.0 framework runtime		
Windows 2003 Datacenter Edition (32-bit and x64)	64-bit IBM data server provider for .NET applications are supported		

### Additional software considerations

- Windows Installer 3.0 is required. It will be installed by the installer if it is not detected.
- IBM Data Server Provider for .NET client applications and CLR server-side procedures require .NET 1.1 SP1 or .NET 2.0 framework runtime. In an x64 environment, 32-bit IBM data server provider for .NET applications will run in the WOW64 emulation mode.

- MDAC 2.8 is required. The DB2 Setup wizard will install MDAC 2.8 if it is not already installed.

**Note:** If a previous version of MDAC (for example, 2.7) is already installed, DB2 install will upgrade MDAC to 2.8. For a typical install, MDAC 2.8 is installed. For a custom install, MDAC 2.8 is installed but only if you have not deselected the default which is to install it. If you deselect MDAC as part of a custom install, it will not be installed.

- If you plan to use LDAP (Lightweight Directory Access Protocol), you should use either a Microsoft® LDAP client or the IBM Tivoli® Directory Server v6 client (also known as the IBM LDAP client which is included with DB2 products). Prior to installation of the Microsoft Active Directory, you will need to extend your directory schema using the db2schex utility, which can be found on the installation media under the db2\Windows\utilities directory.

The Microsoft LDAP client is included with the operating system for Windows XP, and Windows Server 2003.

- TCP/IP support must be enabled to view online help.
- One of the following browsers is required to view online help, run the DB2 install launchpad (setup.exe), and to run First Steps (db2fs):
  - Internet Explorer 6 and up
  - Mozilla 1.4 and up
  - Firefox 1.0 and up
  - Netscape 7.0 and up

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## Installation requirements for DB2 servers and IBM data server clients (AIX)

To install a DB2 product, the following operating system, hardware, and communications prerequisites must be met:

*Table 7. AIX installation prerequisites*

Operating System	Hardware
AIX Version 5.3 <ul style="list-style-type: none"> <li>• 64-bit AIX kernel is required</li> <li>• TL5 SP3 (minimum)</li> <li>• Minimum C++ runtime level is xlC.rte 8.0.0.8 and xlC.aix50.rte 8.0.0.8</li> </ul>	One of: <ul style="list-style-type: none"> <li>• eServer™ pSeries®</li> <li>• IBM System p™</li> <li>• IBM System p5™</li> </ul>

### Software considerations

- (Clients only) If you plan to use Kerberos Authentication, you require IBM Network Authentication Service client v1.4 or later. The NAS client can be downloaded from <https://www6.software.ibm.com/dl/dm/dm-nas-p>.
- Use the bosboot command to switch to the 64-bit kernel.

To switch to a 64-bit kernel, you require root authority and should enter the following commands:

```
ln -sf /usr/lib/boot/unix_64 /unix
ln -sf /usr/lib/boot/unix_64 /usr/lib/boot/unix
bosboot -a
shutdown -Fr
```

- DB2 Version 9.5 requires the “IBM C++ Runtime Environment Components for AIX” which includes xIC.rte 8.0.0.8. This is available from the IBM AIX support web site.
- One of the following browsers is required to view online help and to run First Steps (db2fs):
  - Mozilla 1.4 and up
  - Firefox 1.0 and up
  - Netscape 7.0 and up

## **DB2 product installation on NFS (Network File System)**

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting /opt/IBM/db2/V9.5 and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for a DB2 server. These include possible problems that involve:

- Performance (impacted by network performance)
- Availability (you are allowing a single point of failure)
- Licensing (there is no checking done across machines)
- Diagnosing NFS errors can be difficult

As mentioned, the setup for NFS will require several manual actions including:

- Ensuring that the mount point preserve the install path
- Permission must be controlled (for example, write permission should not be given to the mounting machine)
- DB2 registries have to be set up manually and maintained across all mounting machines
- The db2ls command, which lists installed DB2 products and features, must be set up and maintained properly if you need to detect DB2 products and features
- More care is required when updating your DB2 product environment
- More steps are required when cleaning up on the exporting machine and the mounting machine

For detailed instructions, see the “Setting up DB2 for UNIX and Linux on NFS mounted file systems” white paper in <http://www.ibm.com/developerworks/db2/library/long/dm-0609lee>.

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## Installation requirements for DB2 servers and IBM data server clients (HP-UX)

To install a DB2 product, the following operating system, hardware, and communications prerequisites must be met:

*Table 8. HP-UX installation prerequisites*

Operating System	Hardware
DB2 products are supported on: <ul style="list-style-type: none"><li>• HP-UX 11iv2 (11.23.0505) with:<ul style="list-style-type: none"><li>– May 2005 Base Quality (QPKBASE) bundle</li><li>– May 2005 Applications Quality (QPAPPS) bundle</li></ul></li><li>• HP-UX 11iv3 (11.31)</li></ul>	Itanium <sup>®</sup> based HP Integrity Series Systems

### Kernel configuration considerations

A system restart is required if you update the kernel configuration parameters. The kernel configuration parameters are set in `/etc/system`. Depending on the values of your kernel configuration parameters, you might need to modify some of them before you install the Version 9 client or DB2 server products. If the kernel parameter being modified is not listed as dynamic, a system reboot is required to make the changes to `/etc/system` take effect.

### Software considerations

- If you are installing the IBM Data Server Client, you must have a C compiler to build SQL Stored Procedures.
- One of the following browsers is required to view online help and to run First Steps (db2fs):
  - Mozilla 1.4 and up
  - Firefox 1.0 and up
  - Netscape 7.0 and up

### DB2 product installation on NFS (Network File System)

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting `/opt/IBM/db2/V9.5` and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for DB2. These include possible problems that involve:

- Performance (impacted by network performance)
- Availability (you are allowing a single point of failure)
- Licensing (there is no checking done across machines)
- Diagnosing NFS errors can be difficult

As mentioned, the setup for NFS will require several manual actions including:

- Ensuring that the mount point preserve the install path
- Permission must be controlled (for example, write permission should not be given to the mounting machine)

- DB2 registries have to be set up manually and maintained across all mounting machines
- The db2ls command, which lists installed DB2 products and features, must be set up and maintained properly if you need to detect DB2 products and features
- More care is required when updating your DB2 product environment
- More steps are required when cleaning up on the exporting machine and the mounting machine

For detailed instructions, see the “Setting up DB2 for UNIX and Linux on NFS mounted file systems” white paper in <http://www.ibm.com/developerworks/db2/library/long/dm-0609lee>.

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## Installation requirements for DB2 servers and IBM data server clients (Linux)

For the latest information on supported Linux distributions, point your browser to <http://www.ibm.com/software/data/db2/linux/validate/>.

To install DB2 products, the distribution requirements, hardware, and communications prerequisites must be met.

DB2 products are supported on the following hardware:

- x86 (Intel Pentium<sup>®</sup>, Intel Xeon<sup>®</sup>, and AMD) 32-bit Intel and AMD processors
- x64 (64-bit AMD64 and Intel EM64T processors)
- POWER (IBM eServer OpenPower<sup>™</sup>, System i<sup>™</sup> or pSeries systems that support Linux)
- eServer System z<sup>™</sup> or System z9<sup>™</sup>

The supported operating systems for Linux include:

- Red Hat Enterprise Linux (RHEL) 4 Update 4
- Red Hat Enterprise Linux (RHEL) 5
- SUSE Linux Enterprise Server (SLES) 9 Service Pack 3
- SUSE Linux Enterprise Server (SLES) 10 Service Pack 1

**Note:** POWER requires a minimum of SLES 10 Service Pack 1 or RHEL 5

### Multithreaded architecture limitations

If you are installing a DB2 Version 9.5 32-bit database product on a Linux operating system, consider upgrading to a 64-bit operating system and installing the DB2 Version 9.5 64-bit database product instead. The multithreaded architecture generally simplifies memory configuration. However, this could affect the memory configuration of 32-bit DB2 servers. For example:

- Private memory for agent threads is allocated within a single process. The aggregate of all private memory allocations for database agents might not fit in a single process memory space.
- Support for multiple databases is limited because all database shared memory segments for all databases are allocated in a single process. You might need to reduce the memory usage for some databases in order to activate all databases successfully at the same time. However, the database manager performance might be impacted. Another alternative is to create multiple instances and



catalog the databases across the instances. However, sufficient system resources is required to support this configuration.

## Distribution Requirements

You should update your kernel configuration parameters in preparation for your Linux distribution. The default values for particular kernel parameters might not be sufficient when running a DB2 database system.

You might also have other products or applications that require Linux system resources. You should modify the kernel configuration parameters based on the needs of your Linux system working environment.

The kernel configuration parameters are set in `/etc/sysctl.conf`.

Refer to your operating system manual for information on setting and activating these parameters using the `sysctl` command.

## Package requirements (server only)

The following tables list the package requirements for SLES and RHEL distributions for DB2 Version 9.5:

- `libaio.so.1` is required for asynchronous i/o
- `libstdc++so.5` is required for the DB2 server

### Package requirements for SLES

Package name	Description
<code>libaio</code>	contains the asynchronous library required for DB2 servers.
<code>compat-libstdc++</code>	contains <code>libstdc++so.5</code>

### Package requirements for RHEL

Directory	Package name	Description
<code>/System Environment/ Libraries</code>	<code>libaio</code>	contains the asynchronous library required for DB2 servers.
<code>/System Environment/ Libraries</code>	<code>compat-libstdc++</code>	contains <code>libstdc++so.5</code>

The following tables list the package requirements for SUSE Linux and Red Hat distributions for DB2 Version 9.5 partitioned servers.

- The `pdksh` Korn Shell package is required for all DB2 systems.
- A remote shell utility is required for partitioned database systems. DB2 supports the following remote shell utilities:
  - `rsh`
  - `ssh`

By default, DB2 uses `rsh` when executing commands on remote DB2 nodes, for example, when starting a remote DB2 database partition. To use the DB2 default, the `rsh-server` package must be installed (see table below). More information on `rsh` and `ssh` is available in the DB2 Information Center.

If you choose to use the `rsh` remote shell utility, `inetd` (or `xinetd`) must be installed and running as well. If you choose to use the `ssh` remote shell utility,

you need to set the DB2RSHCMD communication variable immediately after the DB2 installation is complete. If this registry variable is not set, rsh is used.

- The nfs-utils Network File System support package is required for partitioned database systems.

All required packages should be installed and configured before continuing with the DB2 setup. For general Linux information, see your Linux distribution documentation.

#### Package requirements for SUSE Linux

Package name	Description
pdksh	Korn Shell. This package is required for partitioned database environments.
openssh	This package contains a set of server programs which allow users to run commands on (and from) remote computers via a secure shell. This package is not required if you use the default configuration of DB2 with rsh.
rsh-server	This package contains a set of server programs which allow users to run commands on remote computers, login in to other computers, and copy files between computers (rsh, rexec, rlogin, and rcp). This package is not required if you configure DB2 to use ssh.
nfs-utils	Network File System support package. It allows access to local files from remote computers.

#### Package requirements for Red Hat

Directory	Package name	Description
/System Environment/Shell	pdksh	Korn Shell. This package is required for partitioned database environments.
/Applications/Internet	openssh	This package contains a set of client programs which allow users to run commands on a remote computer via a secure shell. This package is not required if you use the default configuration of DB2 with rsh.
/System Environment/Daemons	openssh-server	This package contains a set of server programs which allow users to run commands from a remote computer via a secure shell. This package is not required if you use the default configuration of DB2 with rsh.
/System Environment/Daemons	rsh-server	This package contains a set of programs which allow users to run commands on a remote computer. Required for partitioned database environments. This package is not required if you configure DB2 to use ssh.
/System Environment/Daemons	nfs-utils	Network File System support package. It allows access to local files from remote computers.

## Software considerations

- (Clients only) If you plan to use Kerberos Authentication, you require IBM Network Authentication Service client v1.4 or later. The NAS client can be downloaded from <https://www6.software.ibm.com/dl/dm/dm-nas-p>.
- One of the following browsers is required to view online help and to run First Steps (db2fs):
  - Mozilla 1.4 and up
  - Firefox 1.0 and up
  - Netscape 7.0 and up
- An X Window System software capable of rendering a graphical user interface is required if:
  - you want to use the DB2 Setup wizard to install a DB2 product on Linux or UNIX operating systems, or
  - you want to use any DB2 graphical tools on Linux for x86 and Linux on AMD 64/EM64T.

## DB2 product installation on NFS (Network File System)

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting /opt/IBM/db2/V9.5 and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for DB2. These include possible problems that involve:

- Performance (impacted by network performance)
- Availability (you are allowing a single point of failure)
- Licensing (there is no checking done across machines)
- Diagnosing NFS errors can be difficult

As mentioned, the setup for NFS will require several manual actions including:

- Ensuring that the mount point preserve the install path
- Permission must be controlled (for example, write permission should not be given to the mounting machine)
- DB2 registries have to be set up manually and maintained across all mounting machines
- The db2ls command, which lists installed DB2 products and features, must be set up and maintained properly if you need to detect DB2 products and features
- More care is required when updating your DB2 product environment
- More steps are required when cleaning up on the exporting machine and the mounting machine

For detailed instructions, see the “Setting up DB2 for UNIX and Linux on NFS mounted file systems” white paper in <http://www.ibm.com/developerworks/db2/library/long/dm-0609lee>.

## Security-enhanced Linux considerations

On RHEL 4 and RHEL 5 systems, if Security-enhanced Linux (SELinux) is enabled and in enforcing mode, the installer might fail due to SELinux restrictions.

To determine if SELinux is installed and in enforcing mode, you can do one of the following:

- check the `/etc/sysconfig/selinux` file
- run the `sestatus` command
- check the `/var/log/messages` file for SELinux notices (Notice format might differ between RHEL 4 and RHEL 5.)

To disable SELinux, you can do one of the following:

- set it in permissive mode and run the `setenforce 0` command as a superuser
- modify `/etc/sysconfig/selinux` and reboot the machine.

If your DB2 product installs successfully on a RHEL 4 or RHEL 5 system, DB2 processes will run in the unconfined domain. To assign DB2 processes to their own domains, modify the policy. A sample SELinux policy is provided in the `sqllib/samples` directory.

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## Installation requirements for DB2 servers and IBM data server clients (Solaris Operating System)

To install a DB2 product, the following operating system, hardware, and communications prerequisites must be met:

*Table 9. Solaris Operating System installation prerequisites*

Operating System	Hardware
Solaris 9 <ul style="list-style-type: none"> <li>• 64-bit kernel</li> <li>• Patches 111711-12 and 111712-12</li> <li>• If raw devices are used, patch 122300-11 on Solaris 9 or 125100-07 on Solaris 10</li> <li>• 64-bit Fujitsu PRIMEPOWER and Solaris 9 Kernel Update Patch 112233-01 or later to get the fix for patch 912041-01</li> </ul>	UltraSPARC
Solaris 10 <ul style="list-style-type: none"> <li>• 64-bit kernel</li> <li>• If raw devices are used, patch 125101-07</li> </ul>	

### Kernel configuration considerations

The kernel configuration parameters are set in `/etc/system`. If the kernel parameter being modified is not listed as dynamic, a system reboot is required to make the changes to `/etc/system` take effect. These parameters must be set before you install an IBM data server client.

### Software considerations

- (Clients only) If you plan to use Kerberos Authentication, you require Solaris Operating System 9 or higher with IBM Network Authentication Service (NAS) client v1.4 or higher. The NAS client can be downloaded from Web site: <https://www6.software.ibm.com/dl/dm/dm-nas-p>.
- If you are installing the IBM Data Server Client, you must have a C compiler to build SQL Stored Procedures.

- One of the following browsers is required to view online help and to run First Steps (db2fs):
  - Mozilla 1.4 and up
  - Firefox 1.0 and up
  - Netscape 7.0 and up

Security Patches can be obtained from the <http://sunsolve.sun.com> Web site. From the SunSolve Online Web site, click on the "Patches" menu item in the left panel.

The Java2 Standard Edition (J2SE) Solaris Operating System Patch Clusters and the SUNWlibC software are also required and can be obtained from the <http://sunsolve.sun.com> Web site.

For DB2 on 64-bit Fujitsu PRIMEPOWER systems, you require the following:

- Solaris 9 Kernel Update Patch 112233-01 or later to get the fix for patch 912041-01.

The Fujitsu PRIMEPOWER patches for the Solaris Operating System can be downloaded from FTSI at: <http://download.ftsi.fujitsu.com/>.

## **DB2 product installation on NFS (Network File System)**

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting /opt/IBM/db2/V9.5 and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for DB2. These include possible problems that involve:

- Performance (impacted by network performance)
- Availability (you are allowing a single point of failure)
- Licensing (there is no checking done across machines)
- Diagnosing NFS errors can be difficult

As mentioned, the setup for NFS will require several manual actions including:

- Ensuring that the mount point preserve the install path
- Permission must be controlled (for example, write permission should not be given to the mounting machine)
- DB2 registries have to be set up manually and maintained across all mounting machines
- The db2ls command, which lists installed DB2 products and features, must be set up and maintained properly if you need to detect DB2 products and features
- More care is required when updating your DB2 product environment
- More steps are required when cleaning up on the exporting machine and the mounting machine

For detailed instructions, see the "Setting up DB2 for UNIX and Linux on NFS mounted file systems" white paper in <http://www.ibm.com/developerworks/db2/library/long/dm-0609lee>.



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## Chapter 3. Password rules

When choosing a password, be aware that:

- On Linux and UNIX operating systems, your password can be a maximum of eight (8) characters.
- On Windows operating systems, your password can be a maximum of fourteen (14) characters.

Some operating systems may have more password rules, such as minimum length and simplicity. See the appropriate operating system documentation.





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## Chapter 4. Additional Windows requirements

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### DB2 services running on your system (Windows)

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The following table lists the DB2 services that run on your system when a DB2 product is installed:

*Table 10. DB2 Services*

Service Display Name	Service Name	Description
DB2 - (DB2 copy name) - <instance name> [<-nodenum>]  where <-nodenum> is added for DB2 ESE instances.	<instance name>[<-nodenum>]	Allows applications to create, update, control, and manage DB2 databases.
DB2 Governor (DB2 copy name)	DB2GOVERNOR_db2copyname	Collects statistics for applications connected to DB2 databases.
DB2 Information Center Server V9.5	DB2ICSERVER_V95	Provides documentation for DB2 products.
DB2 License Server (DB2 copy name)	DB2LICD_db2copyname	Monitors DB2 license compliance.
DB2 Management Service (DB2 copy name)	DB2MGMTSVC_db2copyname	Manages DB2 registry entries for backward compatibility purposes for the DB2 copy.
DB2 Query Patroller (DB2 copy name)	DB2QP_db2copyname	DB2 Query Patroller
DB2 Remote Command Server (DB2 copy name)	DB2REMOTECMD_db2copyname	Supports remote DB2 command execution.
DB2DAS - DB2DASXX	DB2DASXX (where XX is 00-99)	Supports local and remote database administrative requests.
Monitoring Agent for DB2 - <instance name>	kudcma_<instance name>	Monitors the DB2 server and database for availability.

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### Required user accounts for installation of DB2 server products (Windows)

If you are installing a DB2 server product on Windows, you require the following user accounts:

- An installation user account and
- Optional - one or more setup user accounts. You can create these accounts during the installation.
  - A DB2 Administration Server (DAS) user account
  - A DB2 instance user account. You can also use the LocalSystem account for products other than DB2 Enterprise Server Edition.

The installation user account is the account of the user performing the installation. The installation user account must be defined prior to running the DB2 Setup wizard. The setup user accounts can be defined prior to installation or you can have the DB2 Setup wizard create them for you.

All user account names must adhere to your system naming rules and to DB2 naming rules.

## Extended security on Windows

DB2 products offer extended Windows security. If the extended security feature is selected, you must add the users who will administer or use the DB2 product to either the DB2ADMNS or DB2USERS group as appropriate.

The DB2 installer creates these two new groups. You can either specify a new name or accept the default names during installation.

To enable this security feature, select the **Enable operating system security** check box on the **Enable operating system security for DB2 objects** panel during the DB2 installation. Accept the default values for the DB2 Administrators Group field, and the DB2 Users Group field. The default group names are DB2ADMNS and DB2USERS. If there is a conflict with existing group names, you will be prompted to change the group names. If required, you can specify your own values.

## DB2 server user accounts

### Installation user account

A local or domain user account is required to perform the installation. Normally, the user account must belong to the *Administrators* group on the computer where you will perform the installation.

Alternatively, a non-Administrator user account can be used. This alternative requires that a member of the Windows Administrators group first configure the Windows elevated privileges settings to allow a non-Administrator user account to perform an installation.

On Windows Vista, a non-administrator can perform an installation, but will be prompted for administrative credentials by the DB2 Setup wizard.

The user right "Access this computer from the network" is required for the installation user account.

The installation user ID must belong to the Domain Administrators group on the domain if the installation requires a domain account to be created or verified.

You may also use the built-in LocalSystem account as your Service Logon account for all products, except DB2 Enterprise Server Edition

### User rights granted by the DB2 installer

The DB2 installation program does not grant the Debug Programs user right. The DB2 installer grants the following user rights:

- Act as part of the operating system
- Create token object
- Lock pages in memory
- Log on as a service
- Increase quotas

- Replace a process level token

### **DB2 Administration Server (DAS) user account**

A local or domain user account is required for the DB2 Administration Server (DAS).

If you are performing a response file installation, you can also specify the Local System account in the response file. For more details, refer to the sample response files in the db2\windows\samples directory.

The LocalSystem account is available for all products, except DB2 Enterprise Server Edition and can be selected through the DB2 Setup wizard.

The DAS is a special DB2 administration service used to support the GUI tools and assist with administration tasks on local and remote DB2 servers. The DAS has an assigned user account that is used to log the DAS service on to the computer when the DAS service is started.

You can create the DAS user account before installing DB2 or you can have the DB2 Setup wizard create it for you. If you want to have the DB2 Setup wizard create a new domain user account, the user account you use to perform the installation must have authority to create domain user accounts. The user account must belong to the *Administrators* group on the computer where you will perform the installation. This account will be granted the following user rights:

- Act as part of the operating system
- Debug programs
- Create token object
- Lock pages in memory
- Log on as a service
- Increase quotas (adjust memory quotas for a process on Windows XP and Windows Server 2003 operating systems)
- Replace a process level token

If extended security is enabled, then the DB2ADMNS group will have all these privileges. You can simply add users to that group and you do not need to add these privileges explicitly. However, the user still needs to be a member of the Local Administrators group.

The "Debug programs" privilege is only needed when DB2 group lookup is explicitly specified to use the access token.

If the user account is created by the install program, the user account will be granted these privileges and if the user account already exists, this account will also be granted these privileges. If the install grants the privileges, some of them will only be effective on first log-on by the account that was granted the privileges or upon reboot.

It is recommended that the DAS user have SYSADM authority on each of the DB2 systems within your environment so that it can start or stop other instances if required. By default, any user that is part of the *Administrator* group has SYSADM authority.

### **DB2 instance user account**

The user account must belong to the *Administrators* group on the computer where you will perform the installation.

A local or domain user account is required for the DB2 instance. Every DB2 instance has one user that is assigned when the instance is created.

DB2 logs on with this user name when the instance is started. An error will occur if you use a domain user account to perform a database operation (such as, creating a database) against a DB2 instance created with either a Local user account or the LocalSystem account. If you know you will be a domain user account with your DB2 product, you should create the instance using a domain user account.

You may also use the built-in LocalSystem account to run the installation for all products, except for DB2 Enterprise Server Edition.

You can create the DB2 instance user account before installing DB2 or you can have the DB2 Setup wizard create it for you. If you want to have the DB2 Setup wizard create a new domain user account, the user account you use to perform the installation must have authority to create domain user accounts. This account will be granted the following user rights:

- Act as part of the operating system
- Debug programs
- Create token object
- Increase quotas
- Lock pages in memory
- Log on as a service
- Replace a process level token

If extended security is enabled, then the DB2ADMNS group will have all these privileges. You can simply add users to that group and you do not need to add these privileges explicitly. However, the user still needs to be a member of the Local Administrators group.

The "Debug programs" privilege is only needed when DB2 group lookup is explicitly specified to use the access token.

If the user account is created by the install program, the user account will be granted these privileges and if the user account already exists, this account will also be granted these privileges. If the install grants the privileges, some of them will only be effective on first log-on by the account that was granted the privileges or upon reboot.

---

## Setting up Windows elevated privileges prior to installing a DB2 product (Windows)

The usual method to install a DB2 product on Windows is to use an Administrator user account. However, DB2 products can be installed using a non-administrator account. To do so, a Windows Administrator must configure the elevated privileges feature in Windows.

This task explains how a Windows Administrator can set up a computer with elevated privileges to allow installation using a non-Administrator user account. The related task of granting DB2 administration authorities to non-Administrator users is also covered.

Typically a Windows Administrator would perform this task to enable another person who does not have an Administrator account to install a DB2 product. The role of this person might be only to install DB2 products or to also administer DB2 products once installed.

Prior to initiating this procedure, note the following restrictions on non-Administrator installation using elevated privileges:

- Non-Administrator users can only install fix packs, add-on products, or upgrade DB2 as long as prior installations or upgrades were also performed by a non-Administrator user.
- Non-Administrator users cannot uninstall a DB2 product. Those non-Administrator users on a Windows Vista (and later) operating system **can** uninstall a DB2 product.

This procedure uses the Windows Group Policy Editor.

1. Click **Start** -> **Run** and type `gpedit.msc`. The **Group Policy** window opens.
2. Click on Computer Configuration -> Administrative Templates -> Windows Components -> Windows Installer.
3. Enable the following Group Policy settings:
  - Always install with elevated privileges (mandatory)
  - Enable user control over installs (mandatory)
  - Disable Windows Installer. Then set it to *Never*.
  - Enable user to patch elevated products (optional)
  - Enable user to use media source while elevated (optional)
  - Enable user to browse for source while elevated (optional)
4. Enable elevated privileges for the user account that will be performing the installation.
  - a. Click **User Configuration** -> **Administrative Templates** -> **Windows Components** -> **Windows Installer**.
  - b. Enable the **Always install with elevated privileges (mandatory)** Group Policy setting.
5. Perform setup related to the user account that will install the DB2 product.
  - Identify the user account that will install the DB2 product. If necessary, create that account.
  - Give that account write permission for the drive on which an installation is planned.
6. Optional: Complete additional steps applicable to installing fix packs:
  - Provide *read* access to the `sqllib\cfg` directory.
  - Ensure that *allowlockdownpatch* is enabled (as described in the Windows Installer SDK documentation) because fix pack installations are considered minor upgrades to the product.
7. Refresh the computer's security policy in any one of the following ways:
  - Reboot the PC.
  - At the command line, enter `gpupdate.exe`.

By following this procedure you will have set up the computer with elevated privileges and set up a user account that will be able to install DB2 server products, clients and fix packs.

#### Using regedit instead of the Windows Group Policy Editor

An alternative to using the Windows Group Policy Editor is to use regedit.

1. In the registry branch `HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows`, add the key `installer`
2. Edit the key `installer` with the following values:

- For AlwaysInstallElevated, enter REG\_DWORD=1
  - For AllowLockdownBrowse, enter REG\_DWORD=1
  - For AllowLockdownMedia, enter REG\_DWORD=1
  - For AllowLockdownPatch, enter REG\_DWORD=1
  - For DisableMSI, enter REG\_DWORD=0
  - For EnableUserControl, enter REG\_DWORD=1
3. In the registry branch HKEY\_CURRENT\_USER\SOFTWARE\Policies\Microsoft\Windows, add the key installer
  4. Edit the key installer with the following values:
    - For AlwaysInstallElevated, enter REG\_DWORD=1

### Removing elevated privileges

After you have given elevated privileges, you can reverse this action. To do so, remove the registry key Installer under HKEY\_LOCAL\_MACHINE\SOFTWARE\Policies\Microsoft\Windows.

### Granting a non-administrator user DB2 administration authorities

At this point, only members of the Windows Administrators group will have DB2 administration authorities. The Windows Administrator has the option to grant one or more DB2 authorities, such as SYSADM, SYSMAINT, or SYSCTRL to the non-Administrator user who installed the DB2 product.

---

## Preparing the environment for a partitioned DB2 server (Windows)

This topic describes the steps required to prepare your Windows environment for a partitioned installation of the DB2 product.

Each participating computer must have the same operating system.

To prepare your Windows environment for installation:

1. Ensure that the primary computer and participating computers belong to the same Windows domain. Check the domain to which the computer belongs by using the System Properties dialog, accessible through the Control Panel.
2. Ensure that time and date settings on the primary computer and participating computers are consistent. To be considered consistent, the difference in GMT time between all computers must be no greater than one hour.  
System date and time can be modified using the Date/Time Properties dialog, accessible through the Control Panel. You can use the `max_time_diff` configuration parameter to change this restriction. The default is `max_time_diff = 60`, which allows a difference of less than 60 minutes.
3. Ensure that each computer object that participates in the partitioned database environment has the "Trust computer for delegation" privilege flagged. You can verify that the "Trust computer for delegation" checkbox on the General tab of each computer's account Properties dialog box in the Active Directory Users and Computers console is checked.
4. Ensure that all participating computers can communicate with each other using TCP/IP:
  - a. On one participating computer, enter the `hostname` command, which will return the hostname of the computer.
  - b. On another participating computer, enter the following command:  
`ping hostname`

where *hostname* represents the hostname of the primary computer. If the test is successful, you will receive output similar to the following:

```
Pinging ServerA.ibm.com [9.21.27.230] with 32 bytes of data:
```

```
Reply from 9.21.27.230: bytes=32 time<10ms TTL=128
```

```
Reply from 9.21.27.230: bytes=32 time<10ms TTL=128
```

```
Reply from 9.21.27.230: bytes=32 time<10ms TTL=128
```

Repeat these steps until you are sure that all participating computers can communicate with each other using TCP/IP. Each computer must have a static IP address.

If you are planning to use multiple network adapters, you can specify which adapter to use to communicate between database partition servers.

Use the `thedb2nchg` command to specify the `netname` field in the `db2nodes.cfg` file after the installation is complete.

5. During the installation you will be asked to provide a DB2 Administration Server user account. This is a local or domain user account that will be used by the DB2 Administration Server (DAS). The DAS is an administration service used to support the GUI tools and assist with administration tasks. You can define a user now or have the DB2 Setup wizard create one for you. If you want to create a new domain user using the DB2 Setup wizard, the account used to perform the installation must have authority to create domain users.
6. On the primary computer, where you will install the instance-owning partition, you must have a domain user account that belongs to the local *Administrators* group. You will log on as this user when you install DB2. You must add the same user account to the local *Administrators* group on each participating computer. This user must have the *Act as part of the operating system* user right.
7. Ensure that all computers in the instance have the database directory on the same local drive letter. You can check this condition by running the `GET DATABASE CONFIGURATION` command and verifying the value of the `DFTDBPATH DBM` configuration parameter.
8. During the installation you will be asked to provide a domain user account to be associated with the DB2 instance. Every DB2 instance has one user assigned. DB2 logs on with this user name when the instance is started. You can define a user now, or you can have the DB2 Setup wizard create a new domain user for you.

When adding a new node to a partitioned environment the DB2 copy name must be the same on all computers.

If you want to create a new domain user using the DB2 Setup wizard, the account used to perform the installation must have authority to create domain users. The instance user domain account must belong to the local *Administrators* group on all the participating computers and will be granted the following user rights:

- Act as part of the operating system
- Create token object
- Lock pages in memory
- Log on as a service
- Increase quotas
- Replace a process level token

If extended security was selected, then the account must also be a member of the `DB2ADMNS` group. The `DB2ADMNS` group already has these privileges so the privileges would not be required to be added explicitly to the account.

---

## Granting user rights (Windows)

This topic describes the steps required to grant user rights on Windows operating systems. Specific user rights are recommended for user accounts required to install and set up DB2.

To grant advanced user rights on Windows you must be logged on as a local Administrator.

1. Click **Start -> Run** and type `secpol.msc`. On Windows Vista, click **Start** and type `secpol.msc` in the search bar. Click **OK**.
2. Select **Local Security Policy**.
3. In the left window pane, expand the **Local Policies** object, then select **User Rights Assignment**.
4. In the right window pane, select the user right that you want to assign.
5. From the menu, select **Action** —> **Security...**
6. Click **Add**, then select a user or group to assign the right to, and click **Add**.
7. Click **OK**.

If your computer belongs to a Windows domain, the domain user rights may override your local settings. In this case, your Network Administrator will have to make the changes to the user rights.

---

## DB2 system administrator group considerations (Windows)

By default, system administrative (SYSADM) authority is granted to any valid DB2 user account that belongs to the Administrators group on the computer where the account is defined. If the account is a local account, then it must belong to the local Administrators group. If the account is a domain account, then it must belong to the Administrators group at the domain controller or the local Administrators group. You can force the DB2 database server to always perform group lookup on the local computer by setting the registry variable `DB2_GRP_LOOKUP=local` and adding the domain accounts (or global groups) to the local group.

For example, if a user logs on to a domain account and tries to access a DB2 database, the DB2 database server goes to a domain controller to enumerate groups (including the Administrators group).

For a domain user to have SYSADM authority, they must belong to the local Administrators group or the Administrators group at the domain controller. Since the DB2 database server always performs authorization at the machine where the account is defined, adding a domain user to the local Administrators group on the server does not grant the domain user SYSADM authority to this group, unless `DB2_GRP_LOOKUP=local` is set.

To avoid adding a domain user to the Administrators group at the domain controller, create a global group and add the domain users to which you want to grant SYSADM authority to it. Then update the DB2 configuration parameter `SYSADM_GROUP` with the name of the global group.

To update the DB2 configuration parameter, enter the following commands:

```
db2 update dbm cfg using sysadm_group global_group
db2stop
db2start
```



---

## Fast communications manager (Windows)

The fast communications manager (FCM) provides communications support for DB2 server products belonging to the same instance. Each database partition server has one FCM sender, and one FCM receiver daemon to provide communications between database partition servers to handle agent requests and to deliver message buffers. The FCM daemon is started when you start the instance.

If communications fail between database partition servers or if they re-establish communications, the FCM thread updates information (that you can query with the database system monitor) and causes the appropriate action (such as the rollback of an affected transaction) to be performed. You can use the database system monitor to help you set the FCM configuration parameters.

You can specify the number of FCM message buffers with the *fcm\_num\_buffers* database manager configuration parameter and the number of FCM channels with the *fcm\_num\_channels* database manager configuration parameter. The *fcm\_num\_buffers* and *fcm\_num\_channels* database manager configuration parameter are set to AUTOMATIC as the default value. FCM monitors resource usage when any of these parameter are set to automatic, and incrementally releases resources. It is recommended to leave these parameters set to AUTOMATIC.

---

## Extending the Active Directory Schema for LDAP directory services (Windows)

If you plan to use the Lightweight Directory Access Protocol (LDAP) directory server feature with Windows Server 2003, you should extend the Active Directory schema to contain DB2 object classes and attribute definitions. You should perform this task before you install any DB2 products.

Extending the directory schema ensures that:

- The default DB2 instance, created during the installation, is cataloged as a DB2 node in Active Directory provided the installation user ID had sufficient privileges to write to Active Directory.
- Any databases that the user creates after installation will automatically be cataloged into Active Directory.

If you decide to install your DB2 product and create databases before you extend the directory schema, you will have to manually register the node and catalog the databases.

Your Windows user account must have Schema Administration authority.

To extend the directory schema:

1. Log onto the domain controller.
2. Run the **db2schex.exe** program from the installation DVD with a user account that has Schema Administration authority. You can run this program without logging off and logging on again, as follows:

```
runas /user:MyDomain\Administrator x:\db2\Windows\utilities\db2schex.exe
```

where x: represents the DVD drive letter.

When **db2schex.exe** completes, you can proceed with the installation of your DB2 product.

---

## Verifying port range availability on participating computers (Windows)

This task describes the steps required to verify port range availability on participating computers. The port range is used by the Fast Communications Manager (FCM). FCM is a feature of DB2 that handles communications between database partition servers.

When you install the instance-owning database partition server on the primary machine, DB2 reserves a port range according to the specified number of database partition servers participating in partitioned database environment. The default range is four ports. The DB2 Setup wizard must be able to reserve an identical port range when database partition servers are installed on participating computers; the port range needs to be free on each of the database partition servers.

This task should be done after you install the instance-owning database partition server and before you install any participating database partition servers.

To verify the port range availability on participating computers:

1. Open the services file. The default location of the services file is in the %SystemRoot%\system32\drivers\etc directory, where %SystemRoot% is your Windows root directory.
2. Locate the ports reserved for the DB2 Fast Communications Manager (FCM). The entries should appear similar to the following:

```
DB2_DB2          60000/tcp
DB2_DB2_1       60001/tcp
DB2_DB2_2       60002/tcp
DB2_DB2_END     60003/tcp
```

DB2 reserves the first four available ports after 60000.

3. On each participating computer, open the services file and verify that the ports reserved for DB2 FCM in the services file of the primary computer are not being used.
4. In the event that the required ports are in use on a participating computer, identify an available port range for all computers and update each service file, including the services file on the primary computer.

---

## Chapter 5. Additional Linux and UNIX requirements

---

### Multiple DB2 copies on the same computer (Linux and UNIX)

DB2 products can be installed to an installation path of your choice. DB2 products can also be installed multiple times on a single machine. Each DB2 Copy can be at the same or different code levels.

The following restrictions apply when installing multiple DB2 copies on one system:

- Non-root installations do not support multiple DB2 copies
- There can be only one DB2 Administration Server (DAS) on the system.
- Instance names must be unique across DB2 copies.
- A DB2 copy is not aware of any instances created in another DB2 copy. However, the `db2iupdt` command can switch ownership of an instance from one DB2 copy to another.
- Creating links with the `db2ln` command for one DB2 copy renders the other copies nonfunctional. Links should not be created when multiple DB2 copies are intended to coexist.
- Linux 32-bit images cannot be installed on Linux x64 operating system platforms.
- The DB2 installation tools do not support multiple simultaneous invocations on the same machine by the same user.

Root installations of DB2 products can be installed to an installation path of your choice. Unless specified otherwise, the default installation paths are:

- for AIX, HP-UX or Solaris operating systems `/opt/IBM/db2/V9.5`
- for Linux operating systems `/opt/ibm/db2/V9.5`

If you are using the DB2 Setup wizard and choose to install a new DB2 copy when the default installation path is already in use, the default path becomes:

- for AIX, HP-UX or Solaris `/opt/IBM/db2/V9.5_##`
- for Linux `/opt/ibm/db2/V9.5_##`

where `##` is a zero-prefixed sequential number in the range 01 to 99. The first occurrence of modifying the default path is `_01`. For example, a DB2 product is installed using the DB2 Setup wizard without specifying an installation path, and, the default installation path `/opt/ibm/db2/V9.5` is already in use, the DB2 product will be installed in the new default path `/opt/ibm/db2/V9.5_01`.

If you install a DB2 copy using an installation method other than the DB2 Setup wizard, you must specify the installation path. Automatic sequential incrementation of the default path only occurs when the DB2 Setup wizard is used to install a DB2 copy.

With the ability to install multiple copies of DB2 products on your system and the flexibility to install DB2 products and features in the path of your choice, the `db2ls` command helps you keep track of what is installed and where it is installed. Run the `db2ls` command to locate DB2 products installed on your system.

---

## Fast communications manager (Linux and UNIX)

The fast communications manager (FCM) provides communications support for DB2 server products that use the Database Partitioning Feature (DPF).

For multiple partition instances, each database partition server has one FCM sender daemon and one FCM receiver daemon to provide communications between database partition servers to handle agent requests and to deliver message buffers. The FCM daemon is started when you start the multiple partition instance.

If communications fail between database partition servers or if they re-establish communications, the FCM daemons update information. You can query this information with the database system monitor. The FCM daemons also trigger the appropriate action. An example of an appropriate action is the rollback of an affected transaction. You can use the database system monitor to help you set the FCM configuration parameters.

You can specify the number of FCM message buffers with the *fcm\_num\_buffers* database manager configuration parameter. You can also specify the number of FCM channels with the *fcm\_num\_channels* database manager configuration parameter. The *fcm\_num\_buffers* and *fcm\_num\_channels* database manager configuration parameters are set to AUTOMATIC as the default value. The FCM monitors resource usage when any of these parameter are set to automatic, and incrementally releases resources. It is recommended to leave these parameters set to AUTOMATIC.

---

## DB2 users and groups (Linux and UNIX)

The DB2 Setup wizard creates the users and groups automatically (if needed) during the installation of your DB2 product.

**Note:** This topic does not apply to non-root installations.

If you are using the DB2 Setup wizard, you do not need to manually create the following users and groups. Three users and three groups are used to operate DB2 on Linux and UNIX platforms.

### Instance owner

The DB2 instance is created in the instance owner home directory. This user ID controls all DB2 processes and owns all filesystems and devices used by the databases contained within the instance. The default user is `db2inst1` and the default group is `db2iadm1`.

When using the DB2 Setup wizard, the default action is to create a new user for your DB2 instance. The default name is `db2inst1`. If that user name already exists, the DB2 Setup wizard searches through user names (`db2inst2`, `db2inst3`, and so on). The search continues until a user name is identified that is not already an existing user on the system as the default instance owner ID. If you choose to proceed this user is created by the DB2 Setup wizard. However, you also have a choice to specify any existing user as the instance owner.

This method for user name creation also applies to the creation of fenced users and DB2 administration server users.

### Fenced user

The fenced user is used to run user defined functions (UDFs) and stored procedures outside of the address space used by the DB2 database. The

default user is db2fenc1 and the default group is db2fadm1. If you do not need this level of security, for example in a test environment, you may use your instance owner as your fenced user.

### **DB2 administration server user**

The user ID for the DB2 administration server user is used to run the DB2 administration server (DAS) on your system. The default user is dasusr1 and the default group is dasadm1. This user ID is also used by the DB2 GUI tools to perform administration tasks against the local server database instances and databases.

There is only one DAS per computer. One DAS services one or more database instances, including database instances that belong to different installations. The DAS can service database instances whose release level is lower than the release level of the DAS. However, for database instances whose release level is higher than the release level of the DAS, the DAS should be migrated to a higher level. The DAS release level should be as high (or higher) than the release level of any of the database instances it services.

### **User ID restrictions**

User IDs have the following restrictions and requirements:

- Must have a primary group other than guests, admins, users, and local
- Can include lowercase letters (a–z), numbers (0–9), and the underscore character ( \_ )
- Cannot be longer than eight characters
- Cannot begin with IBM, SYS, SQL, or a number
- Cannot be a DB2 reserved word (USERS, ADMINS, GUESTS, PUBLIC, or LOCAL), or an SQL reserved word
- Cannot include accented characters
- Cannot be IDs managed by NIS or NIS+
- If existing user IDs are specified instead of creating new user IDs, make sure that the user IDs:
  - Are not locked
  - Do not have expired passwords

---

## **Centralized user-management considerations (Linux and UNIX)**

In environments that include security software, there are some installation considerations.

The DB2 installation cannot update or create users and groups if they are controlled outside of the operating system. For example, LDAP can be used to control users and groups outside of the operating system.

At instance creation, without a security component present, the instance owner's group list is modified to include that of the database administrative server (DAS) user's primary group, if the DAS is created. If the instance creation program is unable to modify these properties, it reports that it could not. The warning message provides the necessary information to manually make the changes.

These considerations hold true for any environment in which an external security program does not allow the DB2 installation or instance creation programs to modify user characteristics.

---

## Preparing to install DB2 for Linux on zSeries

To install a DB2 product on an IBM zSeries that is running Linux, you must make the installation image accessible to the Linux operating system. You can use FTP to send the installation image to the operating system, or use an NFS mount to make the product DVD available to the operating system.

### Prerequisites

You have already obtained your DB2 product installation image.

### Using FTP to access the installation image

From the IBM zSeries computer running Linux:

1. Enter the following command:

```
ftp yourserver.com
```

where *yourserver.com* represents the FTP server where the DB2 product installation image resides.

2. Enter your user ID and password.
3. Enter the following commands:

```
bin  
get product file
```

where *product file* represents the appropriate product package name.

### Using the DB2 product DVD over NFS to access the installation image

To use the product DVD on a Linux operating system:

1. Mount the appropriate product DVD.
2. Export the directory where you mounted the DVD. For example, if you mounted the DVD under */db2dvd*, then export the */db2dvd* directory.
3. On the IBM zSeries computer running Linux, NFS mount this directory using the following command:

```
mount -t nfs -o ro nfsservername:/db2dvd /local_directory_name
```

where *nfsservername* represents the hostname of the NFS server, *db2dvd* represents the name of the directory being exported on the NFS server, and *local\_directory\_name* represents the name of the local directory.

4. From the IBM zSeries computer running Linux, change to the directory where the DVD is mounted. You can do this by entering the `cd /local_directory_name` command, where *local\_directory\_name* represents the mount point of your product DVD.

---

## Creating group and user IDs for a DB2 database installation (Linux and UNIX)

To perform this task, you must have root authority to create users and groups.

Three users and groups are required.

The DB2 Setup wizard will create these users and groups for you during the installation process. If you want, you can create them ahead of time.

The user and group names used in the following instructions are documented in the table below. You can specify your own user and group names as long as they adhere to system naming rules and DB2 naming rules.

The user IDs you create will be required to complete subsequent setup tasks.

Table 11. Default users and groups

User	Example user name	Example group name
Instance owner	db2inst1	db2iadm1
Fenced user	db2fenc1	db2fadm1
DB2 administration server user	dasusr1	dasadm1

- The instance owner home directory is where the DB2 instance will be created.
- The fenced user is used to run user defined functions (UDFs) and stored procedures outside of the address space used by the DB2 database.
- The user ID for the *DB2 administration server user* is used to run the DB2 administration server on your system.

To create the required groups and user IDs for DB2:

1. Log in as a user with root authority.
2. Enter the appropriate commands for your operating system.

**Note:** These command line examples do not contain passwords. They are examples only. You can use the *passwd username* command from the command line to set the password.

#### AIX operating systems

To create groups on AIX, enter the following commands:

```
mkgroup id=999 db2iadm1
mkgroup id=998 db2fadm1
mkgroup id=997 dasadm1
```

Create users for each group:

```
mkuser id=1004 pgrp=db2iadm1 groups=db2iadm1
  home=/home/db2inst1 db2inst1
mkuser id=1003 pgrp=db2fadm1 groups=db2fadm1
  home=/home/db2fenc1 db2fenc1
mkuser id=1002 pgrp=dasadm1 groups=dasadm1
  home=/home/dasusr1 dasusr1
```

#### HP-UX operating systems

To create groups on HP-UX, enter the following commands:

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 dasadm1
```

Create users for each group:

```
useradd -g db2iadm1 -d /home/db2inst1 -m db2inst1
useradd -g db2fadm1 -d /home/db2fenc1 -m db2fenc1
useradd -g dbasgrp -d /home/dasusr1 -m dasusr1
```

#### Linux operating systems

To create groups on Linux operating systems, enter the following commands:

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 dasadm1
```

Create users for each group:

```
useradd -u 1004 -g db2iadm1 -m -d /home/db2inst1 db2inst1
useradd -u 1003 -g db2fadm1 -m -d /home/db2fenc1 db2fenc1
useradd -u 1002 -g dasadm1 -m -d /home/dasusr1 dasusr1
```

### Solaris operating systems

To create groups on Solaris, enter the following commands:

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 dasadm1
```

Create users for each group:

```
useradd -g db2iadm1 -u 1004 -d /export/home/db2inst1 -m db2inst1
useradd -g db2fadm1 -u 1003 -d /export/home/db2fenc1 -m db2fenc1
useradd -g dasadm1 -u 1002 -d /export/home/dasusr1 -m dasusr1
```

---

## OS user limit requirements (Linux and UNIX)

This topic outlines the recommended operating system user process resource limits (ulimits) on Linux and UNIX operating systems.

Depending on your installation, the DB2 engine automatically raises the ulimits to varying degrees:

- For root installations, the DB2 engine automatically raises ulimits where necessary based on the needs of the DB2 database system.
- For non-root installations, the DB2 engine can update only the **data**, **nfiles**, and **fsize** ulimits for the engine process up to the hard limits imposed by the system administrator.

In either case, it might be more practical to set the resource limits permanently on your system. Especially for non-root installations, the **data**, **nfiles**, and **fsize** ulimit values should be set appropriately by an administrator after installing.

### Recommended ulimit values for non-root installations

After a non-root installation is completed, the instance owner should verify the hard operating system ulimits for the **data**, **nfiles**, and **fsize** resources. The recommended values are outlined in the following table:

*Table 12. Recommended ulimit values for non-root installations*

Hard ulimit resource	Description	Minimum value	Recommended value	Command to query the value
<b>data</b>	Maximum private memory allowed for a process	The amount of memory available on the computer	Unlimited	ulimit -Hd



Table 12. Recommended ulimit values for non-root installations (continued)

Hard ulimit resource	Description	Minimum value	Recommended value	Command to query the value
<b>nfiles</b>	Maximum number of open files allowed for a process	Larger than the sum of all <b>MAXFILOP</b> database configuration parameters for all databases in the instance	65536 or unlimited	ulimit -Hn
<b>fsize</b>	Maximum file size allowed	Unlimited	Unlimited	ulimit -Hf

If the minimum ulimit values are not met, the DB2 engine could encounter unexpected operating system resource shortage errors. These errors can lead to a DB2 outage.

Contact a root user or a System Administrator if the ulimit values need to be updated for your non-root installation. Values for ulimits must be set manually, except on AIX operating systems, where you also have the option to set ulimits by running the db2rfe command.

---

## Kernel parameters (Linux and UNIX)

### Modifying kernel parameters (HP-UX)

For your DB2 product to perform properly on HP-UX, you may need to update your system's kernel configuration parameters. You must restart your computer if you update your kernel configuration parameter values.

You must have root authority to modify kernel parameters.

To modify kernel parameters:

1. Enter the **sam** command to start the System Administration Manager (SAM) program.
2. Double-click the **Kernel Configuration** icon.
3. Double-click the **Configurable Parameters** icon.
4. Double-click the parameter that you want to change and type the new value in the **Formula/Value** field.
5. Click **OK**.
6. Repeat these steps for all of the kernel configuration parameters that you want to change.
7. When you are finished setting all of the kernel configuration parameters, select **Action --> Process New Kernel** from the action menu bar.

The HP-UX operating system automatically restarts after you change the values for the kernel configuration parameters.

## Recommended kernel configuration parameters (HP-UX)

For HP-UX systems running a DB2 64-bit database system, run the `db2osconf` command to suggest appropriate kernel configuration parameter values for your system. The `db2osconf` utility can only be run from `$DB2DIR/bin`, where `$DB2DIR` is the directory where you installed your DB2 product.

## Modifying kernel parameters (Linux)

Before installing a DB2 database system, you should update your Linux kernel parameters. The default values for particular kernel parameters on Linux are not sufficient when running a DB2 database system.

You must have root authority to modify kernel parameters.

To update kernel parameters on Red Hat and SUSE Linux:

1. Run the `ipcs -l` command
2. Analyze the output to determine if there are any necessary changes required for your system. Comments have been added following the `//` to show what the parameter names are.

```
# ipcs -l

----- Shared Memory Limits -----
max number of segments = 4096           // SHMNI
max seg size (kbytes) = 32768          // SHMMAX
max total shared memory (kbytes) = 8388608 // SHMALL
min seg size (bytes) = 1

----- Semaphore Limits -----
max number of arrays = 1024           // SEMMNI
max semaphores per array = 250        // SEMMSL
max semaphores system wide = 256000   // SEMMNS
max ops per semop call = 32           // SEMOPM
semaphore max value = 32767

----- Messages: Limits -----
max queues system wide = 1024         // MSGMNI
max size of message (bytes) = 65536    // MSGMAX
default max size of queue (bytes) = 65536 // MSGMNB
```

- Beginning with the first section on Shared Memory Limits, SHMMAX and SHMALL are the parameters that need to be looked at. SHMMAX is the maximum size of a shared memory segment on a Linux system whereas SHMALL is the maximum allocation of shared memory pages on a system.
  - It is recommended to set the SHMMAX value to be equal to the amount of physical memory on your system. However, the minimum required on x86 systems is 268435456 (256 MB) and for 64-bit systems, it is 1073741824 (1 GB).
  - SHMALL is set to 8 GB by default (8388608 KB = 8 GB). If you have more physical memory than this, and it is to be used for DB2, then this parameter should be increased to approximately 90% of your computer's physical memory. For instance, if you have a computer system with 16 GB of memory to be used primarily for DB2, then SHMALL should be set to 3774873 (90% of 16 GB is 14.4 GB; 14.4 GB is then divided by 4 KB, which is the base page size). The `ipcs` output has converted SHMALL into kilobytes. The kernel requires this value as a number of pages.
- The next section covers the amount of semaphores available to the operating system. The kernel parameter `sem` consists of 4 tokens, SEMMSL, SEMMNS,

SEMOPM and SEMMNI. SEMMNS is the result of SEMMSL multiplied by SEMMNI. The database manager requires that the number of arrays (SEMMNI) be increased as necessary. Typically, SEMMNI should be twice the maximum number of agents expected on the system multiplied by the number of logical partitions on the database server computer plus the number of local application connections on the database server computer.

- The third section covers messages on the system.
  - MSGMNI affects the number of agents that can be started, MSGMAX affects the size of the message that can be sent in a queue, and MSGMNB affects the size of the queue.
  - MSGMAX should be change to 64 KB (that is, 65535 bytes), and MSGMNB should be increased to 65535.
- 3. To modify these kernel parameters, edit the `/etc/sysctl.conf` file. If this file does not exist, create it. The following lines are examples of what should be placed into the file:

```
kernel.sem=250 256000 32 1024
#Example shmmax for a 64-bit system
kernel.shmmax=1073741824
#Example shmall for 90 percent of 16 GB memory
kernel.shmall=3774873
kernel.msgmax=65535
kernel.msgmnb=65535
```
- 4. Run `sysctl` with `-p` parameter to load in `sysctl` settings from the default file `/etc/sysctl.conf`:

```
sysctl -p
```
- 5. To make the changes effective after every reboot:
  - (SUSE Linux) Make `boot.sysctl` active
  - (Red Hat) The `rc.sysinit` initialization script will read the `/etc/sysctl.conf` file automatically

## Modifying kernel parameters (Solaris)

For the DB2 database system to operate properly, it is recommended that you update your system's kernel configuration parameters. You can use the `db2osconf` utility to suggest recommended kernel parameters. If you want to take advantage of project resource controls (`/etc/project`), you should consult your Solaris documentation.

You must have root authority to modify kernel parameters.

To use the `db2osconf` command, you must first install the DB2 database system. The `db2osconf` utility can only be run from `$DB2DIR/bin`, where `$DB2DIR` is the directory where you installed your DB2 product.

You must restart your system after modifying kernel parameters.

To set a kernel parameter, add a line at the end of the `/etc/system` file as follows:

```
set parameter_name = value
```

For example, to set the value of the `msgsys:msginfo_msgmax` parameter, add the following line to the end of the `/etc/system` file:

```
set msgsys:msginfo_msgmax = 65535
```

After updating the `/etc/system` file, restart the system.

---

## Additional partitioned database environment pre-installation tasks (Linux and UNIX)

### Updating environment settings for a partitioned DB2 installation (AIX)

This task describes the environment settings that you need to update on each computer that will participate in your partitioned database system.

To update AIX environment settings:

1. Log on to the computer as a user with root authority.
2. Set the AIX maxuproc (maximum number of processes per user) device attribute to 4096 by entering the following command:

```
chdev -l sys0 -a maxuproc='4096'
```

**Note:** A bosboot/reboot may be required to switch to the 64-bit kernel if a different image is being run.

3. Set the TCP/IP network parameters on all the workstations that are participating in your partitioned database system to the following values. These values are the minimum values for these parameters. If any of the network-related parameters are already set to a higher value, do not change it.

```
thewall      = 65536
sb_max       = 1310720
rfc1323      = 1
tcp_sendspace = 221184
tcp_recvspace = 221184
udp_sendspace = 65536
udp_recvspace = 65536
ipqmaxlen    = 250
somaxconn    = 1024
```

To list the current settings of all network-related parameters, enter the following command:

```
no -a | more
```

To set a parameter, enter the follow command:

```
no -o parameter_name=value
```

where:

- *parameter\_name* represents the parameter you want to set.
- *value* represents the value that you want to set for this parameter.

For example, to set the tcp\_sendspace parameter to 221184, enter the following command:

```
no -o tcp_sendspace=221184
```

4. If you are using a high speed interconnect, you must set the *spoolsize* and *rpoolsize* for *css0* to the following values:

```
spoolsize    16777216
rpoolsize    16777216
```

To list the current settings of these parameters, enter the following command:

```
lsattr -l css0 -E
```

To set these parameters, enter the following commands:

```
/usr/lpp/ssp/css/chgcss -l css0 -a spoolsize=16777216
/usr/lpp/ssp/css/chgcss -l css0 -a rpoolsize=16777216
```

If you are not using the `/tftpboot/tuning.cst` file to tune your system, you can use the `DB2DIR/misc/rc.local.sample` sample script file, where `DB2DIR` is path where the DB2 product has been installed to, to update the network-related parameters after installation. To update the network-related parameters using the sample script file after installation, perform the following steps:

- a. Copy this script file to the `/etc` directory and make it executable by root by entering the following commands:

```
cp /usr/opt/db2_09_01/misc/rc.local.sample /etc/rc.local
chown root:sys /etc/rc.local
chmod 744 /etc/rc.local
```

- b. Review the `/etc/rc.local` file and update it if necessary.
- c. Add an entry to the `/etc/inittab` file so that the `/etc/rc.local` script is executed whenever the machine is rebooted. You can use the `mkitab` command to add an entry to the `/etc/inittab` file. To add this entry, enter the following command:

```
mkitab "rclocal:2:wait:/etc/rc.local > /dev/console 2>&1"
```

- d. Ensure that `/etc/rc.nfs` entry is included in the `/etc/inittab` file by entering the following command:

```
lsitab rcnfs
```

- e. Update the network parameters without rebooting your system by entering the following command:

```
/etc/rc.local
```

5. Ensure that you have enough paging space for a partitioned installation of DB2 ESE to run. If you do not have sufficient paging space, the operating system will kill the process that is using the most virtual memory (this is likely to be one of the DB2 processes). To check for available paging space, enter the following command:

```
lspg -a
```

This command will return output similar to the following:

Page Space	Physical Volume	Volume Group	Size	%Used	Active	Auto	Type
paging00	hdisk1	rootvg	60MB	19	yes	yes	lv
hd6	hdisk0	rootvg	60MB	21	yes	yes	lv
hd6	hdisk2	rootvg	64MB	21	yes	yes	lv

The paging space available should be equal to twice the amount of physical memory installed on your computer.

6. If you are creating a small to intermediate size partitioned database system, the number of network file system daemons (NFSDs) on the instance-owning computer should be close to:

# of biod on a computer × # of computers in the instance

Ideally, you should run 10 biod processes on every computer. According to the above formula, on a four computer system with 10 biod processes, you would use 40 NFSDs.

If you are installing a larger system, you can have up to 120 NFSDs on the computer.

For additional information about NFS, refer to your NFS documentation.

## Setting up a working collective to distribute commands to ESE workstations (AIX)

In a partitioned database environment on AIX, you can set up a working collective to distribute commands to the set of RS/6000® SP™ workstations that participate in your partitioned database system. Commands can be distributed to the workstations by the `dsh` command.

This can be useful when installing or administering a partitioned database system on AIX, to enable you to quickly execute the same commands on all the computers in your environment with less opportunity for error.

You must know the hostname of each computer that you want to include in the working collective.

You must be logged on to the Control workstation as a user with root authority.

Have a file that lists the hostnames for all of the RS/6000 SP workstations that will participate in your partitioned database system. To set up the working collective to distribute commands to this list of workstations:

1. Create a file called `eeelist.txt` that will list the *hostnames* for all of the workstations that will participate in the working collective.

For example, assume that you wanted to create a working collective with two SP nodes called `workstation1` and `workstation2`. The contents of `eeelist.txt` would be:

```
workstation1
workstation2
```

2. Update the working collective environment variable. To update this list, enter the following command:

```
export WCOLL=path/eeelist.txt
```

where *path* is the location where `eeelist.txt` was created, and `eeelist.txt` is the name of the file that you created that lists the RS/6000SP workstations in the working collective.

3. Verify that the names in the working collective are indeed the workstations that you want, by entering the following command:

```
dsh -q
```

You will receive output similar to the following:

```
Working collective file /eeelist.txt:
workstation1
workstation2
Fanout: 64
```

## Verifying port range availability on participating computers (Linux and UNIX)

This task describes the steps required to verify port range availability on participating computers. The port range is used by the Fast Communications Manager (FCM). FCM is a feature of DB2 that handles communications between database partition servers.

Verifying the port range availability on participating computers should be done after you install the instance-owning database partition server and before you install any participating database partition servers.

When you install the instance-owning database partition server on the primary computer, DB2 reserves a port range according to the specified number of logical database partition servers participating in partitioned database environment. The default range is four ports. For each server that participates in the partitioned database environment, you must manually configure the `/etc/services` file for the FCM ports. The range of the FCM ports depends on how many logical partitions you want to use on the participating computer. A minimum of two entries are required, `DB2_<instance>` and `DB2_<instance>_END`. Other requirements for the FCM ports specified on participating computers are:

- The starting port number must match the starting port number of the primary computer
- Subsequent ports must be sequentially numbered
- Specified port numbers must be free
- 

To make changes to the services file, you require root authority.

To verify the port range availability on participating computers:

1. Open the services file located in the `/etc/services` directory.
2. Locate the ports reserved for the DB2 Fast Communications Manager (FCM). The entries should appear similar to the following:

```
DB2_db2inst1      60000/tcp
DB2_db2inst1_1   60001/tcp
DB2_db2inst1_2   60002/tcp
DB2_db2inst1_END 60003/tcp
```

DB2 reserves the first four available ports after 60000.

3. On each participating computer, open the services file and verify that the ports reserved for DB2 FCM in the services file of the primary computer are not being used.
4. In the event that the required ports are in use on a participating computer, identify an available port range for all computers and update each service file, including the services file on the primary computer.

After you install the instance-owning database partition server on the primary computer, you must install your DB2 product on the participating database partition servers. You can use the response file generated for the partitioning servers (default name is `db2ese_addpart.rsp`), you need to manually configure the `/etc/services` files for the FCM ports. The range of the FCM ports depend on how many logical partitions you want to use on the current machine. The minimum entries are for `DB2_` and `DB2__END` two entries with consecutive free port numbers. The FCM port numbers used on each participating machines must have the same starting port number, and subsequent ports must be sequentially numbered.

## Creating a DB2 home file system for a partitioned database environment

To install DB2 Enterprise Server Edition and create a partitioned database environment, you must have a file system that is available to all of the machines. This file system will be used as the instance home directory. It can also be used as a temporary location for the contents of the DB2 database product CD.

## Creating a DB2 home file system for a partitioned database system (AIX)

This task is part of setting up your partitioned database system. This task describes how to:

- create a DB2 home file system
- NFS export the home file system
- NFS mount the home file system from each participating computer

It is recommended that you create a home file system that is as large as the content on the DB2 product DVD. You can use the following command to check the size, shown in KB:

```
du -sk <DVD mounting point>
```

A DB2 instance will require at least 50 MB of space. If you do not have enough free space, you can mount the DB2 product DVD from each participating computer as an alternative to copying the contents to disk.

You must have:

- root authority to create a file system
- Created a volume group where your file system is to physically reside.

To create, NFS export, and NFS mount the DB2 home file system, perform the following steps:

### Creating the DB2 home file system

Log on to the primary computer (ServerA) in your partitioned database system as a user with root authority and create a home file system for your partitioned database system called /db2home.

1. Enter the **smit jfs** command.
2. Click on the **Add a Journaled File System** icon.
3. Click on the **Add a Standard Journaled File System** icon.
4. Select an existing volume group from the **Volume Group Name** list where you want this file system to physically reside.
5. Set the **SIZE of file system (SIZE of file system (in 512-byte blocks) (Num.)** field). This sizing is enumerated in 512-byte blocks, so if you only need to create a file system for the instance home directory, you can use 180 000, which is about 90 MB. If you need to copy the product DVD image over to run the installation, you can create it with a value of 20 000 000, which is about 1 GB.
6. Enter the mount point for this file system in the **MOUNT POINT** field. In this example, the mount point is /db2home.
7. Set the **Mount AUTOMATICALLY at system restart** field to yes. The remaining fields can be left to the default settings.
8. Click **OK**.

### Exporting the DB2 home file system

1. NFS export the /db2home file system so that it is available to all of the computers that will participate in your partitioned database system:
  - a. Enter the **smit nfs** command.
  - b. Click on the **Network File System (NFS)** icon.
  - c. Click on the **Add a Directory to Exports List** icon.



- d. Enter the pathname and directory to export (for example, /db2home) in the **PATHNAME of directory to export** field.
  - e. Enter the name of each workstation that will participate in your partitioned database system in the **HOSTS allowed root access** field. Use a comma (,) as the delimiter between each name. For example, ServerA, ServerB, ServerC. If you are using a high speed interconnect, it is recommended that you specify the high speed interconnect names for each workstation in this field as well. The remaining fields can be left to the default settings.
  - f. Click **OK**.
2. Log out.

### Mounting the DB2 home file system from each participating computer

Log on to *each* participating computer (ServerB, ServerC, ServerD) and NFS mount the file system that you exported by performing the following steps:

1. Enter the **smit nfs** command.
2. Click on the **Network File System (NFS)** icon.
3. Click on the **Add a File System for Mounting** icon.
4. Enter the pathname of the mount point in the **PATHNAME of the mount point (Path)** field.

The path name of the mount point is where you should create the DB2 home directory. For this example, use /db2home.

5. Enter the pathname of the remote directory in the **PATHNAME of the remote directory** field.

For our example, you should enter the same value that you entered in the **PATHNAME of the mount point (Path)** field.

6. Enter the *hostname* of the machine where you exported the file system in the **HOST where the remote directory resides** field.

This value is the hostname of the machine where the file system that you are mounting was created.

To improve performance, you may want to NFS mount the file system that you created over a high speed interconnect. If you want to mount this file system using a high speed interconnect, you must enter its name in the **HOST where remote directory resides** field.

You should be aware that if the high speed interconnect ever becomes unavailable for some reason, every workstation that participates in your partitioned database system will lose access to the DB2 home directory.

7. Set the **MOUNT now, add entry to /etc/filesystems or both?** field to both.
8. Set the **/etc/filesystems entry will mount the directory on system RESTART** field to yes.
9. Set the **MODE for this NFS file system** field to read-write.
10. Set the **Mount file system soft or hard** field to soft.

A soft mount means that the computer *will not* try for an infinite period of time to remotely mount the directory. A hard mount means that your machine will infinitely try to mount the directory. This could cause problems in the event of a system crash. It is recommended that you set this field to soft.

The remaining fields can be left to the default settings.

11. Ensure that this file system is mounted with the **Allow execution of SUID and sgid programs in this file system?** field set to Yes. This is the default setting.
12. Click **OK**.
13. Log out.

## Creating a DB2 home file system for a partitioned database system (HP-UX)

This task is part of setting up your partitioned database system. This task describes how to:

- create a DB2 home file system
- NFS export the home file system
- NFS mount the home file system from each participating computer

It is recommended that you create a home file system that is as large as the content on the DB2 product DVD. You can use the following command to check the size, shown in KB:

```
du -sk <DVD mounting point>
```

A DB2 instance will require at least 50 MB of space. If you do not have enough free space, you can mount the DB2 product DVD from each participating computer as an alternative to copying the contents to disk.

You must have root authority to create a file system.

To create, NFS export, and NFS mount the DB2 home file system, perform the following steps:

### Creating the DB2 home file system

Manually:

1. Select a disk partition or logical volume and use a utility like `newfs` to create this file system. For more information, enter the `man newfs` command.
2. Mount this file system locally and add an entry to the `/etc/fstab` file so that this file system is mounted each time the system is restarted.

Using SAM:

1. Enter the `sam` command.
2. Click on the **Disks and File Systems** icon.
3. Click on the **File Systems** icon.
4. Select **Action** → **Add Local File systems**.
5. You can choose either to use or not to use a Logical Volume Manager. It is recommended to use a Logical Volume Manager.

### Exporting the DB2 home file system

If you are installing DB2 ESE on a cluster of HP-UX systems, you can add an entry to the `/etc/exports` file to export this file system via NFS, or use SAM.

To export the file system using SAM:

1. Enter the `sam` command.
2. Click on the **Networking and Communications** icon.
3. Click on the **Networked File Systems** icon.

4. Click on the **Exported Local File Systems** icon.
5. Click the **Action** menu and select **Add Exported File System**
6. Enter the pathname and directory to export (for example, /db2home) in the **Local Directory Name** field.
7. Click the **User Access** button and add read-write access for the other computers in the instance in the window that appears.
8. Click the **Root User Access** button and add access for the other computers in the instance in the window that appears.
9. Click **OK**.
10. Log out.

### Mounting the DB2 home file system from each participating computer

After you have exported this file system, you must mount this file system on each of the participating computers.

On each participating computer:

1. Enter the **sam** command.
2. Click on the **Networking and Communications** icon.
3. Click on the **Networked File Systems** icon.
4. Click on the **Mounted Remote File Systems** icon.
5. Click the **Action** menu and select **Add Remote File System Using NFS**
6. Enter the mount point of the file system to mount (for example, /db2home) in the **Local Directory Name** field.
7. Enter the name of the remote server (for example, ServerA) in the **Remote Server Name** field.
8. Enter the pathname and directory of the remote directory (for example, /db2home) in the **Remote Directory Name** field.
9. Set the **Mount At System Boot** option on.
10. Click the **NFS Mount Options** button and set **soft** mount type and the **Allow SetUID Execution** option on.

A soft mount means that the computer *will not* try for an infinite period of time to remotely mount the directory. A hard mount means that your machine will infinitely try to mount the directory. This could cause problems in the event of a system crash. It is recommended that you set this field to soft.

The remaining fields can be left to the default settings.

11. Click **OK**.
12. Log out.

### Creating a file system for a partitioned DB2 server (Linux)

This task is part of setting up your partitioned database system. This task describes how to:

- create a DB2 home file system
- NFS export the home file system
- NFS mount the home file system from each participating computer

You must have a file system that is available to all machines that will participate in your partitioned database system. This file system will be used as the instance home directory.

For configurations that use more than one machine for a single database instance, NFS (Network File System) is used to share this file system. Typically, one machine in a cluster is used to export the file system using NFS, and the remaining machines in the cluster mount the NFS file system from this machine. The machine that exports the file system has the file system mounted locally.

For more command information, see your Linux distribution documentation.

To create this file system:

1. On one machine, select a disk partition or create one using `fdisk`.
2. Using a utility like `mkfs`, create a file system on this partition. The file system should be large enough to contain the necessary DB2 program files as well as enough space for your database needs.
3. Locally mount the file system you have just created and add an entry to the `/etc/fstab` file so that this file system is mounted each time the system is rebooted. For example:

```
/dev/hda1 /db2home ext3 defaults 1 2
```

4. To automatically export an NFS file system on Linux at boot time, add an entry to the `/etc/exports` file. Be sure to include all of the host names participating in the cluster as well as all of the names that a machine might be known as. Also, ensure that each machine in the cluster has root authority on the exported file system by using the "root" option.

The `/etc/exports` file is an ASCII file which contains the following type of information:

```
/db2home machine1_name(rw) machine2_name(rw)
```

To export the NFS directory, run

```
/usr/sbin/exports -r
```

5. On each of the remaining machines in the cluster, add an entry to the `/etc/fstab` file to NFS mount the file system automatically at boot time. As in the following example, when you specify the mount point options, ensure that the file system is mounted at boot time, is read-write, is mounted hard, includes the `bg` (background) option, and that `setuid` programs can be run properly.

```
fusion-en:/db2home /db2home nfs rw,timeo=7,  
hard,intr,bg,suid,lock
```

where `fusion-en` represents the machine name.

6. NFS mount the exported file system on each of the remaining machines in the cluster by entering the following command:

```
mount /db2home
```

If the `mount` command fails, use the `showmount` command to check the status of the NFS server. For example:

```
showmount -e fusion-en
```

where `fusion-en` represents the machine name.

This `showmount` command should list the file systems which are exported from the machine named `fusion-en`. If this command fails, the NFS server may not have been started. Run the following command as root on the NFS server to start the server manually:

```
/etc/rc.d/init.d/nfs restart
```

Assuming the present run level is 3, you can have this command run automatically at boot time by renaming K20nfs to S20nfs under the following directory: /etc/rc.d/rc3.d.

7. Ensure that the following steps were successful:
  - a. On a single machine in the cluster, you have created a file system to be used as the instance and home directory.
  - b. If you have a configuration that uses more than one machine for a single database instance, you have exported this file system using NFS.
  - c. You have mounted the exported file system on each of the remaining machines in the cluster.

## Creating a file system for a partitioned DB2 server (Solaris Operating System)

This task is part of setting up your partitioned database system. This task describes how to:

- create a DB2 home file system
- NFS export the home file system
- NFS mount the home file system from each participating computer

It is recommended that you create a home file system that is as large as the content on the DB2 product DVD. You can use the following command to check the size, shown in KB:

```
du -sk <DVD mounting point>
```

A DB2 instance will require at least 50 MB of space. If you do not have enough free space, you can mount the DB2 product DVD from each participating computer as an alternative to copying the contents to disk.

There are a number of ways to create a local file system on Solaris Operating Systems. If you want to use a product, such as Veritas, to create the file system, refer to the product's documentation.

You must have root authority to create a file system.

To create, NFS export, and NFS mount the DB2 home file system, perform the following steps:

### Creating the DB2 home file system

1. On the primary computer (ServerA), select a disk partition or configure one using the format command. When using the format command, ensure that the disk partitions being used do not overlap. Overlapping partitions can cause data corruption or file system failures. Ensure you have correctly entered the command, as mistakes can cause serious problems.
2. Using a utility like newfs or mkfs, create a file system on this partition. The file system should be large enough to contain the necessary DB2 files as well as other non-DB2 files. A minimum of 300 MB is recommended.
3. Locally mount the file system you have just created and add an entry to the /etc/vfstab file so that this file system is mounted each time the system is rebooted. For example:

```
/dev/dsk/c1t0d2s2 /dev/rdisk/c1t0d2s2 /db2home ufs 2 yes -
```

## Exporting the DB2 home file system

1. To automatically export an NFS file system on Solaris at boot time, add an entry to the `/etc/dfs/dfstab` file. Be sure to include all of the host names of the participating computers as well as all of the names that a given computer might be known as. Also, ensure that each computer has root authority on the exported file system by using the "root" option.

In the following example, an entry for a four computer partitioned database system is added to the `/etc/dfs/dfstab` file. The participating computers, ServerB, ServerC, and ServerD, are given permission to mount the file system `/db2home`, which will be used as the DB2 home file system.

```
share -F nfs -o \
rw=ServerB.torolab.ibm.com,\
root=ServerB.torolab.ibm.com \

rw=ServerC.torolab.ibm.com, \
root=ServerC.torolab.ibm.com\

rw=ServerD.torolab.ibm.com,\
root=ServerD.torolab.ibm.com \
-d "homes" /db2home
```

If a computer is known by more than one hostname, all aliases must be included in the `/etc/dfs/dfstab` file. For example, if ServerB was also known by the name ServerB-tokenring, the entry in the `/etc/dfs/dfstab` for ServerB would appear as follows:

```
rw=ServerB.torolab.ibm.com:ServerB-tokenring.torolab.ibm.com,\
root=ServerB.torolab.ibm.com:ServerB-tokenring.torolab.ibm.com \
```

2. On each of the participating computers, add an entry to the `/etc/vfstab` file to NFS mount the file system automatically at boot time. As in the following example, when you specify the mount point options, ensure that the file system is mounted at boot time, is read-write, is mounted hard, includes the `bg` (background) option, and that `suid` programs can be run properly:

```
ServerA:/db2home - /db2home nfs - yes rw,hard,intr,bg,suid
```

## Mounting the DB2 home file system from each participating computer

1. Create and NFS mount the exported file system on each of the participating computers in the partitioned database environment by entering the following commands:

```
mkdir /db2home
mount /db2home
```

If the mount command fails, use the `showmount` command to check the status of the NFS server. For example:

```
showmount -e ServerA
```

This `showmount` command should list the file systems which are exported from the computer named ServerA. If this command fails, the NFS server may not have been started. To start the server manually, run the following commands as root on the NFS server:

```
/usr/lib/nfs/mountd
/usr/lib/nfs/nfsd -a 16
```

These commands are run automatically at boot time if there are any entries in the `/etc/dfs/dfstab` file. After starting the NFS server, export the NFS file system again by running the following command:

```
sh /etc/dfs/dfstab
```

Ensure that you have completed the following steps:

1. On a single computer in the partitioned database environment, you have created a file system to be used as the instance and home directory.
2. You have exported this file system via NFS.
3. You have mounted the exported file system on each participating computer.

## Verifying that NFS is running (Linux and UNIX)

Before setting up a database partitioned environment, you should verify that Network File System (NFS) is running on each computer that will participate in your partitioned database system.

NFS must be running on each computer.

To verify that NFS is running on each computer:

### AIX operating systems

Type the following command on each computer:

```
lssrc -g nfs
```

The Status field for NFS processes should indicate active.

After you have verified that NFS is running on each system, you should check for the specific NFS processes required by DB2 products. The required processes are:

```
rpc.lockd  
rpc.statd
```

### HP-UX and Solaris operating systems

Type the following command on each computer:

```
showmount -e hostname
```

Enter the showmount command without the *hostname* parameter to check the local system.

If NFS is not active you will receive a message similar to the following:

```
showmount: ServerA: RPC: Program not registered
```

After you have verified that NFS is running on each system, you should check for the specific NFS processes required by DB2 products:

```
rpc.lockd  
rpc.statd
```

You can use the following commands to check for these processes:

```
ps -ef | grep rpc.lockd  
ps -ef | grep rpc.statd
```

### Linux operating systems

Type the following command on each computer:

```
showmount -e hostname
```

Enter the showmount command without the *hostname* parameter to check the local system.

If NFS is not active you will receive a message similar to the following:

```
showmount: ServerA: RPC: Program not registered
```

After you have verified that NFS is running on each system, you should check for the specific NFS processes required by DB2 products. The required process is `rpc.statd`.

You can use the `ps -ef | grep rpc.statd` commands to check for this process.

If these processes are not running, consult your operating system documentation.



---

## Chapter 6. Mounting product CDs or DVDs on Linux or UNIX

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### Mounting the CD or DVD (AIX)

Depending on your system configuration, you might need to log on as root to mount discs.

To mount the CD or DVD on AIX using the System Management Interface Tool (SMIT), perform the following steps:

1. Insert the disc in the drive.
2. Create a disc mount point by entering the `mkdir -p /disc` command, where `disc` represents the CD or DVD mount point directory.
3. Allocate a disc file system using SMIT by entering the `smit storage` command.
4. After SMIT starts, select **File Systems** → **Add / Change / Show / Delete File Systems** → **CDROM File Systems** → **Add CDROM File System**.
5. In the Add a File System window:
  - Enter a device name for your CD or DVD file system in the **DEVICE Name** field. Device names for CD or DVD file systems must be unique. If there is a duplicate device name, you may need to delete a previously-defined CD or DVD file system or use another name for your directory. In our example, we will use `/dev/cd0` as the device name.
  - Enter the disc mount point directory in the **MOUNT POINT** window. In our example, the mount point directory is `/disc`.
  - In the **Mount AUTOMATICALLY at system restart** field, select **yes** to enable automatic mounting of the file system.
  - Click **OK** to close the window, then click **Cancel** three times to exit SMIT.
6. Next, mount the CD or DVD file system by entering the `smit mountfs` command.
7. In the Mount a File System window:
  - Enter the device name for this CD or DVD file system in the **FILE SYSTEM name** field. In our example, the device name is `/dev/cd0`.
  - Enter the disc mount point in the **Directory over which to mount** field. In our example, the mount point is `/disc`.
  - Enter `cdrfs` in the **Type of Filesystem** field. To view the other kinds of file systems you can mount, click **List**.
  - In the **Mount as READ-ONLY system** field, select **yes**.
  - Accept the remaining default values and click **OK** to close the window.

Your CD or DVD file system is now mounted. To view the contents of the CD or DVD, place the disk in the drive and enter the `cd /disc` command where `disc` is the disc mount point directory.

---

### Mounting the CD or DVD (HP-UX)

This topic explains how to mount your DB2 for HP-UX product CD or DVD.

Depending on your system configuration, you might need to log on as root to mount discs.

To mount your DB2 for HP-UX product CD or DVD:

1. Insert the CD or DVD in the drive.
2. If necessary, define a new directory as the mount point for the CD or DVD drive. Define `/cdrom` as the mount point using the `mkdir /cdrom` command.
3. If necessary, identify the drive device file using the `ioscan -fnC` disk command. This command lists all recognized CD or DVD drives and their associated device files. The filename will be something similar to `/dev/dsk/c1t2d0`.
4. Mount the CD or DVD drive to the mount-point directory:

```
mount -F cdfs -o rr /dev/dsk/c1t2d0 /cdrom
```
5. Obtain a file listing to verify the mount using the `ls /cdrom` command.
6. Log out.

Your CD or DVD file system is now mounted. View the contents of the CD or DVD by placing it in the drive and enter the `cd /cdrom` command where `cdrom` is the mount point directory.

---

## Mounting the CD or DVD (Linux)

Depending on your system configuration, you might need to log on as root to mount discs.

To mount the CD or DVD on Linux operating systems:

1. Insert the CD or DVD in the drive and enter the following command:

```
mount -t iso9660 -o ro /dev/cdrom /cdrom
```

where `/cdrom` represents the mount point of the CD or DVD.
2. Log out.

Your CD or DVD file system is now mounted. View the contents of the CD or DVD by placing the disc in the drive and enter the `cd /cdrom` command where `cdrom` is the mount point directory.

---

## Mounting the CD or DVD (Solaris Operating System)

If you are mounting the CD or DVD drive from a remote system using NFS, the CD or DVD file system on the remote computer must be exported with root access.

Depending on your local system configuration, you might also need root access on the local computer.

To mount the CD or DVD on Solaris Operating System:

1. Insert the CD or DVD into the drive.
2. If the Volume Manager (`vold`) is running on your system, the disc is automatically mounted as `/cdrom/cd_label` if the CD or DVD has a label or `/cdrom/unnamed_cdrom` if it is unlabeled.

If the Volume Manager is not running on your system, complete the following steps to mount the CD or DVD:

- a. Determine the name of the device by entering the following command:

```
ls -al /dev/sr* |awk '{print "/" $11}'
```

This command returns the name of the CD or DVD device. In this example, the command returns the string `/dev/dsk/c0t6d0s2`.

- b. Enter the following commands to mount the CD or DVD:

```
mkdir -p /cdrom/unnamed_cdrom
mount -F hsfs -o ro /dev/dsk/c0t6d0s2 /cdrom/unnamed_cdrom
```

where `/dev/dsk/c0t6d0s2` represents the name of the device that was returned in the preceding step and `/cdrom/unnamed_cdrom` represents the CD or DVD mount directory.

**Note:** If you are mounting the CD or DVD drive from a remote system using NFS, the CD or DVD file system on the remote machine must be exported with root access. You must also mount that file system with root access on the local machine.

3. Log out.

Your CD or DVD file system is now mounted. View the contents of the CD or DVD by placing the disk in the drive and enter the `cd /cdrom` command where `cdrom` is the mount point directory.



---

## Chapter 7. Installing on Windows

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### An overview of installing your DB2 server product (Windows)

This topic outlines the steps for installing your DB2 server product on Windows.

To install your DB2 server product:

1. Review your DB2 product prerequisites.
2. Review DB2 migration information if applicable.
3. Prepare the installation media:

#### **Product DVD**

Insert the DB2 product DVD into your DVD-ROM drive.

#### **Installation image**

If you downloaded an installation image, unzip the file.

4. Install your DB2 product using:
  - the DB2 Setup wizard.
  - a silent installation with a response file.

You can use the DB2 Setup wizard to perform installation and configuration tasks, such as:

- Selecting DB2 installation type (typical, compact, or custom).
- Selecting DB2 product installation location.
- Installing the languages that you can specify later as the default language for the product interface and messages.
- Setting up DB2 Extended Security.
- Setting up a DB2 instance (including instance user setup. By default, it is same as the DAS user).
- Setting up the DB2 Administration Server (including DAS user setup).
- Setting up the DB2 Text Search server.
- Setting up Administration contact and health monitor notification.
- Setting up and configuring your instance setup and configuration (including instance user setup).
- Preparing the DB2 tools catalog.
- Specifying the DB2 Information Center port.
- Creating response files.
- Installing additional products.

---

### Installing DB2 servers (Windows)

This task describes how to start the DB2 Setup wizard on Windows. You will use the DB2 Setup wizard to define your installation and install your DB2 product on your system.

#### **Prerequisites**

Before you start the DB2 Setup wizard:

- If you are planning on setting up a partitioned database environment, see the "Setting up a partitioned database environment" topic.

- Ensure that your system meets installation, memory, and disk requirements.
- If you are planning to use LDAP on Windows to register the DB2 server in Active Directory, you should extend the directory schema before you install.
- You must have a local *Administrator* user account with the recommended user rights to perform the installation. In DB2 servers where LocalSystem can be used as the DAS and DB2 instance user and you are not using the database partitioning feature, a non-administrator user with elevated privileges can perform the installation.
- Although not mandatory, it is recommended that you close all programs so that the installation program can update any files on the computer without requiring a reboot.

### Restrictions

- The DB2 copy name and the instance name cannot start with a numeric value.
- The DB2 copy name and the instance name must be unique among all DB2 copies.
- The use of XML features is restricted to a database that has only one database partition.
- No other DB2 product can be installed in the same path if one of the following is already installed:
  - IBM Data Server Runtime Client
  - IBM Data Server Driver for ODBC, CLI, and .NET
  - DB2 Information Center.
- The DB2 Setup wizard fields do not accept non-English characters.
- If you enable extended security on Windows Vista, users must belong to the DB2ADMNS or DB2USERS group to run local DB2 commands and applications because of an extra security feature (User Access Control) that limits the privileges that local administrators have by default. If users do not belong to one of these groups, they will not have read access to local DB2 configuration or application data.

To start the DB2 Setup wizard:

1. Log on to the system with the local Administrator account that you have defined for the DB2 installation.
2. If you have the DB2 product DVD, insert it into the drive. If enabled, the auto-run feature automatically starts the DB2 Setup Launchpad. If the auto-run does not work, use Windows Explorer to browse the DB2 product DVD and double-click on the setup icon to start the DB2 Setup Launchpad.
3. If you downloaded the DB2 product from passport advantage, run the executable file to extract the DB2 product installation files. Use Windows Explorer to browse the DB2 installation files and double-click on the setup icon to start the DB2 Setup Launchpad.
4. From the DB2 Setup Launchpad, you can view installation prerequisites and the release notes, or you can proceed directly to the installation. You may want to review the installation prerequisites and release notes for late-breaking information.
5. Click **Install a Product** and the **Install a Product** window will display the products available for installation.

If you have no existing DB2 products installed on your computer, launch the installation by clicking **Install New**. Proceed through the installation following the DB2 Setup wizard's prompts.

If you have at least one existing DB2 product installed on your computer, you can:

- Click **Install New** to create a new DB2 copy.
  - Click **Work with Existing** to upgrade an existing DB2 copy, to add functionality to an existing DB2 copy, migrate an existing DB2 Version 8 or Version 9.1 copy, or to install an add-on product.
6. The DB2 Setup wizard will determine the system language, and launch the setup program for that language. Online help is available to guide you through the remaining steps. To invoke the online help, click **Help** or press **F1**. You can click **Cancel** at any time to end the installation.

Your DB2 product will be installed, by default, in the <Program Files>\IBM\sqllib directory, where <Program Files> represents the location of the Program Files directory.

If you are installing on a system where this directory is already being used, the DB2 product installation path will have `_xx` added to it, where `_xx` are digits, starting at 01 and increasing depending on how many DB2 copies you have installed.

You can also specify your own DB2 product installation path.

For information on errors encountered during installation, review the installation log file located in the My Documents\DB2LOG\ directory. The log file uses the following format: DB2-ProductAbbrev-DateTime.log, for example, DB2-ESE-Tue Apr 04 17\_04\_45 2006.log.

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database system and DB2 related products. By default, DB2 information will be accessed from the web if the DB2 Information Center is not locally installed.

#### **DB2 Express and DB2 Workgroup Server Edition memory limits**

If you are installing DB2 Express Edition, the maximum allowed memory for the instance is 4GB.

If you are installing DB2 Workgroup Server Edition, the maximum allowed memory for the instance is 16GB.

The amount of memory allocated to the instance is determined by the **INSTANCE\_MEMORY** database manager configuration parameter.

#### **Important notes when migrating from Version 9.1:**

- If the memory configuration for your Version 9.1 DB2 product exceeds the allowed limit, the DB2 product might not start after migrating to the current version.
- The self tuning memory manager will not increase your overall instance memory limit beyond the license limits.

---

## Multiple DB2 copies on the same computer (Windows)

You can use multiple DB2 copies on the same computer. Each DB2 copy can be at the same or different code levels. The benefits of doing this include:

- The ability to run applications that require different DB2 versions on the same machine at the same time.
- The ability to run independent copies of DB2 products for different functions.
- The ability to test on the same computer before moving the production database to the latter version of the DB2 product.
- For independent software vendors, the ability to embed a DB2 server product into your product and hide the DB2 database from your users.

A DB2 copy can contain one or more different DB2 products. This refers to the group of DB2 products that are installed at the same location.

### Differences when only one DB2 copy is installed

- During installation, a unique Default DB2 copy name is generated. You can only change the name of the default DB2 copy as you go through the DB2 Setup wizard. You cannot change the DB2 copy name after the installation is completed.
- Applications use the Default DB2 copy in an environment similar to the DB2 Version 8 environment.

### Differences when multiple DB2 copies are installed on the same computer

- DB2 Version 8 can coexist with DB2 Version 9.1 and DB2 Version 9.5, with restrictions described below.
- The DB2 Version 8 copy must be the default copy even though you may have multiple copies of DB2 Version 9.1 or Version 9.5. This default copy cannot be changed. After DB2 Version 8 is uninstalled, you can use the Global Switcher to set the default copy to any the DB2 Version 9.1 or Version 9.5 copies.
- Optional: You can configure each DB2 copy to use a different DB2 Information Center.

**Note:** You can have only one copy of the DB2 Information Center installed on the same system at the same Release level. Specifically, you can have a Version 8, a Version 9.1, and a Version 9.5 DB2 Information Center on the same system, but you cannot have one DB2 Information Center at Version 9 fix pack 1 and another at Version 9 fix pack 2 on the same machine. You can however configure the DB2 database server to access these DB2 Information Centers remotely.

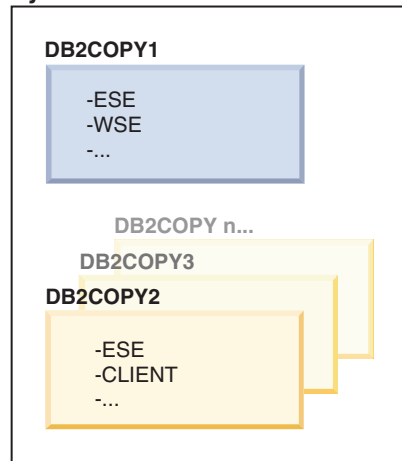
- Only the IBM Data Server Provider for .NET from the default IBM database client interface copy is registered in the Global Assembly Cache. If Version 8 is installed with Version 9, the IBM Data Server Provider for .NET 2.0 Provider from Version 9 is also registered in the Global Assembly Cache. Version 8 does not have a 2.0 .NET provider.
- Each DB2 copy must have unique instance names. For a response file installation with `NO_CONFIG=YES`, the default instance will not be created. However, when you create the instance after the installation, it must be unique. The name of the default instance will be "DB2". If an instance of the "DB2" name already exists, a unique name for the instance is generated to ensure uniqueness. This is done by using the "DB2" name and adding an underscore and generating the last 2 characters in numerical sequence. The subsequent instance names generated are "DB2\_01", "DB2\_02", and so on. For performance reasons, the DB2 Control Center should only be used from one DB2 copy at a single time on a machine.



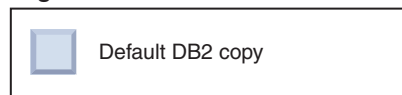
For Microsoft COM+ applications, it is recommended that you use and distribute the *IBM Data Server Driver for ODBC, CLI and .NET (installer) or IBM Data Server Driver for ODBC and CLI (zip)* with your application instead of the *IBM Data Server Runtime Client* as only one *Data Server Runtime Client* can be used for COM+ applications at a time. The *IBM Data Server Driver for ODBC, CLI and .NET (installer) or IBM Data Server Driver for ODBC and CLI (zip)* does not have this restriction. Microsoft COM+ applications accessing DB2 data sources are only supported with the default DB2 copy. Concurrent support of COM+ applications accessing different DB2 copies is not supported. If you have DB2 Universal Database (UDB) Version 8 installed, you can only use DB2 UDB Version 8 to run these applications. If you have DB2 Version 9 or higher installed, you can change the default DB2 copy using the Default DB2 Copy Selection Wizard, but you can't use them concurrently.

### Choosing a default when installing a new DB2 copy

#### System environment

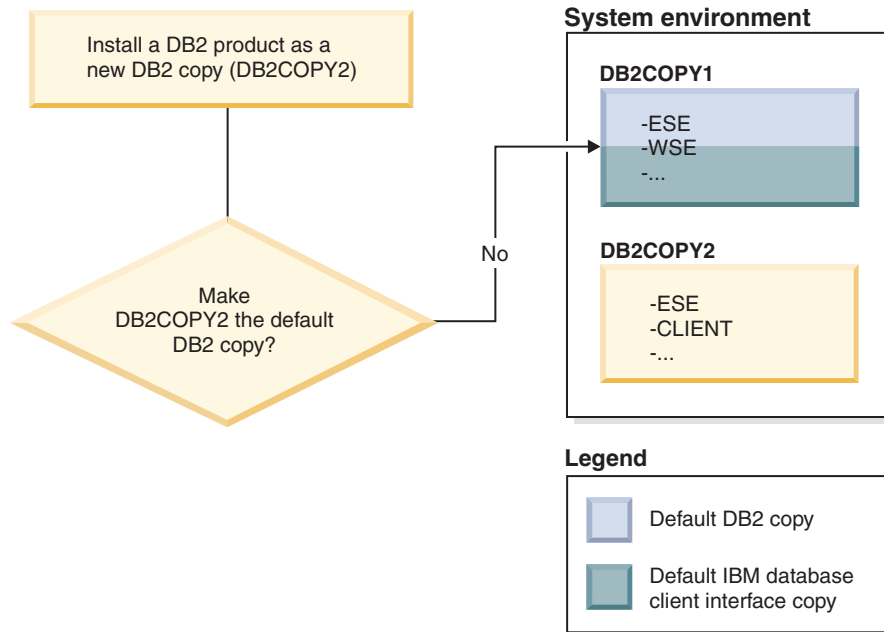


#### Legend



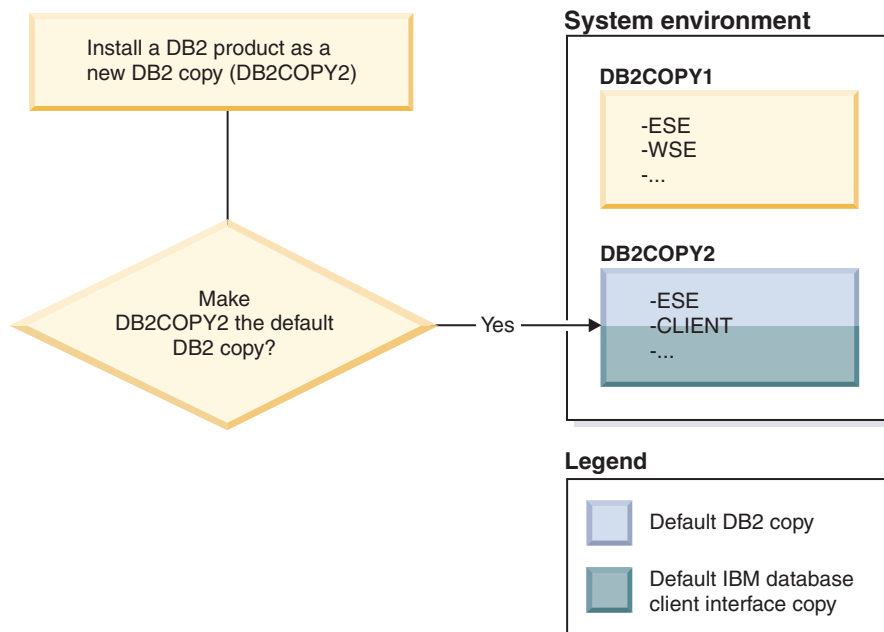
In Version 9.1, you can have a scenario where you have installed multiple DB2 copies. (In this example, DB2COPY1, DB2COPY2, and on to DB2COPYn.) One of the DB2 copies is selected by you as the default DB2 copy. In this case, DB2COPY1 is selected as the default DB2 copy.

Beginning with Version 9.5, imagine a scenario where you install one DB2 copy (DB2COPY1). It is the default DB2 copy and the default IBM database client interface copy.



Then you install a DB2 product in a new DB2 copy (DB2COPY2). During the installation of the new DB2 copy (DB2COPY2) you are asked if you want to make the new DB2 copy the default DB2 copy. If you respond “No”, then DB2COPY1 remains the default DB2 copy. (It is also the default IBM database client interface copy.)

However, consider the same scenario but you respond “Yes” when asked if you want to make the new DB2 copy the default DB2 copy.



In this case, DB2COPY2 becomes the new default DB2 copy (and the default IBM database client interface copy).

#### Version 8 coexistence

DB2 Version 8 and DB2 Version 9 can coexist with the restriction that DB2 Version 8 is set as the Default DB2 copy. To no longer have DB2 Version 8

as the Default DB2 copy, you can migrate that DB2 copy to DB2 Version 9 and then change the Default DB2 copy.

On the server, there can be only one DAS version and it administers instances as follows:

- If the DAS is on Version 9, then it can administer Version 8 and Version 9 instances.
- If the DAS is on Version 8, then it can administer only Version 8 instances. You can migrate your Version 8 DAS, or drop it and create a new Version 9 DAS to administer the Version 8 and Version 9 instances. This is required only if you want to use the Control Center to administer the instances.

### **Version 8 and Version 9 coexistence and the DB2 .NET Data Provider**

In DB2 Version 9, the DB2 .NET Data Provider has System.Transaction support however, this support is only available for the default IBM database client interface copy. You cannot use the DB2 Version 8 .NET Data Provider if the DB2 Version 9 .NET Data Provider is installed. If DB2 Version 8 is installed, the 1.1 .NET Data Provider that is registered in the Global Assembly Cache will be from DB2 Version 8. The 2.0 provider that is registered will be from DB2 Version 9.

### **3rd party applications that run as a service**

By default, 3rd party applications that dynamically bind DB2 DLLs, for example, that are linked with db2api.lib, will find the DB2 DLLs in the current PATH. This means that existing applications that are not enabled for multi-version support will use the Default DB2 copy. To work around this, the application can use the db2SelectDB2Copy API prior to loading any DB2 libraries. For more information, see the *Call Level Interface Guide and Reference, Volume 1*.

### **32- and 64-bit versions on Win x64**

DB2 does not support multiple DB2 32- and 64-bit versions installed on Windows. If you install the DB2 64-bit version, the 32-bit version will be removed from the system. This is because the DB2 32- and 64-bit registries reside in different locations.

### **LDAP and CLI configuration**

With DB2 Version 8, if an application needs different LDAP settings, it needs to use a different LDAP user. Otherwise, the CLI configuration will affect all DB2 copies that the LDAP user might potentially use.

### **Performance counters**

Performance counters can be registered for only one DB2 copy at a time and they can monitor only the instances in the DB2 copy in which they are registered. When you switch the Default DB2 copy, the DB2 Selection Wizard de-registers and reregisters the performance counters so that they are active for the Default DB2 copy.

### **Windows Management Instrumentation (WMI)**

Only one version of the WMI provider can be registered at any given time.

### **Client Connectivity**

You can use only one DB2 copy in the same process. For more information, see "IBM data server client connectivity using multiple copies" on page 167.

### **Applications that dynamically link DB2 DLLs**

Applications that link to DB2 DLLs directly or that use LoadLibrary instead of LoadLibraryEx with the

LOAD\_WITH\_ALTERED\_SEARCH\_PATH parameter will need to ensure that the initial dependent library is loaded properly. You can use your own coding technique to do this, or you can call the db2envar.bat file to setup the environment before running the application, or you can call the db2SelectDB2Copy API, which can be statically linked into the application.

### **Visual Studio 2003 plugins**

There can be only one version of the plugins registered on the same computer at the same time. The version of the plugins that is active will be the version that is shipped with the Default DB2 copy.

### **Licensing**

Licenses need to be registered for each DB2 copy. They are not system-wide. This allows different licenses for different paths and provides the ability for both restricted versions of DB2 copies of the product and full versions of DB2 copies on the same machine.

### **NT Services**

DB2 NT services will use the <servicename\_installationname>. For example, DB2NETSECSERVER\_MYCOPY1. The display name also contains the Copy Name appended to it in brackets, for example, DB2 Security Server (MYCOPY1). Instances also include the DB2-DB2 Copy Name>-Instance Name>-Node Number> in the display name, which is shown in the services control panel applet. The actual service name remains as is.

### **API to select the DB2 copy to use**

You can use the db2SelectDB2Copy API to select the DB2 copy that you want your application to use. This API does not require any DLLs. It is statically linked into your application. You can delay the loading of DB2 libraries and call this API first before calling any other DB2 APIs. Note that the function cannot be called more than once for any given process; that is, you cannot switch a process from one DB2 copy to another.

The db2SelectDB2Copy API sets the environment required by your application to use the DB2 copy name or the location specified. If your environment is already set up for the copy of DB2 that you want to use, then you do not need to call this API. If, however, you need to use a different DB2 copy, you must call this API before loading any DB2 DLLs within your process. This call can be made only once per process.

### **Database Partitioning with multiple physical nodes**

Each physical partition must use the same DB2 copy name on all computers.

### **Using MSCS and Multiple DB2 Copies**

Each DB2 resource must be configured to run in a separate resource monitor.

---

## Chapter 8. Installing on Linux and UNIX

---

### An overview of installing your DB2 server product (Linux and UNIX)

This topic outlines the steps for installing your DB2 server product on AIX, HP-UX, Linux, and Solaris.

To install your DB2 server product:

1. Review your DB2 product prerequisites.
2. Review DB2 migration information if applicable.
3. Modify kernel parameters on HP-UX, Linux, and Solaris. On all platforms, except for Linux on x86\_32, you must install a 64-bit kernel before proceeding with the installation, otherwise the installation will fail.
4. Prepare the installation media:

#### **Product DVD**

If the DB2 product DVD does not automount, mount your DB2 product DVD.

#### **Installation image**

If you downloaded an installation image, untar the file.

5. Install your DB2 product using one of the available methods:
  - The DB2 Setup wizard
  - The db2\_install command
  - A silent installation using a response file
  - Payload file deployment

For DB2 servers, you can use the DB2 Setup wizard to perform installation and configuration tasks, such as:

- Selecting DB2 installation type (typical, compact, or custom).
  - Selecting DB2 product installation location.
  - Install the languages that you can specify later as the default language for the product interface and messages.
  - Install or upgrade the IBM Tivoli System Automation for Multiplatforms Base Component (Linux and AIX).
  - Setting up a DB2 instance.
  - Setting up the DB2 Administration Server (including DAS user setup).
  - Setting up the DB2 Text Search server.
  - Setting up Administration contact and health monitor notification.
  - Setting up and configuring your instance setup and configuration (including instance user setup).
  - Setting up Informix<sup>®</sup> data source support.
  - Preparing the DB2 tools catalog.
  - Specify the DB2 Information Center port.
  - Creating response files.
6. If you installed a DB2 server using a method other than the DB2 Setup wizard, post-installation configuration steps are required.

---

## Installing as a root user

### Installing DB2 servers using the DB2 Setup wizard (Linux and UNIX)

This task describes how to start the DB2 Setup wizard on Linux and UNIX systems. The DB2 Setup wizard is used to define your installation preferences and to install your DB2 product on your system.

Before you start the DB2 Setup wizard:

- If you are planning on setting up a partitioned database environment, see how to do this by following the related link at the bottom of this topic.
- Ensure that your system meets installation, memory, and disk requirements.
- You can install a DB2 server using either root or non-root authority. For more information on non-root installation, see the related links.
- The DB2 product image must be available. You can obtain a DB2 installation image either by purchasing a physical DB2 product DVD, or by downloading an installation image from Passport Advantage.
- If you are installing a non-English version of a DB2 database product, you must have the appropriate National Language Packages.
- The DB2 Setup wizard is a graphical installer. You must have X windows software capable of rendering a graphical user interface for the DB2 Setup wizard to run on your machine. Ensure that the X windows server is running. Ensure that you have properly exported your display. For example, export `DISPLAY=9.26.163.144:0`.
- If you are using security software in your environment, you must manually create required DB2 users before you start the DB2 Setup wizard.

**Note:**

- The use of XML features is restricted to a database that is defined with the code set UTF-8 and has only one database partition.
- The DB2 Setup wizard fields do not accept non-English characters.

To start the DB2 Setup wizard:

1. If you have a physical DB2 product DVD, change to the directory where the DB2 product DVD is mounted by entering the following command:

```
cd /dvdrom
```

where */dvdrom* represents mount point of the DB2 product DVD.

2. If you downloaded the DB2 product image, you must decompress and untar the product file.

- a. Decompress the product file:

```
gzip -d product.tar.gz
```

where *product* is the name of the product that you downloaded.

- b. Untar the product file:

**On Linux operating systems**

```
tar -xvf product.tar
```

**On AIX, HP-UX, and Solaris operating systems**

```
guntar -xvf product.tar
```

where *product* is the name of the product that you downloaded.

c. Change directory:

```
cd ./product
```

where *product* is the name of the product that you downloaded.

**Note:** If you downloaded a National Language Package, untar it into the same directory. This will create the subdirectories (for example `./nlpack/disk1`) in the same directory, and allows the installer to automatically find the installation images without prompting.

3. Enter the `./db2setup` command from the directory where the product image resides to start the DB2 Setup wizard.
4. The IBM DB2 Setup Launchpad opens. From this window, you can view installation prerequisites and the release notes, or you can proceed directly to the installation. You may want to review the installation prerequisites and release notes for late-breaking information.
5. Click **Install a Product** and the **Install a Product** window will display the products available for installation.

Launch the installation by clicking **Install New**. Proceed through the installation following the DB2 Setup wizard's prompts.

Once you have initiated the installation, proceed through the DB2 Setup wizard installation panels and make your selections. Installation help is available to guide you through the remaining steps. To invoke the installation help, click **Help** or press F1. You can click **Cancel** at any time to end the installation.

For non-root installations, DB2 products are always installed in the `$HOME/sqllib` directory, where `$HOME` represents the non-root user's home directory.

For root installations, DB2 products are installed, by default, in one of the following directories:

**AIX, HP-UX, and Solaris**

```
/opt/IBM/db2/V9.5
```

**Linux** `/opt/ibm/db2/V9.5`

If you are installing on a system where this directory is already being used, the DB2 product installation path will have `_xx` added to it, where `_xx` are digits, starting at 01 and increasing depending on how many DB2 copies you have installed.

You can also specify your own DB2 product installation path.

DB2 installation paths have the following rules:

- Can include lowercase letters (a-z), uppercase letters (A-Z), and the underscore character ( \_ )
- Cannot exceed 128 characters
- Cannot contain spaces
- Cannot contain non-English characters

National Language Packs can also be installed by running the `./db2setup` command from the directory where the National Language Pack resides, after a DB2 database product has been installed.

The installation log files are:

- The DB2 setup log file. This file captures all DB2 installation information including errors.

- For root installations, the DB2 setup log file name is db2setup.log.
- For non-root installations, the DB2 setup log file name is db2setup\_username.log, where *username* is the non-root user ID under which the installation was performed.
- The DB2 error log file. This file captures any error output that is returned by Java (for example, exceptions and trap information).
  - For root installations, the DB2 error log file name is db2setup.err.
  - For non-root installations, the DB2 error log file name is db2setup\_username.err, where *username* is the non-root user ID under which the installation was performed.

By default, these log files are located in the /tmp directory. You can specify the location of the log files.

There is no longer a db2setup.his file. Instead, the DB2 installer saves a copy of the DB2 setup log file in the DB2\_DIR/install/logs/ directory, and renames it db2install.history. If the name already exists, then the DB2 installer renames it db2install.history.xxxx, where xxxx is 0000-9999, depending on the number of installations you have on that machine.

Each installation copy has a separate list of history files. If an installation copy is removed, the history files under this install path will be removed as well. This copying action is done near the end of the installation and if the program is stopped or aborted before completion, then the history file will not be created.

On Linux x86, if you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database system and DB2 related products.

#### **DB2 Express and DB2 Workgroup Server Edition memory limits**

If you are installing DB2 Express Edition, the maximum allowed memory for the instance is 4GB.

If you are installing DB2 Workgroup Server Edition, the maximum allowed memory for the instance is 16GB.

The amount of memory allocated to the instance is determined by the **INSTANCE\_MEMORY** database manager configuration parameter.

#### **Important notes when migrating from Version 9.1:**

- If the memory configuration for your Version 9.1 DB2 product exceeds the allowed limit, the DB2 product might not start after migrating to the current version.
- The self tuning memory manager will not increase your overall instance memory limit beyond the license limits.

---

## **Installing as a non-root user**

### **Non-root installation overview (Linux and UNIX)**

Before Version 9.5, you could install products, apply and roll back fix packs, configure instances, add features, or uninstall products only if you had root privileges. Now, if you are a non-root user, you can perform these tasks on Linux and UNIX platforms.



The DB2 installer automatically creates and configures a non-root instance during a non-root installation. As a non-root user, you can customize the configuration of the non-root instance during the installation. You can also use and maintain the installed DB2 product without root privileges.

The non-root installation of a DB2 product has one DB2 instance with most features enabled by default.

A non-root installation can be attractive for many groups, such as the following ones:

- Enterprises that have thousands of workstations and users who want to install a DB2 product without consuming a system administrator's time
- Application developers who are not typically system administrators but use DB2 products to develop applications
- Independent Software Vendors (ISVs) who develop software that does not require root authority yet embeds a DB2 product

Although non-root installations have most of the functionality of root installations, there are some differences and limitations. You can lift some of the limitations by having a root user run the `db2rfe` command.

## Differences between root installations and non-root installations

In addition to a few limitations, the directory structure of a non-root installation is slightly different than the directory structure of a root installation.

During a root installation, subdirectories and files for the DB2 product are created in a directory of the root user's choosing.

Unlike root users, non-root users cannot choose where DB2 products are installed. Non-root installations are always placed in the `$HOME/sqllib` directory, where `$HOME` represents the non-root user's home directory. The layout of the subdirectories within the `sqllib` directory of a non-root is similar to that of a root installation.

For root installations, multiple instances can be created. Instance ownership is associated with the user ID under which the instance was created.

Non-root installations can have only one DB2 instance. The non-root installation directory contains all of the DB2 product files and instance files with no soft links.

The following table summarizes the differences between root installations and non-root installations.

*Table 13. Differences between root installations and non-root installations*

Criteria	Root installations	Non-root installations
User can select installation directory	Yes	No. DB2 products are installed under the user's home directory.
Number of DB2 instances allowed	Multiple	One

Table 13. Differences between root installations and non-root installations (continued)

Criteria	Root installations	Non-root installations
Files deployed during installation	Program files only. Instances must be created after installation.	Program files and instance files. The DB2 product is ready for use immediately after installation.

## Limitations of non-root installations

In addition to the differences between root installations and non-root installations, there are several limitations on non-root installations. This topic discusses the limitations to help you decide if you want to use a non-root installation.

### Product limitations

Some DB2 products are not supported in non-root installations:

- data server developer tool
- DB2 Embedded Application Server (DB2 EAS)
- DB2 Query Patroller
- DB2 Net Search Extender
- Locally installed DB2 Information Center

**Note:** The locally installed DB2 Information Center is not supported in non-root installations because it requires root authority to start the daemon. However, a non-root-installation DB2 instance can be configured to use a locally installed DB2 Information Center if it is installed on the same computer.

### Features and tools limitations

The following features and tools are not available in non-root installations:

- The DB2 Administration Server (DAS) and its associated commands: `dasprt`, `dasdrop`, `daslist`, `dasmigr`, and `dasupdt`
- The Configuration Assistant
- The Control Center
- The ability for the `db2governor` to increase priority is not supported
- In the Work Load Manager (WLM), attempts to set agent priority in a DB2 service class in a non-root DB2 instance are allowed. However, the agent priority will not be respected, and no `SQLCODE` error is returned.
- Automatic starting of non-root DB2 instances at system reboot is not supported

### Health monitor limitations

The following health monitor features are not supported in non-root installations:

- Running script or task actions on alert occurrences
- Sending alert notifications

### Partitioned database limitation

Only single-partition databases are supported in non-root installations. You cannot add additional database partitions.

### Listing DB2 products

The output produced by the `db2ls` command, when run as a non-root user, is different than the output produced when run as a root user. For details, refer to the `db2ls` command topic.

**DB2 copies**

Each non-root user can have only one copy of a DB2 product installed.

**DB2 instance limitation**

In non-root installations, one DB2 instance is created during installation. Additional instances cannot be created.

**DB2 instance actions can be performed only by the instance owner**

Root installations and non-root installations can coexist on the same computer in different installation paths. However, a non-root instance can be updated, or dropped (using the `db2_deinstall` command), only by the non-root user who owns the non-root instance.

A DB2 instance created by a user with root privilege can be updated or dropped only by a user with root privilege.

**DB2 instance commands**

The following DB2 instance commands are unavailable in non-root installations:

**db2icrt**

When installing a DB2 product as a non-root user, a single instance is automatically created and configured. Further instances cannot be created in non-root installations. However, if the automatically created instance needs to be configured, you can use the non-root install configuration command, `db2nrcfg`.

**db2iupdt**

The `db2iupdt` command cannot be used for non-root instances. Instead, use the non-root install configuration command (`db2nrcfg`) to update the non-root DB2 instance. However, updating the non-root instance is normally not required because it gets updated automatically when updating your DB2 product.

**db2idrop**

The instance that gets automatically created during non-root installations cannot be dropped. The DB2 product must be uninstalled to drop the DB2 instance.

**db2imigr**

Migration is not supported for non-root installations.

**Migration limitation**

Root instances cannot be migrated to a non-root instance.

**Post-installation actions can be performed only by the DB2 instance owner**

Root installations and non-root installations can coexist on the same computer. However, only the original non-root user who installed the DB2 product can perform subsequent actions such as:

- Applying fix packs
- Adding features
- Installing add-on products

**Adjusting ulimit values**

The `ulimit` command on UNIX and Linux sets or reports user resource limits, such as data and stack limits. For root instances, the database server dynamically updates required `ulimit` settings without changing the permanent settings. However, for non-root instances, the `ulimit` settings can only be checked during installation. A warning message is displayed if the settings are inadequate. Root authority is required to change the `ulimit` settings.

## Limitations that can be overcome by running db2rfe

There are further limitations on non-root installations which can be overcome by running the db2rfe command. The following features and abilities are initially unavailable in non-root installations:

- Operating system-based authentication
- High Availability (HA) feature
- The ability to reserve service names in the /etc/services file
- The ability to increase user data limits (ulimits). This ability applies only to AIX. On other platforms, user data limits must be increased manually.

Run the Enable root features for non-root install command (db2rfe) to enable these features and abilities. Running the db2rfe command is optional, and must be run by a user with root authority.

## Authentication type in non-root installations

Operating system-based authentication is the default authentication type for DB2 products. Since non-root installations do not support operating system-based authentication, if you choose not to run the db2rfe command after installing your DB2 product as a non-root user, then you must manually set the authentication type. You can do so by updating the following parameters in the database manager configuration (dbm cfg) file:

- clnt\_pw\_plugin (Client userid-password plug-in configuration parameter)
- group\_plugin (Group plug-in configuration parameter)
- srvcon\_pw\_plugin (Userid-password plug-in for incoming connections at the server configuration parameter)

## Installing a DB2 product as a non-root user

Most DB2 products can be installed as a non-root user.

Before you install any DB2 product as a non-root user, you should be aware of the differences between root installations and non-root installations, and the limitations of non-root installations. Refer to the Related Links at the end of this topic for details.

Prerequisites for installing a DB2 product as a non-root user are:

- You must be able to mount the installation DVD, or have it mounted for you.
- You must have a valid user ID that can be used as the owner of a DB2 instance.

User IDs have the following restrictions and requirements:

- Must have a primary group other than guests, admins, users, and local
- Can include lowercase letters (a-z), numbers (0-9), and the underscore character ( \_ )
- Cannot be longer than eight characters
- Cannot begin with IBM, SYS, SQL, or a number
- Cannot be a DB2 reserved word (USERS, ADMINS, GUESTS, PUBLIC, or LOCAL), or an SQL reserved word
- Cannot include accented characters
- Cannot be IDs managed by NIS or NIS+
- If existing user IDs are specified instead of creating new user IDs, make sure that the user IDs:

- Are not locked
  - Do not have expired passwords
  - The hardware and software prerequisites that exist for the product you are installing apply to the non-root user just as they do for root users.
  - On AIX Version 5.3, Asynchronous I/O (AIO) must be enabled.
  - Your home directory must be a valid DB2 path.
- DB2 installation paths have the following rules:
- Can include lowercase letters (a-z), uppercase letters (A-Z), and the underscore character ( \_ )
  - Cannot exceed 128 characters
  - Cannot contain spaces
  - Cannot contain non-English characters

Installing DB2 products as a non-root user should be transparent to the non-root user. In other words, there is nothing special a non-root user needs to do to install a DB2 product, other than being logged in as a non-root user. To perform a non-root installation:

1. Log in as a non-root user
2. Install your DB2 product using any of the methods available to you. Options include:
  - The DB2 Setup wizard (GUI install)
  - The db2\_install command
  - The db2setup command with a response file (silent install)

**Note:** Since non-root users cannot choose the directory where DB2 products are installed, any FILE keyword in your response file is ignored.

Refer to the Related Links at the end of this topic for details.

3. After the DB2 product is installed, you need to open a new login session to use the non-root DB2 instance. Alternatively, you can use the same login session if you source the DB2 instance environment with \$HOME/sqllib/db2profile (for Bourne shell and Korn shell users) or \$HOME/sqllib/db2chsrc (for C shell users), where \$HOME is the non-root user's home directory.

After the DB2 product is installed, you should verify your operating system user process resource limits (ulimits). If the minimum ulimit values are not met, the DB2 engine could encounter unexpected operating resource shortage errors. These errors can lead to a DB2 outage.

## Enabling root-based features in non-root installations with db2rfe

There are several features and abilities in non-root installations that are initially unavailable but can be enabled by running a the db2rfe command

This task requires root authority.

To enable the features and abilities that are initially unavailable in non-root installations:

1. Locate the sample configuration files. Two sample configuration files are provided:

- \$HOME/sql/lib/instance/db2rfe.cfg is pre-configured with default values for the non-root DB2 instance
- \$HOME/sql/lib/cfg/db2rfe.cfg.sample is not configured

where \$HOME is the non-root user's home directory.

2. Copy one of the sample configuration files to a different location so the original file remains unaltered.
3. Update the copied configuration file as needed. This configuration file is input to the db2rfe command. An example of a configuration file is:

```

INSTANCENAME=db2inst2
SET_ULIMIT=NO
ENABLE_HA=NO
ENABLE_OS_AUTHENTICATION=NO
RESERVE_REMOTE_CONNECTION=NO
  **SVCENAME=db2c_db2inst2
  **SVCEPORT=48000
RESERVE_TEXT_SEARCH_CONNECTION=NO
  **SVCENAME_TEXT_SEARCH=db2j_db2inst2
  **SVCEPORT_TEXT_SEARCH=55000

```

**Note:**

- The value for the **INSTANCENAME** parameter is filled in automatically by DB2 installer
- The **SET\_ULIMIT** parameter is available only on AIX. On other operating systems, a user with root authority needs to set ulimit values manually.
- The default value for the other keywords is NO
- Child parameters (such as **SVCENAME**) are commented out by default. Comments are denoted with \*\*
- If you set a parameter to YES, and if it has any child parameters, it is recommended that you uncomment the child parameters and provide appropriate values. Any port values that are provided are examples. Ensure the port values you assign are free.

An example is provided below to show an edited configuration file that will enable the following features and abilities:

- High availability
- Operating system-based authentication
- DB2 Text Search, with a service name of **db2j\_db2inst2** and a port value of **55000**

To enable these features and abilities, edit the configuration file as follows:

```

INSTANCENAME=db2inst2
SET_ULIMIT=NO
ENABLE_HA=YES
ENABLE_OS_AUTHENTICATION=YES
RESERVE_REMOTE_CONNECTION=NO
  **SVCENAME=db2c_db2inst2
  **SVCEPORT=48000
RESERVE_TEXT_SEARCH_CONNECTION=YES
  SVCENAME_TEXT_SEARCH=db2j_db2inst2
  SVCEPORT_TEXT_SEARCH=55000

```

4. Log in as a user with root authority
5. Navigate to the \$HOME/sql/lib/instance directory, where \$HOME represent's the non-root user's home directory.
6. Run the db2rfe command using the following syntax:  
db2rfe -f *config\_file*

where *config\_file* is the configuration file created in Step 3 on page 78.

You must rerun the `db2rfe` command after applying fix packs to keep root-based features enabled on non-root installations.





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## Chapter 9. Setting up a partitioned database environment

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### Setting up a partitioned database environment

This topic describes how to set up a partitioned database environment using the Database Partitioning Feature (DPF). You will use the DB2 Setup wizard to install your instance-owning database server and to create the response files that will in turn be used to create your participating database servers.

If you have purchased DB2 Enterprise Server Edition (ESE), you can create a partitioned instance. This option is called DPF.

**Note:** DPF is not supported in non-root installations.

A database partition is part of a database that consists of its own data, indexes, configuration files, and transaction logs. A partitioned database is a database with two or more partitions.

To take advantage of the DPF of ESE, you must have a DPF license key in addition to the ESE license key. If you want the license keys added automatically during the installation, you need to copy the license keys to the license subdirectory under the db2 directory of the installation image before launching the DB2 Setup wizard.

#### Prerequisites

- The same number of consecutive ports must be free on each computer that is to participate in the DPF environment. For example, if the DPF environment will be comprised of four computers, then each of the four computers must have the same four consecutive ports free. During instance creation, a number of ports equal to the number of logical partitions on the current server will be reserved in the /etc/services on Linux and UNIX and in the %SystemRoot%\system32\drivers\etc\services on Windows. These ports will be used by the Fast Communication Manager. The reserved ports will be in the following format:

```
DB2_InstanceName
DB2_InstanceName_1
DB2_InstanceName_2
DB2_InstanceName_END
```

The only mandatory entries are the beginning (DB2\_InstanceName) and ending (DB2\_InstanceName\_END) ports. The other entries are reserved in the services file so that other applications do not use these ports

- To support multiple participating DB2 database servers, the computer on which you want to install DB2 must belong to an accessible domain. However, you can add local partitions to this computer even though the computer doesn't belong to a domain.
- On Linux and UNIX systems, a remote shell utility is required for partitioned database systems. DB2 supports the following remote shell utilities:
  - rsh
  - ssh

By default, DB2 uses rsh when executing commands on remote DB2 nodes, for example, when starting a remote DB2 database partition. To

use the DB2 default, the rsh-server package must be installed. For more information about security issues when installing DB2 products, see the Related Links.

If you choose to use the rsh remote shell utility, inetd (or xinetd) must be installed and running as well. If you choose to use the ssh remote shell utility, you need to set the DB2RSHCMD registry variable immediately after the DB2 installation is complete. If this registry variable is not set, rsh is used.

- On Linux and UNIX operating systems, ensure the hosts file under the etc directory does not contain an entry for “127.0.0.2” if that IP address maps to the fully qualified hostname of the machine.

**Note:** The use of XML features prohibits later use of the Database Partitioning Feature (DPF).

To set up a partitioned database environment:

1. Install your instance-owning database server using the DB2 Setup wizard. For detailed instructions, see the appropriate “Installing DB2 servers” topic for your platform.
  - On the **Select installation, response files creation, or both** window, ensure that you select the **Save my installation settings in a response files** option. After the installation has completed, two files will be copied to the directory specified in the DB2 Setup wizard: PROD\_ESE.rsp and PROD\_ESE\_addpart.rsp. The PROD\_ESE.rsp file is the response file for instance-owning database servers. The PROD\_ESE\_addpart.rsp file is the response file for participating database servers.
  - On the **Set up partitioning options for the DB2 instance** window, ensure that you select **Multiple partition instance**, and enter the maximum number of logical partitions.
2. Make the DB2 install image available to all participating computers in the partitioned database environment.
3. Distribute the participating database servers response file (PROD\_ESE\_addpart.rsp).
4. Install a DB2 database server on each of the participating computers using the db2setup command on Linux and UNIX, or the setup command on Windows:

#### **Linux and UNIX**

Go to the directory where the DB2 product code is available and run:  
`./db2setup -r /responsefile_directory/response_file_name`

#### **Windows**

`setup -u x:\responsefile_directory\response_file_name`

For example, here is the command using the PROD\_ESE\_addpart.rsp as the response file:

#### **Linux and UNIX**

Go to the directory where the DB2 product code is available and run:  
`./db2setup -r /db2home/PROD_ESE_addpart.rsp`

where /db2home is the directory where you have copied the response file.

#### **Windows**

`setup -u c:\resp_files\PROD_ESE_addpart.rsp`

where `c:\resp_files\` is the directory where you have copied the response file.

5. (Linux and UNIX only) Configure the `db2nodes.cfg` file. The DB2 installation only reserves the maximum number of logical partitions you want to use for the current computer, but does not configure the `db2nodes.cfg` file. If you do not configure the `db2nodes.cfg` file, the instance is still a single partitioned instance.
6. Update the services file on the participating servers to define the corresponding FCM port for the DB2 instance. The services file is in the following location:
  - `/etc/services` on Linux and UNIX
  - `%SystemRoot%\system32\drivers\etc\services` on Windows

---

## Installing database partition servers on participating computers using a response file (Windows)

In this task you will use the response file you created using the DB2 Setup wizard to install database partition servers on participating computers.

### Prerequisites

- You have installed a DB2 copy on the primary computer using the DB2 Setup wizard.
- You have created a response file for installing on participating computers and copied it onto the participating computer.
- You must have administrative authority on participating computers.
- You must have copied the contents of the DB2 product DVD onto the participating computer.

To install additional database partition servers using a response file:

1. Log to the computer that will participate in the partitioned database environment with the local Administrator account that you have defined for the DB2 installation.
2. Change to the directory where you copied the contents of the DB2 product DVD. For example:

```
cd c:\db2dvd
```

where `db2dvd` represents the name of the directory where you copied the contents of the DB2 product DVD.

3. From a command prompt, enter the setup command as follows:

```
setup -u responsefile_directory\response_file_name
```

In the following example, the response file, `Addpart.file` can be found in the `c:\responsefile` directory. The command for this example, would be:

```
setup -u c:\responsefile\Addpart.file
```

4. Check the messages in the log file when the installation finishes. You can find the log file in the `My Documents\DB2LOG\` directory. You should see output similar to the following at the end of the log file:

```
=== Logging stopped: 5/9/2007 10:41:32 ===  
MSI (c) (C0:A8) [10:41:32:984]: Product: DB2  
Enterprise Server Edition - DB2COPY1 -- Installation  
operation completed successfully.
```

5. When you install the instance-owning database partition server on the primary computer, the DB2 product reserves a port range according to the specified number of logical database partition servers participating in partitioned

database environment. The default range is four ports. For each server that participates in the partitioned database environment, you must manually configure the `/etc/services` file for the FCM ports. The range of the FCM ports depends on how many logical partitions you want to use on the participating computer. A minimum of two entries are required, **DB2\_<instance>** and **DB2\_<instance>\_END**. Other requirements for the FCM ports specified on participating computers are:

- The starting port number must match the starting port number of the primary computer.
- Subsequent ports must be sequentially numbered.
- Specified port numbers must be free.

You must log onto each participating computer and repeat these steps.

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database system and DB2 related products.

---

## Verifying access to the registry on the instance-owning computer (Windows)

This step is only required if you are setting up a partitioned database environment.

After installing DB2 on a participating computer, you should verify that you have access to the registry on the instance-owning computer. This verification step should be run from all participating computers.

You must have DB2 installed.

To verify access to the registry on the instance-owning computer:

1. From a command prompt, type the **regedit** command. The Registry Editor window opens.
2. Click the **Registry** menu item.
3. Select **Connect Network Registry**.
4. Type the name of the instance-owning computer in the **Computer name** field.

If the information is returned, then you have successfully verified that you have access to the registry on the instance-owning computer.

---

## Chapter 10. Response file installation

---

### Response file installation basics

Unlike the DB2 Setup wizard, a DB2 response file installation lets you install DB2 products without any user interaction.

A *response file* is an English-only text file that contains setup and configuration information. A response file specifies configuration and setup parameters and the products and components to install.

This method is useful not only for large-scale deployments of DB2 products, but also for embedding the DB2 installation process transparently inside your customized installation and configuration procedure.

You can create a response file by any of the following methods:

- Modifying one of the sample response files that are provided. Sample response files are located in the DB2 product DVD under the directory:  
`db2/platform/samples`

where *platform* refers to the appropriate hardware platform.

- Using the DB2 Setup wizard to save the setup and configuration data according to the input you provided. If you choose the option to create a response file in the DB2 Setup wizard, the response files (one for the server, and one for the partition, if you are setting up a multi-partitioned environment) will be saved by default at this location. The default names of the files are *name1* and *name2*.
- Using the response file generator to create a response file from an existing installed and configured DB2 product (Windows platforms only).

A response file installation can also be referred to as a silent installation or an unattended installation.

---

### Response file considerations

You should understand the following considerations before proceeding with a response file installation:

- Although response files created in Version 8 and response files created in Version 9 have similar formats, there are version limitations as to where response files can be used. For example, any response file generated in DB2 Version 9 can only be used to install a DB2 Version 9 (or Version 9.5) product; it cannot be used to install DB2 Version 8. The opposite is also true, where response files generated in DB2 Version 8 cannot be used to install DB2 Version 9. This is primarily caused by mandatory keywords that are new in Version 9.
- On Linux or UNIX platforms, a response file created for a root installation might not be usable for a non-root installation. Some response file keywords are valid for root installation only. For details, see the response file keywords.
- If you are using the DB2 Setup wizard:
  - You can save your settings in a response file during the installation in the **Select the installation action** panel of the DB2 Setup wizard.

- You are creating a response file based on just the installation you are performing. This method is recommended if you have either a fairly simple configuration or if you want to create a response file that you plan to later customize.
- A response file is only generated if you allow the installation process to complete, and it completes successfully. If you cancel the installation, or if the installation fails, the response file is not created.
- You can use a response file to install an identical configuration across every workstation on your network or to install multiple configurations of a DB2 product. You can then distribute this file to every workstation where you want this product to be installed.
- If you use the response file generator (Windows platforms only), you are creating the response file based on an existing installation. This method is recommended when you have a more complex configuration, one that you manually configured. If you are using the response file generator after generating the response file, you might need to input user names and passwords

---

## Creating a response file using the DB2 Setup wizard

You can create a response file using the DB2 Setup wizard based on the installation you are performing. This response file will be generated based on your DB2 Setup wizard selections. You can then use the response file to perform an unattended installation using the same settings.

To create a response file using the DB2 Setup wizard:

1. From the DB2 Setup launchpad, select **Install New** for the product you want to install, or, select **Work with Existing** to select the DB2 copy you want to work with.
2. Select the product or DB2 copy you want to install and click **Next** to launch the DB2 Setup wizard.
3. Click **Next** on the Welcome page and accept the license agreement terms.
4. In the **Select the installation type** window, select from Typical, Compact or Custom installation.
5. In the **Select the installation, response file creation, or both** window, select either the **Save my installation setting in a response file** option or the **Install product on this computer and save my settings in a response file** option. Then, in the **Response file name** field type the path where you want the DB2 Setup wizard to place the generated response file. By default, the response file name is *name1*, and is saved in *directory1*.

**Note:**

- a. If you select the **Save my installation setting in a response file** option, no software is installed on the computer, only the response file is created with the name specified in the **Response file name** field.
- b. If you select a partitioned database installation, two response files will be generated, one for the instance-owning computer and one for the participating computers. The participating computer response file name is generated based on the name of the instance-owning computer. By default, the partition response file name is *name2*, and is saved in *directory2*.
6. Proceed through the rest of the installation panels selecting the options you want.
7. In the **Start copying files and create response file** window, review the settings you selected.

8. To install the product, click **Finish**.
9. When the installation has completed, the DB2 Setup wizard will have placed the generated response file in the path you specified. When the DB2 Setup wizard is used to create the response file, a special keyword ENCRYPTED is added to the response file. For example:

```
DAS_PASSWORD = 07774020164457377565346654170244883126985535505156353
ENCRYPTED = DAS_PASSWORD
```

The keyword ENCRYPTED indicates the actual value of the password is not the sequence of numbers shown.

---

## Response file installation of DB2 overview (Linux and UNIX)

This task describes how to perform response file installations on Linux or UNIX. You can use the response file to install additional components or products after an initial installation. A response file installation might also be referred to as a silent installation or an unattended installation.

### Restrictions

You should be aware of the following limitations when using the response files method to install DB2 on Linux or UNIX platforms:

- If you set any instance or global profile registry keywords to BLANK (the word "BLANK"), that keyword is, in effect, deleted from the list of currently set keywords.
- Ensure that you have sufficient disk space prior to installing. Otherwise you might need to do some manual cleanup if the installation fails.
- If you are performing multiple installations or are installing DB2 from multiple DVDs, it is recommended that you install from a network file system rather than a DVD drive. Installing from a network file system significantly decreases the amount of time it will take to perform the installation.
- If you are planning on installing multiple clients, you should set up a mounted file system on a code server to improve performance.

### Prerequisites

Before you begin the installation, ensure that:

- Your system meets all of the memory, hardware, and software requirements to install your DB2 product.
- All DB2 processes are stopped. If you are installing a DB2 product on top of an existing DB2 installation on the computer, you must stop all DB2 applications, the DB2 database manager, and DB2 processes for all DB2 instances and DB2 DAS related to the existing DB2 installation.

To perform a response file installation:

1. Mount your DB2 product DVD or access the filesystem where the installation image is stored.
2. Create a response file using the sample response file  
Response files have a file type of .rsp. For example, ese.rsp.
3. Install DB2 using a response file

## Creating a response file using the sample response file (Linux and UNIX)

After creating a response file, you might need to make changes to the response file to activate or deactivate keywords.

One of the following scenarios should apply:

- You want to create a response file based on a sample response file (located in `db2/platform/samples` where *platform* refers to the appropriate hardware platform.)
- You created a response file using the DB2 Setup wizard (based on your installation) and want to make changes to it.

If you are installing directly from the DVD, you must store the renamed response file on another filesystem.

You can specify the name of the instance owner in the response file. If this user does not already exist, DB2 will create this user on your system.

To edit a response file:

1. If you are using the sample response file, copy the sample response file to a local file system and edit it using the Response file keywords topic as a guide.
2. Customize the sample response file.

To activate an item in the response file, remove the asterisk (\*) to the left of the keyword. Then, replace the current setting to the right of the value with the new setting. The possible settings are listed to the right of the equal sign.

Some product response files have mandatory keywords that you must provide values for. The mandatory keywords are documented in the comments of each response file.

Keywords that are unique to installation are only specified in a response file during a response file installation.

3. Save the file on an exported file system available to everyone on the network.

## Installing a DB2 product using a response file (Linux and UNIX)

Before you begin the installation, ensure that:

- For root installations, log on with the user ID that has root privileges. For non-root installations, log on with the user ID that is to own the DB2 installation.
- Your system meets all of the memory, hardware, and software requirements to install your DB2 product.
- You can install a DB2 product using a response file with either root or non-root authority. For more information on non-root installation, see the related links.
- All DB2 processes associated with the copy of DB2 you are working with are stopped.

To perform a response file installation:

1. Enter the `db2setup` command as follows:

```
dvd/db2setup -r responsefile_directory/response_file
```



where:

- *dvd* represents the location of the DB2 installable image;
  - *responsefile\_directory* represents the directory where the customized response file is located; and
  - *response\_file* represents the name of the response file.
2. Check the messages in the log file when the installation finishes. The installation logs are located, by default, in the /tmp directory:
    - db2setup.log (db2setup\_username.log for non-root installations, where *username* is the non-root user ID under which the installation was performed)
    - db2setup.err (db2setup\_username.err for non-root installations, where *username* is the non-root user ID under which the installation was performed)

You can specify the location of the log file. An installation history log db2install.history is located in *DB2DIR*/install/logs where *DB2DIR* specifies the path where the DB2 product was installed. The default installation directory is:

- For AIX, HP-UX or Solaris /opt/IBM/db2/V9.5
- For Linux/opt/ibm/db2/V9.5

If more than one DB2 product is installed in the same location, you will see db2install.history.xxxx, where xxxx are digits, starting at 0001 and increasing depending on how many DB2 copies you have installed.

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database and related products.

## Installing database partition servers on participating computers using a response file (Linux and UNIX)

In this task you will use the response file you created using the DB2 Setup wizard to install database partition servers on participating computers.

### Prerequisites

- You have installed DB2 on the primary computer using the DB2 Setup wizard and have created a response file for installing on participating computers.
- You must have root authority on participating computers.

To install additional database partition servers using a response file:

1. As root, log on to a computer that will participate in the partitioned database environment.

2. Change to the directory where you copied the contents of the DB2 product DVD. For example:

```
cd /db2home/db2dvd
```

3. Enter the db2setup command as follows:

```
./db2setup -r /responsefile_directory/response_file_name
```

In our example, we saved the response file, AddPartitionResponse.file, to the /db2home directory. The command for our example, would be:

```
./db2setup -r /db2home/AddPartitionResponse.file
```

4. Check the messages in the log file when the installation finishes.

You must log onto each participating computer and perform a response file installation.

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database system and DB2 related products.

## Response file error codes (Linux and UNIX)

The following tables describe error return codes (primary and secondary) that can be encountered during a response file installation.

*Table 14. Primary response file installation error codes*

Error code value	Description
0	The action completed successfully.
1	The action returns a warning.
67	A fatal error occurred during the installation.

*Table 15. Secondary response file installation error codes*

Error code value	Description
3	The path was not found.
5	Access was denied.
10	An environment error occurred.
13	The data is invalid.
16	The DAS creation failed.
17	The instance creation failed.
18	The database creation failed.
19	The fix pack image is at a lower level than the installed product.
20	The fix pack image is at the same level as the installed product. There is nothing to update.
21	There are no DB2 products installed at the selected location. There is nothing to update.
22	To update an already installed DB2 product, use the installFixPack command instead of the db2setup command.
87	One of the parameters was invalid.
66	The installation was cancelled by the user.
74	The configuration data is corrupt. Contact your support personnel.
76	The installation source for this product is not available. Verify that the source exists and that you can access it.
82	Another installation is already in progress. Complete that installation first before proceeding with this installation.
86	There was an error opening the installation log file. Verify that the specified log file location exists and that it is writable.
97	This installation package is not supported on this platform.
102	Another version of this product is already installed. Installation of this version cannot continue.

Table 15. Secondary response file installation error codes (continued)

Error code value	Description
103	Invalid command line argument.
143	The system does not have enough free space to continue with the installation.

## Response file installation of DB2 overview (Windows)

On Windows, you can perform a response file installation of a DB2 product on a single machine or on multiple machines. A response file installation might also be referred to as a silent installation or an unattended installation.

Before you begin the installation, ensure that:

- Your system meets all of the memory, hardware, and software requirements to install your DB2 product.
- You have all of the required user accounts to perform the installation.
- Ensure all DB2 processes are stopped.
- To perform a response file installation of a DB2 product on a single machine:
  1. Create and customize a response file by one of the following methods:
    - Modifying a sample response file. Sample response files are located in (db2\Windows\samples).
    - Using the DB2 Setup wizard to generate a response file.
    - Using the response file generator.
  2. Run the setup -u command specifying your customized response file. For example, a response file created during an installation:  

```
setup -u my.rsp
```
- To perform a response file installation of a DB2 product on multiple machines:
  1. Set up shared access to a directory
  2. Create a response file using the sample response file
  3. Install a DB2 product using a response file

### Making the DB2 installation files available for a response file installation (Windows)

Making the DB2 installation file available for an installation is part of the process to perform a response file installation of a DB2 product on multiple machines.

To make the DB2 installation files available for a response file installation, you must copy the required files from the product DVD to another drive.

To copy the required files from the product DVD to another drive:

1. Insert the appropriate DB2 product DVD into your DVD drive.
2. Create a directory (for example, c:\db2prods).
3. Copy the DB2 installation files.

### Setting up shared access to a directory (Windows)

Setting up shared access to a directory is part of the process to perform a response file installation of a DB2 product on multiple machines. This allows you to grant your network workstations access to a directory on the installation server.

To set up shared access to a directory on the installation server:

1. Copy the DB2 installation files to a directory. For example, c:\db2prods.
2. Open Windows Explorer.
3. Select the directory on the installation server that you want to share.
4. Select **File**—>**Properties** from the menu bar. The Properties window for the directory opens.
5. Select the **Sharing** tab.
6. For Windows 2003, select the **Shared this folder** button.
7. For Windows Vista, click the **Advanced Sharing** button. Enable the **Shared this folder** checkbox.
8. In the **Share Name** field, type a share name. For example, db2win.
9. To specify *Read access* for everyone:
  - a. Click the **Permissions** push button. The Permissions for <share name> window opens.
  - b. Ensure that the **Everyone** option is selected in the **Group or user names** box.
  - c. In the **Permissions for Everyone** box, ensure that read permission is enabled. Click the checkbox in the **Allow** column for **Read**.
  - d. Click **OK**. You are returned to the Properties window of the directory for which you want to set up shared access.
  - e. Click **OK**.

## Editing a response file (Windows)

After creating a response file, you might need to make changes to the response file to activate or deactivate keywords.

One of the following scenarios should apply:

- You want to create a response file based on a sample response file (located in db2\Windows\samples).
- You created a response file using the DB2 Setup wizard (based on your installation) and want to make changes to it.
- You have already set up and configured your DB2 product and you want to distribute this exact configuration across your network using the response file generated by the response file generator. If you are using the response file generator after generating the response file, you might need to input user names and passwords .

You should install DB2 products only on a drive which is local to the target workstation. Installing on a non-local drive can cause performance and availability problems.

To edit a response file:

1. If you are using the sample response file, make a copy of it and open it in a text editor. If you are using the response file created by the DB2 Setup wizard, open it in a text editor.
2. Customize the response file.

To activate an item in the response file, remove the asterisk (\*) to the left of the keyword. Then, replace the current setting to the right of the value with the new setting. The possible settings are listed to the right of the equal sign.

Some product response files have mandatory keywords that you must provide values for. The mandatory keywords are documented in the comments of each response file.

Keywords that are unique to installation are only specified in a response file during a response file installation.

3. Save the file on the shared network drive so that it is available to the installation server. If you have made any changes, save the file under a new file name to preserve the original sample response file. If you are installing directly from the product DVD, you should store the renamed response file on another drive.

## Installing a DB2 product using a response file (Windows)

Before you begin the installation, ensure that:

- Your system meets all of the memory, hardware, and software requirements to install your DB2 product.

To perform an installation from the workstation where the DB2 product will be installed:

1. Connect to the shared directory of the network drive or DVD drive containing the DB2 installation files by entering the following command from the command prompt:

```
net use x: \\computer_name\directory_sharename /USER:domain\username
```

where:

- *x*: represents the shared directory on the local drive.
- *computer\_name* represents the computer name of the remote machine where the DB2 installation files reside.
- *directory\_sharename* represents the share name of the directory on the network drive or DVD drive where the DB2 installation files reside.
- *domain* represents the domain where the account is defined.
- *username* represents a user that has access to this system.

For example, to use the remote db2prods directory, which was shared as db2nt and is located on the remote server codesrv, as the local x: drive, enter the following command:

```
net use x: \\Server\DB2_Installation_Images
```

Depending on how security is set up across your network, you might have to specify the */USER* parameter.

2. Enter the setup command as follows:

```
setup -u response_file
```

where *response\_file* represents the full path and file name of the response file to use.

If you are using a response file that was created using the response file generator, ensure that all the instance profiles are located in the same drive and directory as the response file that you specify.

3. Check the messages in the log file when the installation finishes. For information on errors encountered during installation, review the installation log file located in the My Documents\DB2LOG\ directory. The log file uses the following format: DB2-ProductAbbrrev-DateTime.log, for example, DB2-ESE-Tue Apr 04 17\_04\_45 2007.log.

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, you must install the DB2 Information Center.

## Installing DB2 products using Microsoft Systems Management Server (SMS)

With Microsoft Systems Management Server (SMS), you can install DB2 products across a network, and set up the installation from a central location. An SMS installation will minimize the amount of work the users will have to perform. This installation method is ideal if you want to roll out an installation based on the same setup on a large number of clients.

You must have at least SMS Version 2.0 installed and configured on your network for both your SMS server and SMS workstation. Refer to *Microsoft's Systems Management Server Administrator's Guide* for your platform for more details on how to:

- Set up SMS (including setting up primary and secondary sites).
- Add clients to the SMS system.
- Set up inventory collection for clients.

When you are using SMS, you have control over which response file you will use. You can have several different installation options, resulting in several different response files. When you configure the SMS install package, you can specify which response file to use.

To install DB2 products using SMS:

1. Import the DB2 install file into SMS
2. Create the SMS package on the SMS server
3. Distribute the DB2 installation package across your network

### Importing the DB2 install file into SMS

Importing the DB2 install file into SMS is part of the larger task of installing DB2 products using SMS.

To set up a package through SMS, use the sample SMS package definition file and your customized response file and instance profile. The sample SMS file name is **db2<product\_abbreviation>.pdf**. For example **db2ese.pdf**. If you are using a response file that was created using the response file generator, you must ensure that all the instance profiles are located in the same drive and directory as the response file that you specify.

To import the DB2 installation files into SMS:

1. Insert the DB2 product DVD into the drive.
2. Start the **Microsoft SMS Administrator**. The **Microsoft SMS Administrator Logon** window opens.
3. Enter your logon ID and password, and click **OK**. The **Open SMS** window opens.
4. Select the **Packages** window type and click **OK**. The **Packages** window opens.
5. Select **File—>New** from the menu bar. The **Package Properties** window opens.
6. Click the **Import** push button. The **File Browser** opens. Find the SMS package definition file located in `x:\db2\Windows\samples`, where `x`: represents the DVD drive. Typically, the pdf file needs to be customized before being used.

You can copy the sample file from x:\db2\Windows\samples to local a local drive, modified the file, and import the updated file.

7. Click **OK**.

## Creating the SMS package on the SMS server

Creating the SMS package on the SMS server is part of the larger task of *Installing DB2 products using SMS*.

An *SMS package* is a bundle of information that you send from the SMS server to an SMS client. The package consists of a set of commands that can be run on the client workstation. These commands could be for system maintenance, changing client configuration parameters, or installing software.

To create an SMS package:

1. From the **Package Properties** window, click on the **Workstations** push button. The **Setup Package For Workstations** window opens, with the imported response file and instance profile ready to use.
2. In the **Source Directory** field, enter the name of the parent directory where you put the copied DB2 files. For example, x:\db2prods, where x: represents your DVD drive.
3. Select the name of the product to install from the **Workstation Command Lines** window.
4. If you changed and renamed the sample response file, click on the **Properties** push button. The **Command Line Properties** window opens. Change the value of the **Command Line** parameter to match the new response file name and path. If you are using a response file that was created using the response file generator, ensure that all the instance profiles are located in the same drive and directory as the response file that you specify.
5. Click **OK**.
6. Click the **Close** push button.
7. Click **OK** to close the opened windows. The Packages window shows the name of the new SMS package.

## Distributing the DB2 installation package across your network

Distributing the DB2 installation package across your network is part of the larger task of *Installing DB2 products using SMS*.

Now that you have created the package, you have three options:

- You can distribute your SMS package and then log on locally on the client workstation to run the package. This option requires that the user account used to perform the installation belongs to the *local Administrators* group where the account is defined.
- You can distribute your SMS package and then log on remotely on the client workstation to run the package. This option requires that the user account used to perform the installation belongs to the *Domain Admins* group.
- You can set up your SMS package with an auto-install feature.

Options 1 and 2 are available to you, but for a large number of installations option 3 is recommended, which will be the focus for this step.

Once sent to the client workstation, the SMS package will tell the client workstation what code to execute, and the location, on the SMS server, of that code.

- To send the code to a client workstation:
  1. Open the **Sites** window.
  2. Open the **Packages** window.
  3. In the **Packages** window, select the appropriate package and drag it onto the target client in the **Sites** window. The **Job Details** window opens. This window lists the package that will be sent to the client machine (Machine Path) and the command that will be executed at the workstation.
  4. Select the **Run Workstation Command** check box and select the installation package that you want to use.
  5. In the **Run Phase** box of the **Job Details** window, select the **Mandatory After** check box. A default mandatory date is set one week from the current date. Adjust the date as required.
  6. Deselect the **Not Mandatory over Slow Link** check box. This feature is critical if you are installing across a large number of workstations. It is recommended that you stagger the installation to avoid overloading your server. For example, if you are considering an overnight install, then spread out the install time for a manageable amount of client workstation. For more information about completing the **Job Details** window, refer to *Microsoft's Systems Management Server Administrator's Guide* for your platform.
  7. When the job specifications are complete, click **OK**. You are returned to the **Job Properties** window.
  8. Add a comment that explains what the job will do. For example, Install IBM Data Server Client.
  9. Click the **Schedule** push button and the **Job Schedule** window opens. This window will arrange a priority for this job. By default, the job is low priority and all other jobs will be executed first. It is recommended that you select medium or high priority. You can also select a time to start the job.
  10. Click **OK** to close the **Job Schedule** window.
  11. Click **OK**.

The job is created and the package is sent to the SMS client workstation.

- To run the installation on the SMS client, perform the following steps:
  1. On the target SMS client workstation, log on to the workstation with a user account that belongs to the *local Administrators* group where the account is defined. This level of authority is required because a system program install is being performed instead of a user program install.
  2. Start the **Package Command Manager**. The **Package Command Manager** window opens.
  3. When the SMS client workstation receives the packages from the SMS server, it is listed in the **Package Name** section of the window. Select the package and click on the **Execute** push button. The installation runs automatically.
  4. Following installation, you must reboot the SMS client workstation before using DB2. **Important:** If you specified REBOOT = YES in your response file, the SMS client will reboot automatically.
  5. Click **Start** and select **Programs—>SMS Client—>Package Command Manager**. The **Package Command Manager** window opens.
  6. Click the **Executed Commands** folder and verify the execution of the package. Similarly, you can verify completion on the SMS server by checking the status of the job and ensuring that it has been changed to complete from pending or active.



On the SMS client, open the Package Command Manager again. When the package, which you created and sent to the client, appears under the Executed Commands folder, the installation has completed.

## Distributing DB2 installation packages using Microsoft Systems Management Server (SMS)

This topic describes how to use the Microsoft Systems Management Server (SMS) to distribute the DB2 installation package.

To distribute the DB2 installation package using SMS, ensure that:

- your SMS environment has already been set up.
- your DB2 install media is copied to a location where the contents of the install media can be edited.

**Note:** For information on how to set up your SMS environment, consult the documentation for that product.

To distribute the DB2 installation package using SMS, perform the following:

1. Prepare the sample response file located on your DB2 install media for the type of DB2 installation that you want to perform. The sample response file is **db2\*.rsp** and is located in the db2\windows\samples directory on your DB2 install media.
2. On an SMS Distribution Point computer in your SMS environment, open the SMS Administrator Console. Click on the **Site Database** drop down menu and right click on **Packages**.
3. Select **New** —> Package From Definition. The Create Package from Definition wizard opens.
4. Click **Next**. The Package Definition window opens. Browse for the desired package file from the db2\windows\samples directory located on your DB2 install media. The name of this file is in the form **db2\*.pdf**. Click **Open**.
5. Select the appropriate package definition from the list displayed. Click **Next**. The Source Files window opens.
6. Select the **Create a compressed version of the source** radio button, and click **Next**. The Source Directory window opens.
7. Select the location type and directory of the DB2 install media, and click **Next**.
8. Click **Finish** to complete the creation of the SMS package.
9. From inside the SMS Administrator Console, open the **Site Database** drop down menu and select **Packages** —> **All Tasks** —> **Distribute Software**. The Distribute Software wizard opens.
10. Click **Next**. The Package window opens.
11. Select the **Distribute an existing package** radio button, and select the appropriate package from the list of packages shown. Click **Next**. The Distribute Points window opens. Select one or more distribution points for the package that you are planning to distribute.
12. Click **Next**. The Advertise a Program window opens.
13. Select the radio button indicating that you want to advertise the program to a collection, and select the program that you want to run from the list shown. Click **Next**. The Advertisement Target window opens.
14. Select either an existing collection of computers or a choose to create a new collection of computers where you want to advertise and install the selected program. Click **Next**. The Advertisement Name window opens.

15. Type in a name for the new advertisement and any comments that you want to add. Click **Next**. The Advertise to Subcollections window opens.
16. Specify where you want the relevant DB2 program to be run relative to the hierarchical setup of the SMS computers in your SMS environment. Click **Next**. The Advertisement Schedule window opens.
17. Select a date and time after which you want the DB2 program to be run on the collection of computers specified. You might also want to select an expiration time for the advertisement of the program. Click **Next**. The Assign Program window opens.
18. If you want the DB2 program to be a mandatory requirement on the computers in the specified collection, specify a date and time after which the program will automatically run. Click **Next**.
19. Click **Finish** to complete the Distribute Software wizard.

### Configuring remote access to a server database

Once you have installed your DB2 product, you can configure your product to access remote databases individually on each client workstation using the Configuration Assistant or the command line processor.

DB2 uses the CATALOG command to catalog remote database access information:

- The CATALOG NODE command specifies the protocol information on how to connect to the host or to the server.
- The CATALOG DATABASE command catalogs the remote database name and assigns it a local alias.
- The CATALOG DCS command specifies that the remote database is a host or OS/400® database. (This command is only required for DB2 Connect™ Personal or Enterprise Editions).
- The CATALOG ODBC DATA SOURCE command registers the DB2 database with the ODBC driver manager as a data source.

If you plan to roll out multiple copies of IBM data server clients with identical configurations, then you can create a batch file that will run your customized script. For example, consider the following sample batch file, `myscript.bat`, used to run the script file:

```
@echo off
cls
db2cmd catmvs.bat
```

The `DB2CMD` command initializes the DB2 environment and the `catmvs.bat` file calls the batch job of the same name. Here is a sample catalog script file, `catmvs.bat`, that could be used to add databases to a DB2 Connect Personal Edition workstation:

```
db2 catalog tcpip node tcptst1 remote mvshost server 446
db2 catalog database mvbdb at node tcptst1 authentication dcs
db2 catalog dcs database mvbdb as mvs_locator
db2 catalog system odbc data source mvbdb
db2 terminate
exit
```

You can either send these files to your client workstations manually or use SMS and have the script execute automatically after the installation and reboot have completed.

To create another SMS package with the catalog script, perform the following steps:

1. Start the **SMS Administrator**. The **Open SMS** window opens.
2. Select the **Packages** window type and click **OK**. The **Packages** window opens.
3. Select **File—>New** from the menu bar. The **Package Properties** window opens.
4. Enter a name for your new package. For example, batchpack.
5. Enter a comment about the package. For example, Package for batch file.
6. Click on the **Workstations** push button. The **Setup Package for Workstations** window opens.
7. Enter the source directory. Ensure that the source directory is a location that both the server and the client have access to, and that contains the batch file that is to be run from the client workstation.
8. Under the **Workstation Command Lines** section, click on **New**. The **Command Line Properties** window opens.
9. Enter a command name.
10. Enter the command line.
11. Click the check box for the platforms that should be supported, under the **Supported Platforms** section.
12. Click **OK**.
13. Click **Close**.
14. Click **OK**.

Distribute this package in the same way as an installation package.

### **Configuring db2cli.ini for a response file installation**

The db2cli.ini file is an ASCII file which initializes the DB2 CLI configuration. This file is shipped to help you get started and can be found in the x:\sqllib directory, where x:\sqllib represents the install path for the DB2 product.

If you need to use any specific CLI optimization values or CLI parameters, you can use your customized db2cli.ini file for your IBM data server client workstations. To do so, copy your db2cli.ini file to the DB2 installation directory (for example c:\Program Files\IBM\SQLLIB) on each IBM data server client workstation.

### **The response file generator (Windows)**

The response file generator utility, which is available on Windows operating systems, creates a response file from an existing installed and configured DB2 product. You can use the generated response file to recreate the exact setup on other machines.

For example, you could install and configure an IBM Data Server Client to connect to various databases across your network. Once this IBM Data Server Client is installed and configured to access all the databases that your users have access to, you can run the response file generator to create a response file and a configuration profile for each DB2 instance.

The response file generator creates a response file for the installation and instance profiles for each instance that you specify. You can then use the response file to create identical clients across your network.

The response file generator also gives you the option to create the installation response file without an instance profile. This option allows you to create identical copies of your installed client without the configuration information.

Although several DB2 copies could already be installed on your system, the response file generator only generates the response file for the current copy (that is, where you run the db2rspgn utility from.)

## Response file error codes (Windows)

The following tables describe error return codes (primary and secondary) that can be encountered during a response file installation or uninstallation.

*Table 16. Primary response file installation error codes*

Error code value	Description
0	The action completed successfully.
1	The action returns a warning.
1603	A fatal error occurred.
3010	The installation or uninstallation is successful, however a reboot is required to complete the process. This does not include installations where the ForceReboot action is run. This error code is not available on Windows Installer version 1.0.

*Table 17. Secondary response file installation error codes*

Error code value	Description
3	The path was not found.
5	Access was denied.
10	An environment error occurred.
13	The data is invalid.
87	One of the parameters was invalid.
1602	The installation was cancelled by the user.
1610	The configuration data is corrupt. Contact your support personnel.
1612	The installation source for this product is not available. Verify that the source exists and that you can access it.
1618	Another installation is already in progress. Complete that installation first before proceeding with this installation.
1622	There was an error opening the installation log file. Verify that the specified log file location exists and that it is writable.
1632	The <b>Temp</b> folder is either full or inaccessible. Verify that the <b>Temp</b> folder exists and that you can write to it.
1633	This installation package is not supported on this platform.
1638	Another version of this product is already installed. Installation of this version cannot continue.
1639	Invalid command line argument.

For more information regarding response file return codes, refer to the Microsoft Web site.

## Response file installation using a batch file (Windows)

You can use a batch file to launch a response file installation.

To launch a response file installation using a batch file:

1. Edit or create your response file.
2. Create your batch file using a text editor. For example, create a batch file called `ese.bat` with the following content to install DB2 Enterprise Server Edition:

```
c:\db2ese\setup /U c:\PROD_ESE.rsp
echo %ERRORLEVEL%
```

where `/U` specifies the location of the response file and `echo %ERRORLEVEL%` specifies that you want the batch process to display the installation return code.

3. Run the batch file, using the **ese.bat** command issued from a command prompt.

---

## Available sample response files

The DB2 DVD includes ready-to-use sample response files with default entries.

The sample response files are located in:

```
db2/platform/samples
```

where *platform* refers to the appropriate hardware platform.

On Windows, the sample response files for IBM Data Server Runtime Client and IBM Data Server Driver for ODBC, CLI, and .NET are located in:

```
\samples
```

You can use the sample response files to install DB2 products on supported workstations.

---

## Response file keywords

You will specify keywords when performing a response file installation. You can use the response file to perform an initial installation or to install additional components or products after an initial installation. The following response file keywords are explained in conjunction with the sample response file. The edited response file must then be copied to your shared network drive or network file system where it will be used by your installation server.

On Linux or UNIX platforms, some response file keywords are valid for root installation only.

**PROD** Specifies the product that you want to install. Only one DB2 product can be installed at a time. Therefore, only one product can be specified with this keyword.

**Note:** You should not comment out the **PROD** keyword as you might have some missing components even with a successful response file installation.

**FILE** Specifies the destination directory for a DB2 product.

### Windows

On Windows operating systems, this keyword is limited to 110 characters.

### Linux or UNIX

On Linux or UNIX operating systems, this keyword is mandatory for root installations.

DB2 installation paths have the following rules:

- Can include lowercase letters (a–z), uppercase letters (A–Z), and the underscore character ( \_ )
- Cannot exceed 128 characters
- Cannot contain spaces
- Cannot contain non-English characters

### INSTALL\_OPTION

Windows platforms only and specific to DB2 Enterprise Server Edition. This keyword specifies the installation. The default is SINGLE\_PARTITION.

The options are:

- INSTANCE\_OWNING
- NEW\_NODE
- SINGLE\_PARTITION

### LIC\_AGREEMENT

Indicates you have read and agree to the license agreement file in the db2/license directory on the DB2 product DVD. The default is DECLINE.

The options are:

- DECLINE
- ACCEPT

**Note:** You must change this keyword to ACCEPT to signify your acceptance of the DB2 license agreement for the installation to proceed.

### INTERACTIVE

Linux or UNIX platforms only. Determines if installation provides prompting for location of the installation package (either on DVDs or fileset location) and progress reports.

The options are:

- NONE
- YES
- MACHINE

#### **Note:**

1. When *NONE* is specified, there is no interaction. The keyword **PACKAGE\_LOCATION** must also be specified with the valid path to the installation package.
2. When *YES* is specified, progress information and prompt information displays to the console. During installation, if a new DVD is required, you are prompted for the location.
3. Specify *MACHINE* to receive progress or prompt information in a format easily parsed by another program. A sample program is also provided, see Embedding the DB2 installation image (Linux and UNIX).

**CONFIG\_ONLY**

Linux or UNIX platforms only. Specifies that this response file is for performing configuration tasks only. For example, creating a new instance using the db2isetup command.

The options are:

- YES
- NO

**INSTALL\_TYPE**

Specifies the type of install.

The options are:

- COMPACT
- TYPICAL
- CUSTOM

A compact or typical install type will ignore any custom keywords (COMP).

**DB2\_COPY\_NAME**

Windows platforms only. Represents the name used to refer to a set of DB2 products installed in the same location. This name is limited to 64 characters.

**DEFAULT\_COPY**

Windows platforms only. Specifies if the copy being installed or modified should be set as the default DB2 copy used by DB2 applications. The default is NO unless this is the only DB2 copy installed.

The options are:

- YES
- NO

**COPY\_NAME**

Windows platforms only. Represents the name used to refer to the IBM Data Server Driver for ODBC, CLI, and .NET installed. Valid only when the PROD keyword is set to IBM\_DATA\_SERVER\_DRIVER. This name is limited to 64 characters.

**DEFAULT\_CLIENT\_INTERFACE\_COPY**

Windows platforms only. Specifies if the copy of DB2 products, or the IBM Data Server Driver for ODBC, CLI, and .NET, installed should be set as the default IBM database client interface copy. If this keyword is set to YES, the IBM data server client interface (ODBC/CLI driver and .Net data provider) in the copy is the default driver to be used by the applications. If you are installing the IBM Data Server Driver, the default is NO unless the computer does not have a DB2 product, or the IBM Data Server Driver for ODBC, CLI, and .NET, installed. If you are installing other products, the default is the value of the DEFAULT\_COPY keyword.

The options are:

- YES
- NO

**INSTALL\_TSAMP**

AIX and Linux platforms only. Specifies support of IBM Tivoli System Automation for Multiplatforms Base Component. The default value is YES.

The options are:

- YES
- NO

#### **INSTALL\_ITMA**

Specifies that the IBM Tivoli Monitoring for Databases: DB2 Agent is installed from the DB2 installation media. The default value is YES.

The options are:

- YES
- NO

#### **MIGRATE\_PRIOR\_VERSIONS**

Windows platforms only. Specifies if an existing version of the DB2 product is to be migrated. The default is NO.

The options are:

- YES
- NO

#### **PACKAGE\_LOCATION**

Linux or UNIX platforms only. This keyword is used only when "nlpack" is removed from the image and NL languages are selected to install. This keyword specifies the location of the nlpack. The path can be the location of the product DVD, or, the location where the contents of the DVD has been saved.

Built in search paths allow automatic searching of the same parent directory. For example, if the contents of a DB2 product DVD are copied into subdirectories:

```
/db2images/ese/dvd  
/db2images/nlpack/dvd
```

The subdirectories are automatically searched without specifying each subdirectory:

```
PACKAGE_LOCATION=/db2images/ese/disk1
```

This includes searching subdirectories for the national language DVD.

If the contents of a DB2 product DVD are copied into different parent directories, this keyword can be repeated as many times as required. For example:

```
PACKAGE_LOCATION=/db2images1/dvd  
PACKAGE_LOCATION=/db2images2/nlpack/dvd
```

#### **COMP**

Specifies the components that you want to install. The setup program automatically installs components that are required for a product.

In a custom install, you must select components individually. This can be done by uncommenting the COMP keywords for the components that you want installed (this differs depending on the product).

**Note:** This keyword is ignored unless your **INSTALL\_TYPE** is *CUSTOM*.

#### **LANG**

This refers to language selection keywords. You must uncomment any additional languages that you would like to install. The English language is mandatory and is always selected.



**CLIENT\_IMPORT\_PROFILE**

Specifies a file name with a full path to a profile exported by the db2cfexp command. The profile contains instance related parameters.

**REBOOT**

Windows platforms only. Specifies whether to restart the system when the installation or uninstallation has completed. The default is NO.

The options are:

- YES
- NO

**KILL\_PROCESSES**

Windows platforms only. If you have an existing version of DB2 and it is running and this keyword is set to YES, it will terminate your running DB2 processes without prompt.

The options are:

- YES
- NO

**NEW\_CONTACT**

Specifies if the email address contact on the notification and contact list is new or existing. The email address does not need to be provided if there is an existing email address. On Linux or UNIX platforms, this keyword is valid only for root installation.

The options are:

- YES
- NO

This keyword is optional. If the keyword is not specified, by default the contact is considered as a new contact.

**DB2\_OLEDB\_GUID**

Windows platforms only. Use this keyword to enter the GUID used by DB2 applications using OLEDB. If you do not specify this keyword, it is generated.

**CREATE\_DAS**

Windows platforms only. Specifies whether to create the DAS or not.

The options are:

- YES
- NO

**REMOVE\_DAS**

Windows platforms only. Specifies whether to delete the DAS or not. This keyword is only valid during a silent uninstallation using the db2unins -u command.

The options are:

- YES
- NO

The keyword REMOVE\_DAS will only be examined in the following situation:

- there is more than one DB2 copy on the system, and,

- the DAS is configured and active under the DB2 copy that is being removed.

In this case, after the uninstallation, other DB2 copies that require the use of a DAS will not function properly. To correct the problem, use the `dasupdt` command to move the DAS to another DB2 copy.

When the keyword `REMOVE_DAS` is set to `YES`, and the conditions specified above are met, the uninstallation will always remove the DAS when removing the current DB2 copy. When the keyword `REMOVE_DAS` is set to `NO`, and the conditions specified above are met, the uninstallation will fail.

### DB2 Administration Server settings

To enable any of the following DAS settings, remove the `*` (uncomment). This setting is applicable for Windows, Linux and UNIX environments but on Linux or UNIX platforms, this keyword is valid for root installation only.

- On Linux or UNIX platforms:
  - \*DAS\_USERNAME = dasuser
  - \*DAS\_PASSWORD = dasp
  - \*DAS\_GID = 100
  - \*DAS\_UID = 100
  - \*DAS\_GROUP\_NAME = dasgroup
  - \*DAS\_SMTP\_SERVER = jsmith.torolab.ibm.com
- On Windows platforms:
  - \*DAS\_USERNAME = dasuser
  - \*DAS\_DOMAIN = domain
  - \*DAS\_PASSWORD = dasp
  - \*DAS\_SMTP\_SERVER = jsmith.torolab.ibm.com

You can also specify `LOCALSYSTEM` as a valid userid that does not require a password. The `LOCALSYSTEM` userid is available for all products, except DB2 Enterprise Server Edition.

The options below specify where the DAS contact list will be kept. On Linux or UNIX platforms, these options are valid for root installation only. If the contact list is remote, then you must specify a username and password that has authority to add a contact to the system.

```
*DAS_CONTACT_LIST = LOCAL or REMOTE (DEFAULT = LOCAL)
*DAS_CONTACT_LIST_HOSTNAME = hostname
*DAS_CONTACT_LIST_USERNAME = username
*DAS_CONTACT_LIST_PASSWORD = password
```

### Special instance specifications

This takes the instance section not instance name. The instance section must exist in the response file.

- Windows platforms:
  - `DEFAULT_INSTANCE` - This is the default instance.
- Linux or UNIX platforms:
  - none

### Instance specifications

For root installations, you can use the response file to create as many instances as you want. To create a new instance you must specify an instance section using the `INSTANCE` keyword. Once this has been done, any keywords that contain the value specified in `INSTANCE` as a prefix belong to that instance. On Windows platforms, you can also specify

LOCALSYSTEM as a valid userid that does not require a password. The LOCALSYSTEM userid is available for all products, except DB2 Enterprise Server Edition.

The following are examples of instance specifications for Windows, Linux and UNIX platforms:

- On Linux or UNIX platforms:

```
*INSTANCE=DB2_INSTANCE
*DB2_INSTANCE.NAME = db2inst1
*DB2_INSTANCE.TYPE = ESE
*DB2_INSTANCE.PASSWORD = PASSWORD
    (valid for root installation only)
*DB2_INSTANCE.UID = 100
    (valid for root installation only)
*DB2_INSTANCE.GID = 100
    (valid for root installation only)
*DB2_INSTANCE.GROUP_NAME = db2grp1
    (valid for root installation only)
*DB2_INSTANCE.HOME_DIRECTORY = /home/db2inst1
    (valid for root installation only)
*DB2_INSTANCE.SVCENAME = db2cdb2inst1
*DB2_INSTANCE.PORT_NUMBER = 50000
*DB2_INSTANCE.FCM_PORT_NUMBER = 60000
    (valid for root installation only)
*DB2_INSTANCE.MAX_LOGICAL_NODES = 4
    (valid for root installation only)
*DB2_INSTANCE.AUTOSTART = YES
*DB2_INSTANCE.START_DURING_INSTALL = YES
*DB2_INSTANCE.FENCED_USERNAME = USERNAME
    (valid for root installation only)
*DB2_INSTANCE.FENCED_PASSWORD = PASSWORD
*DB2_INSTANCE.FENCED_UID = 100
*DB2_INSTANCE.FENCED_GID = 100
*DB2_INSTANCE.FENCED_GROUP_NAME = db2grp1
*DB2_INSTANCE.FENCED_HOME_DIRECTORY = /home/db2inst1
*DB2_INSTANCE.CONFIGURE_TEXT_SEARCH = YES
*DB2_INSTANCE.TEXT_SEARCH_HTTP_SERVICE_NAME = db2j_DB2_INSTANCE
    (valid for root installation only)
*DB2_INSTANCE.TEXT_SEARCH_HTTP_PORT_NUMBER = 55000
```

- On Windows platform:

```
*INSTANCE = DB2_INSTANCE
*DB2_INSTANCE.NAME = db2inst1
*DB2_INSTANCE.DEFAULT_INSTANCE = db2inst1
*DB2_INSTANCE.TYPE = ESE
*DB2_INSTANCE.PASSWORD = PASSWORD
*DB2_INSTANCE.AUTOSTART = YES
*DB2_INSTANCE.START_DURING_INSTALL = YES
*DB2_INSTANCE.SVCENAME = db2cdb2inst1
*DB2_INSTANCE.PORT_NUMBER = 50000
*DB2_INSTANCE.FCM_PORT_NUMBER = 60000
*DB2_INSTANCE.MAX_LOGICAL_NODES = 4
*DB2_INSTANCE.CONFIGURE_TEXT_SEARCH = YES
*DB2_INSTANCE.TEXT_SEARCH_HTTP_SERVICE_NAME = db2j_DB2_INSTANCE
*DB2_INSTANCE.TEXT_SEARCH_HTTP_PORT_NUMBER = 55000
```

**Note:** The keyword `START_DURING_INSTALL` determines if the instance is started after installation. The keyword `AUTOSTART` determines if the instance is auto started after system reboot. If `START_DURING_INSTALL` is not specified, `AUTOSTART` also determines if the instance is started after installation.

## Database Section

These keywords can be used to have the installation create or catalog a database on the machine that is being installed.

```
DATABASE = DATABASE_SECTION
DATABASE_SECTION.INSTANCE = db2inst1
DATABASE_SECTION.DATABASE_NAME = MYDB
DATABASE_SECTION.LOCATION = LOCAL
DATABASE_SECTION.ALIAS = MYDB
DATABASE_SECTION.USERNAME = username
DATABASE_SECTION.PASSWORD = password
```

\* these keywords are only used for REMOTE databases  
that are being cataloged

```
DATABASE_SECTION.SYSTEM_NAME = hostname
DATABASE_SECTION.SVCENAME = db2c_db2inst1
```

## TOOLS\_CATALOG\_DATABASE

On Linux or UNIX platforms, this keyword is valid for root installation only. This keyword specifies the database to use to store the tools catalog. The value for this keyword should be one of the database section keywords that were specified in the response file.

```
*TOOLS_CATALOG_DATABASE = DATABASE_SECTION
```

## TOOLS\_CATALOG\_SCHEMA

To set the tools catalog schema, remove the \* (uncomment) from the following:

```
*TOOLS_CATALOG_SCHEMA = toolscat_schema
```

On Linux or UNIX platforms, this keyword is valid for root installation only.

## Contact Section

These keywords define a contact section that will be created by the installation process if it does not already exist. The Health notifications for the instance that is specified will be sent to this contact.

```
CONTACT = contact_section
contact_section.NEW_CONTACT = YES
contact_section.CONTACT_NAME = contact name
contact_section.INSTANCE = DB2_INSTANCE
contact_section.EMAIL = Email address
contact_section.PAGER = NO
```

On Linux or UNIX platforms, this keyword is valid for root installation only.

## DB2 Information Center settings Section

The default location for accessing the DB2 documentation is the IBM Web site. Only edit this section if you want to access DB2 documentation from a different location, such as your local computer or an intranet server.

The options below specify the host name and port number where the Information Center server is installed, and the service name and port number that the Information Center server service uses.

```
*DB2_DOCHOST = hostname
*DB2_DOCPORT = 1024-65535
*DB2_ECLIPSEIC_SVCENAME = db2icv95
*DB2_ECLIPSEIC_PORT = 51000
```

DB2\_ECLIPSEIC\_SVCENAME and DB2\_ECLIPSEIC\_PORT are only valid for the installation of the DB2 Information Center.

## Extended security section

Windows platforms only. These keywords define a security section.

```
*DB2_EXTSECURITY          = YES
*DB2_ADMINGROUP_NAME     = DB2ADMNS
*DB2_USERSGROUP_NAME     = DB2USER
*DB2_ADMINGROUP_DOMAIN   = BLANK
*DB2_USERSGROUP_DOMAIN   = BLANK
```

## No configuration option

Windows platforms only. This keyword gives you the option to install a DB2 product with only the mandatory configuration. The DB2 instance must be created manually. The default is NO.

```
*NO_CONFIG                = NO
```

The options are:

- YES
- NO

## Query Patroller

These keywords can be used to install Query Patroller.

```
QUERY_PATROLLER_DATABASE = databas1
databas1.QP_CONTROL_TABLESPACE = db2qpControlTableS
databas1.QP_CONTROL_DBPARTITIONGROUP = db2qpControlDBPGrp
databas1.QP_CONTROL_DBPARTITIONNUM = 0,1,2,...,999
databas1.QP_CONTROL_PATH = any valid path
databas1.QP_CONTROL_DMS = NO
databas1.QP_CONTROL_DMS_CONTAINER = FILE
databas1.QP_CONTROL_DMS_NUMPAGES = any non-negative integer
databas1.QP_RESULT_TABLESPACE = db2qpResultTableS
databas1.QP_RESULT_DBPARTITIONGROUP = db2qpResultDBPGrp
databas1.QP_RESULT_DBPARTITIONNUM = 0,1,2,...,999
databas1.QP_RESULT_PATH = any valid path
databas1.QP_RESULT_DMS = NO
databas1.QP_RESULT_DMS_CONTAINER = FILE
databas1.QP_RESULT_DMS_NUMPAGES = any non-negative integer
databas1.QP_REPLACE = YES
```

On Windows platforms only, the following additional keywords for Query Patroller Server User Information are required:

```
*QP_USERNAME
*QP_DOMAIN
*QP_PASSWORD
```

## db2rfe configuration file

### Keywords for the db2rfe configuration file

Use the following keywords to select features and settings to create the db2rfe configuration file:

#### INSTANCENAME

Specifies the user name who owns the non-root installation copy.

**Note:** Do not comment out the **INSTANCENAME** keyword. This is required keyword.

#### SET\_ULIMIT

AIX only. For other platforms, refer to the system documentation to set this manually. On AIX, when this keyword is set to YES, the **db2rfe** command sets the hard and soft data parameter to unlimited, hard and soft file size to unlimited, and, sets the hard and soft nofile parameter to 65536.

The options are:

- YES
- NO

The default is NO.

#### **ENABLE\_DB2\_ACS**

AIX, Linux on AMD64/EM64T, and Linux on POWER only.  
Enables the DB2 Advanced Copy Services (ACS). The default value is NO.

The options are:

- NO
- YES

#### **ENABLE\_HA**

Specifies support of High Availability using IBM Tivoli System Automation for Multiplatform Base Component. The default value is NO.

The options are:

- NO
- YES

#### **ENABLE\_OS\_AUTHENTICATION**

Specifies support of operating system authentication for database connection. The default value is NO.

The options are:

- NO
- YES

#### **RESERVE\_REMOTE\_CONNECTION**

Reserves service for a remote connection. The default value is NO.

The options are:

- NO
- YES

#### **Note:**

1. If the database manager configuration parameter SVCENAME has a value, and keywords SVCENAME or SVCEPORT are also provided in the configuration file, all three values must match.
2. If the database manager configuration parameter SVCENAME has a value, and either keyword SVCENAME or SVCEPORT is not provided, either port\_number or service\_name of SVCNAME is used with a generated service\_name or port\_number respectively.
3. If the database manager configuration parameter SVCENAME is not set, and neither keyword SVCENAME and SVCEPORT are provided, a default service name and port number is generated and reserved.

#### **SVCENAME**

Used with keyword RESERVE\_REMOTE\_CONNECTION. Specifies the service name of a remote connection. This keyword is limited to 14 characters.

### SVCEPORT

Used with keyword RESERVE\_REMOTE\_CONNECTION. Specifies a port number of a remote connection within the range 1024 - 65535.

### RESERVE\_TEXT\_SEARCH\_CONNECTION

Reserves the service entry for the port used by DB2 Text Search. The default value is NO.

The options are:

- NO
- YES

### SVCENAME\_TEXT\_SEARCH

Used with keyword RESERVE\_REMOTE\_CONNECTION. Specifies the service name of the service entry for the port used by DB2 Text Search. This keyword is limited to 14 characters.

### SVCEPORT\_TEXT\_SEARCH

Used with keyword RESERVE\_REMOTE\_CONNECTION. Specifies a port number of the service entry for the port used by DB2 Text Search.

See the related links for the configuration parameters summary, and, DB2 registry and environment variables.

---

## Embedding the DB2 installation image (Linux and UNIX)

On Linux and UNIX platforms, you can embed a DB2 installation image into the installation image of your own application. When installing a DB2 product using a response file with the interactive keyword specified, installation-related information such as progress or prompts is provided in a format easily parsed by your application.

To bundle a DB2 installation image in your own application:

1. Copy the DB2 sample program, located in `db2/samples/`, to a working directory. Sample programs are provided in both C and Java. The C and Java subdirectories contain a sample program and a readme file.
  2. Build the sample program using the makefile provided or a compatible compiler.
  3. Modify the response file to specify the keyword `INTERACTIVE=MACHINE`.
  4. Using the sample program, start the DB2 installation from your working directory.
    - In a C-based installation application, enter:  

```
./InstallTester image -r response_file
```
    - In a Java based installation application, enter:  

```
java InstallTester image -r response_file
```
- where
- *image* represents the location of the DB2 installable image where either the `db2setup` command or the `db2_install` command is located
  - *response\_file* specifies the full path and file name of the response file to use.

---

## Exporting and importing a profile

Configuration information can be exported and imported to another DB2 workstation instance. If you did not use a configuration profile when you installed your DB2 product using the response file that was created by the response file generator, you can create a configuration file and import it to another workstation.

1. To create a configuration profile, enter the `db2cfexp` command specifying the fully qualified name of the target export file. The resulting profile contains only configuration information associated with the current DB2 database instance.
2. To import the configuration profile, you can:
  - Use the `db2cfimp` command
  - Use a response file by uncommenting the keyword `DB2.CLIENT_IMPORT_PROFILE` and specify the *filename* as the export file

**Note:** You can also use the Configuration Assistant (CA) to export and import a configuration profile.

---

## Stopping DB2 processes during an interactive installation (Windows)

If you are installing a new DB2 copy on top of an existing DB2 copy, it is recommended to stop the DB2 processes of the DB2 copy before proceeding. You should exercise extreme caution when you stop active DB2 processes because the termination of a DB2 process can cause the loss of data.

To lessen the risk of data loss, it is recommended that you issue the `db2stop` command for each instance.

The following describes how to stop DB2 processes.

1. For an interactive installation, to stop any running DB2 processes, specify the `/F` option for the setup command. The `/F` option stops the running processes, and the message and prompt are not displayed.
2. In addition, DB2 services can be viewed in the Services Window to ensure that they have been stopped.

---

## Stopping DB2 processes during a response file installation (Windows)

If any DB2 processes are running when the DB2 setup command is issued, the installation cannot occur.

You must stop the DB2 processes so that the installation can proceed. You should exercise extreme caution when you stop active DB2 processes because the termination of a DB2 process can cause the loss of data. The following describes how to stop these processes.

To lessen the risk of data loss, it is recommended that you issue the `db2stop` command for each instance and that you close any applications accessing DB2 data.

For a response file installation, you can use either of the following methods to stop any active DB2 processes. If you specify either of these options, the active DB2 processes are stopped before the installation proceeds.

- Specify the `/F` option for the setup command.
- Set the `KILL_PROCESSES` keyword to `YES` (the default is `N0`).



---

## Chapter 11. Changing DB2 product editions

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### Upgrading DB2 product editions (Linux and UNIX)

When upgrading from one DB2 product edition to another, the following steps are required to preserve all information from the original DB2 product installation. For example, if you are upgrading from DB2 Workgroup Server Edition to DB2 Enterprise Server Edition, these steps must be completed or you will have to install future fix packs on both products.

Do not run the `db2_deinstall` command. This action will remove all DB2 product components.

You do not need to create a new instance during the installation of the new DB2 product edition. Existing instances will be reconfigured by running one of the following commands when the installation is complete:

- `db2iupdt` for root instances
- `db2nrupdt` for the non-root instance

Your system must comply with the system prerequisites for the DB2 product edition that you are installing.

These instructions apply only when switching among the same version of a DB2 product.

To change DB2 product editions:

1. Complete the DB2 product installation for the new edition.
2. To add the license file for the new product edition you must run the `db2licm` command.

```
db2licm -a LicenseFile
```

The license file is found in the `db2/license` directory on the product activation CD.

3. Obtain a list of the names of all instances on your system using the `db2ilist` command:

```
DB2DIR/db2ilist
```

where `DB2DIR` by default is `/opt/ibm/db2/V9.5` on Linux and `/opt/IBM/db2/V9.5` on UNIX operating systems.

4. To reconfigure the instances, run the `db2iupdt` command on all instances: `DB2DIR/bin/db2iupdt InstanceName` where *InstanceName* represents the name of the instance.
5. When all the instances have been updated, you must remove the product signature from the DB2 product that was originally installed by performing the following actions. Find the product signature by opening the `ComponentList.htm` file in the `db2/PLAT` directory, on the DB2 product CD. `PLAT` is the platform that the DB2 product is installed on.

---

## Upgrading DB2 product editions (Windows)

When upgrading from one DB2 product edition to another, the following steps are required to preserve all information from the original DB2 product installation. For example, if you are upgrading from DB2 Workgroup Server Edition to DB2 Enterprise Server Edition, these steps must be completed or you will have to install future fix packs on both products.

Your system must comply with the system prerequisites for the new DB2 product edition that you are installing.

If there were any fix packs installed on the original DB2 product edition, you should obtain the image for that fix pack level and install that directly, as opposed to installing the DB2 product and then applying the fix pack. The reason for this is that each DB2 fix pack image is a full refresh image.

These instructions apply only when switching among the same version of a DB2 product on Windows.

To upgrade DB2 product editions:

1. Log on as a user with administrator access.
2. Stop all DB2 processes and services.
3. Insert the DB2 product DVD of the new edition you are installing, into the drive. The IBM DB2 product Launchpad will open.
4. The DB2 product Setup Wizard will determine the system language, and will start the setup program for that language. To start the DB2 product Setup wizard manually:
  - a. Click **Start** and select the **Run** option.
  - b. In the Open field, type the following command:

```
x:\setup /i language
```

where x represents your DVD drive and language is the territory identifier for your language, for example, EN for English.

If the /i flag is not specified, the installation program will run in the default language of the operating system.

Click **OK**.

5. Choose **Work with existing** to start the installation and proceed by following the setup program's prompts. Online help is available to guide you through these steps. To invoke the online help, click **Help** or press **F1**. You can click **Cancel** at any time to end the installation.
6. To add the license file for the new product edition you must run the db2licm command.

```
db2licm -a LicenseFile
```

The license file is found in the db2\license directory on the product activation CD.

7. Remove the original edition of the DB2 product using the Add/Remove Control Panel window.
8. When the original DB2 product edition is completely uninstalled, reactivate the administration server and the services using the db2start command or the Services window of the Control Panel.

---

## Part 2. Installation methods that require manual configuration (Linux and UNIX)

It is recommended that you install DB2 products and features using the DB2 Setup wizard or by using a response file.

The DB2 Setup wizard provides an easy-to-use graphical interface with installation help, user and group creation, protocol configuration, and instance creation.

A response file installation provides the same advantages as the DB2 Setup wizard, but without the graphical interface. In addition, by using a response file you can take advantage of advanced configuration capabilities such as setting individual database manager configuration parameters or setting profile registry variables.

If you do not prefer these installation methods, you can install DB2 products, features, and components on supported Linux and UNIX operating systems using methods which require manual configuration:

- The `db2_install` command for DB2 products, or `doce_install` command for the DB2 Information Center
- Payload file deployment

With each of these two methods, manual configuration is required after the product files are deployed.

### Prerequisites

Refer to the installation documentation for the particular DB2 product you want to install. For example, if you want to install DB2 Enterprise Server Edition, then refer to the *Quick Beginnings for DB2 Servers* documentation to review installation prerequisites and other important setup information.

### Restrictions

You cannot install DB2 products or feature on Windows operating systems using the `db2_install` command or the payload file method. On Windows operating systems, DB2 products and features can be only installed using the DB2 Setup wizard or a response file.

On supported Linux or UNIX operating systems, you cannot install a DB2 product or feature using the operating system's native installation utility (that is, `rpm`, `SMIT`, `swinstall` or `pkgadd`). Any existing scripts containing a native installation utility that you use to interface and query with DB2 installations will need to change.

Select an installation method:

- Chapter 12, "Installing a DB2 product using the `db2_install` or `doce_install` command (Linux and UNIX)," on page 117
- Chapter 13, "Installing DB2 products with payload files (Linux and UNIX)," on page 121



---

## Chapter 12. Installing a DB2 product using the `db2_install` or `doce_install` command (Linux and UNIX)

Before you install DB2 products and features or the DB2 Information Center:

- You should refer to the installation documentation for the particular DB2 product you want to install. For example, if you want to install DB2 Enterprise Server Edition, then refer to the *Quick Beginnings for DB2 Servers* documentation to review installation prerequisites and other important setup information.
- You can install a DB2 product using either root or non-root authority. However, you cannot use the `doce_install` to install the DB2 Information Center under non-root authority. For more information on non-root installations and limitations, see the Related Links.
- The DB2 product image must be available. You can obtain a DB2 installation image either by purchasing a physical DB2 product DVD, or by downloading an installation image from Passport Advantage.

The `db2_install` command installs DB2 products and features on supported Linux and UNIX operating systems.

The `doce_install` command installs the DB2 Information Center on supported Linux and UNIX operating systems.

You *cannot* manually install a DB2 product or feature using an operating system's native installation utility such as `rpm`, `SMIT`, `swinstall` or `pkgadd`. Any existing scripts containing a native installation utility that you use to interface and query with DB2 installations will need to change.

The `db2_install` command is not supported on the National Language Package DVD.

Only one copy of the DB2 Information Center for the current release can be installed on your system. The Information Center cannot be installed in the same location where a DB2 product is installed. If you install the DB2 Information Center on a system with a firewall, and you plan to allow other systems to access the DB2 Information Center, you must open the port in your firewall setting.

To install a DB2 product or feature using the `db2_install` command, or to install the DB2 Information Center using the `doce_install` command:

1. If you have a physical DB2 product DVD, insert and mount the appropriate DVD or access the file system where the installation image was stored.
2. If you downloaded the DB2 product image, you must decompress and untar the product file.
  - a. Decompress the product file:

```
gzip -d product.tar.gz
```

For example,

```
gzip -d ese.tar.gz
```

- b. Untar the product file:

**On Linux operating systems**

```
tar -xvf product.tar
```

For example,  
tar -xvf ese.tar

### On AIX, HP-UX, and Solaris operating systems

gnutar -xvf product.tar

For example,  
gnutar -xvf ese.tar

- c. Change directory into the product directory:

cd product

For example,  
cd ese

3. Enter the ./db2\_install or ./doce\_install command:

```
./db2_install -b DB2DIR -p productShortName -c NLPackLocation -L language... -n
```

where:

- *DB2DIR* specifies the path where the DB2 product will be installed. If the path is not specified, you are prompted to either select the default path or to provide the path. The default installation path is:
  - for AIX, HP-UX or Solaris operating systems: /opt/IBM/db2/V9.5
  - for Linux operating systems: /opt/ibm/db2/V9.5

If you provide your own path, you must specify the full path name.

DB2 installation paths have the following rules:

- Can include lowercase letters (a–z), uppercase letters (A–Z), and the underscore character ( \_ )
- Cannot exceed 128 characters
- Cannot contain spaces
- Cannot contain non-English characters

**Note:** For DB2 products and components to work together, they must be installed to a single path. This is not to be confused with the ability to install DB2 products to multiple paths. But, for products and components to work together, they must be installed to the same path, and, must be at the same release level.

- *productShortName* specifies the DB2 product to be installed. This parameter is case insensitive and is mandatory when the -n parameter is specified. The product short name (productShortName) can be found in the file ComponentList.htm (under the product full name) located in the /db2/*plat* directory on your media where *plat* is the platform name that you are installing on. You can only install one product at a time.
- *NLPackLocation* specifies the National Language Pack (NLPACK) location.
- *language* specifies national language support. You can install a non-English version of a DB2 product. However, you must run this command from the product DVD, not the National Language pack DVD.

By default, English is always installed, therefore, English does not need to be specified. When more than one language is required this parameter is mandatory. To indicate multiple languages, specify this parameter multiple times. For example, to install both French and German specify -L FR -L DE.

- *n* parameter indicates noninteractive installation mode. When this parameter is specified, both -b and -p must also be specified. You only need to specify -c and -L if applicable.

When installing the DB2 Information Center, if you specify a port number other than the default, you might receive the error “The service name specified is in use”. You can correct this error by either choosing to use the default port number or by specifying a different service name.

After installation, you must manually configure your DB2 server. Tasks include user and instance creation and configuration.





---

## Chapter 13. Installing DB2 products with payload files (Linux and UNIX)

This task describes how to install DB2 products, components, and features from DB2 payload files. This is not a recommended method for installation. It is recommended that you use the DB2 Setup wizard or the response file method.

### Prerequisites

Before you deploy DB2 payload files:

- Review the installation prerequisites and ensure the requirements are met.
- Ensure that DB2 dependencies are met. While reviewing the installation prerequisites, make note of any DB2 products that must be installed with each other. Then be sure to deploy the tar.gz file for a product, as well as any of the tar.gz files for required products.
- Get the payload files, which are contained on the DB2 product DVD or can be downloaded from IBM Passport Advantage: <http://www-306.ibm.com/software/howtobuy/passportadvantage/>.

### Restrictions

You *cannot* manually install a DB2 product, component, or feature using an operating system's native installation utility such as rpm, SMIT, swinstall or pkgadd.

To install DB2 products, components, and features from DB2 payload files:

1. For root installations, log on as a root user. For non-root installations, log on with the user ID that is to own the DB2 installation.
2. Insert and mount the appropriate DVD or access the file system where the installation image is stored.
3. Locate the DB2 component you want to install. Each DB2 product DVD provides a file that lists the components available for installation. The component list is in a file called ComponentList.htm and is located in the `/db2/platform` directory on your DVD, where *platform* is the platform that you are installing on.
4. Uncompress the payload file.

**Note:** For DB2 products and components to work together, they must be installed to a single path. This is not to be confused with the ability to install DB2 products to multiple paths. But, for products and components to work together, they must be installed to the same path, and must be at the same release level. If a component has prerequisites, look in the `DB2DIR/.metadata/COMPONENT/prereqs` file inside each payload to see what the prerequisites are. If any required components are missing, that functionality will not work.

To uncompress the payload file, run the appropriate command:

- For AIX, HP-UX or Solaris:

```
cd DB2DIR
gunzip -c /dvd/db2/platform/FILES/filename.tar.gz | tar -xvf -
```
- For Linux:

```
cd DB2DIR
tar xzvf /dvd/db2/platform/FILES/filename.tar.gz
```

where

- *DB2DIR* is the full path name where you are installing:
  - For non-root installations, *DB2DIR* must be `$HOME/sqllib`. This directory must be empty
  - For root installations, the default path is:
    - `/opt/IBM/db2/V9.5` for AIX, HP-UX or Solaris
    - `/opt/ibm/db2/V9.5` for Linux

If you choose not to use the default path, you can specify a different installation path.

DB2 installation paths have the following rules:

- Can include lowercase letters (a–z), uppercase letters (A–Z), and the underscore character ( \_ )
  - Cannot exceed 128 characters
  - Cannot contain spaces
  - Cannot contain non-English characters
- *dvd* represents the mount point of the DB2 DVD.
  - *filename* is the name of the DB2 component you are installing.
5. To ensure the embedded library search path on each DB2 executable and library file uses the installation path, run the following command:
- ```
DB2DIR/install/db2chgpath
```

where *DB2DIR* is the full path name where you are installing.

#### Important notes:

- After you run the `db2chgpath` command, program files cannot be moved.
  - If you install additional features to the same path at a subsequent time, you must run the `db2stop` command, and rerun the `db2chgpath` command.
6. For root installations, you can create a DB2 instance at this time using the `db2icrt` command. If there is no need to create an instance, you should at least run the `db2ilist` command. Either the `db2icrt` command or the `db2ilist` command must be run at this time, because a side-effect of running either command is that the installation is registered with the global registry.
7. For non-root installations, run `$HOME/sqllib/db2nrcfg` to configure the non-root instance.
8. Set up the `db2ls` utility. The `db2ls` utility allows you to query information about installed DB2 copies. To set up the `db2ls` utility:
- a. Determine which DB2 copy is the most updated copy by running the following command:
- ```
db2greg -dump
```

Output such as the following will display:

```
S,DB2,9.1.0.0,/opt/ibm/copy1,-,,0,,,1159464765,0
S,DB2,9.1.0.1,/opt/ibm/copy2,,,1,0,,,1159466596,0
```

In the sample output, 9.1.0.1 in the second line indicates that copy2 is at a higher level than copy1, which is at 9.1.0.0.

- b. Check `/usr/local/bin` to see if a link to `db2ls` exists. If it exists, check which DB2 copy it points to.
  - c. If either of the following conditions are true, create a link to `/opt/ibm/<latest_copy>/install/db2ls` in the `/usr/local/bin` directory (where `<latest_copy>` is the DB2 copy with the highest level):
    - `/usr/local/bin/db2ls` does not exist
    - `/usr/local/bin/db2ls` exists, but points to an installed DB2 copy which is not the most updated copy on the system
9. Set up the DB2 fault monitor in `/etc/inittab` by running the `db2fmcu` command, which is available in a server installation. For example:
- ```
DB2DIR/bin/db2fmcu -u -p /etc/inittab
```
- where `DB2DIR` is the full path name where you are installing.
10. Install the GSKit. GSKit is a piece of code which is required if you are working with SOAP, or WebSphere® Information Integrator. To install the GSKit:
- a. Locate the GSKit image in the `db2/<platform>/FILES` subdirectory of any DB2 server installation image.
  - b. Install the GSKit image using the `rpm -ivh` operating system command
11. For non-root installations, after the DB2 product is installed, you need to open a new login session to use the non-root DB2 instance. Alternatively, you can use the same login session if you source the DB2 instance environment with `$HOME/sqllib/db2profile` (for Bourne shell and Korn shell users) or `$HOME/sqllib/db2chsrc` (for non C shell users), where `$HOME` is the non-root user's home directory.

After payload deployment, there are further manual configuration tasks which must be performed. Refer to the Related tasks for details.



---

## Chapter 14. Manually configuring DB2 servers after installation

This task provides steps for manually setting up a DB2 server after installing the server using the `db2_install` command or payload file deployment method on supported Linux and UNIX operating systems.

This task does not apply to DB2 products that were installed using the DB2 Setup wizard or a response file.

Installation using the `db2_install` command or the payload file deployment method only installs DB2 components. Configuration and setup tasks such as the ones listed below must be performed manually.

Use the following steps to manually set up a DB2 server. Note that steps 1 to 4 do not apply to non-root installations.

1. Create group and user IDs for a DB2 installation
2. Create a DB2 Administration Server (DAS)
3. Create an instance using `db2icrt`
4. Create links for DB2 files (Optional)
5. Configure TCP/IP communications for a DB2 instance
6. Register the license key using the License Center

If you plan to use DB2 tools such as the Task Center or the DB2 Administration Server scheduler functionality, it is recommended that you set up the DB2 tools catalog. The DB2 tools catalog contains metadata required for DB2 tools and the scheduler to function.

---

### Creating group and user IDs for a DB2 database installation (Linux and UNIX)

To perform this task, you must have root authority to create users and groups.

Three users and groups are required.

The DB2 Setup wizard will create these users and groups for you during the installation process. If you want, you can create them ahead of time.

The user and group names used in the following instructions are documented in the table below. You can specify your own user and group names as long as they adhere to system naming rules and DB2 naming rules.

The user IDs you create will be required to complete subsequent setup tasks.

*Table 18. Default users and groups*

| User                           | Example user name | Example group name |
|--------------------------------|-------------------|--------------------|
| Instance owner                 | db2inst1          | db2iadm1           |
| Fenced user                    | db2fenc1          | db2fadm1           |
| DB2 administration server user | dasusr1           | dasadm1            |

- The instance owner home directory is where the DB2 instance will be created.
- The fenced user is used to run user defined functions (UDFs) and stored procedures outside of the address space used by the DB2 database.
- The user ID for the *DB2 administration server user* is used to run the DB2 administration server on your system.

To create the required groups and user IDs for DB2:

1. Log in as a user with root authority.
2. Enter the appropriate commands for your operating system.

**Note:** These command line examples do not contain passwords. They are examples only. You can use the *passwd username* command from the command line to set the password.

### AIX operating systems

To create groups on AIX, enter the following commands:

```
mkgroup id=999 db2iadm1
mkgroup id=998 db2fadm1
mkgroup id=997 dasadm1
```

Create users for each group:

```
mkuser id=1004 pgrp=db2iadm1 groups=db2iadm1
  home=/home/db2inst1 db2inst1
mkuser id=1003 pgrp=db2fadm1 groups=db2fadm1
  home=/home/db2fenc1 db2fenc1
mkuser id=1002 pgrp=dasadm1 groups=dasadm1
  home=/home/dasusr1 dasusr1
```

### HP-UX operating systems

To create groups on HP-UX, enter the following commands:

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 dasadm1
```

Create users for each group:

```
useradd -g db2iadm1 -d /home/db2inst1 -m db2inst1
useradd -g db2fadm1 -d /home/db2fenc1 -m db2fenc1
useradd -g dbasgrp -d /home/dasusr1 -m dasusr1
```

### Linux operating systems

To create groups on Linux operating systems, enter the following commands:

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 dasadm1
```

Create users for each group:

```
useradd -u 1004 -g db2iadm1 -m -d /home/db2inst1 db2inst1
useradd -u 1003 -g db2fadm1 -m -d /home/db2fenc1 db2fenc1
useradd -u 1002 -g dasadm1 -m -d /home/dasusr1 dasusr1
```

### Solaris operating systems

To create groups on Solaris, enter the following commands:

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 dasadm1
```

Create users for each group:

```
useradd -g db2iadm1 -u 1004 -d /export/home/db2inst1 -m db2inst1
useradd -g db2fadm1 -u 1003 -d /export/home/db2fenc1 -m db2fenc1
useradd -g dasadm1 -u 1002 -d /export/home/dasusr1 -m dasusr1
```

---

## Creating group and user IDs in a partitioned database environment

### Creating required users for a DB2 server installation in a partitioned database environment (AIX)

Three users and groups are required to operate a DB2 database. The user and group names used in the following instructions are documented in the following table. You may specify your own user and group names as long as they adhere to your system naming rules and DB2 naming rules.

If you are planning to use the DB2 Setup wizard to install your DB2 product, the DB2 Setup wizard will create these users for you.

*Table 19. Required users and groups*

| Required user                  | User name | Group name |
|--------------------------------|-----------|------------|
| Instance owner                 | db2inst1  | db2iadm1   |
| Fenced user                    | db2fenc1  | db2fadm1   |
| DB2 administration server user | dasusr1   | dasadm1    |

If the DB2 administration server user is an existing user, this user must exist on all the participating computers before the installation. If you use the DB2 Setup wizard to create a new user for the DB2 administration server on the instance-owning computer, then the new user is also created (if necessary) during the response file installations on the participating computers. If the user already exists on the participating computers, the user must have the same primary group.

#### Prerequisites

- You must have root authority to create users and groups.
- If you manage users and groups with security software, additional steps might be required when defining DB2 users and groups.

#### Restriction

The user names you create must conform to both your operating system's naming rules, and those of DB2.

To create all three of these users, perform the following steps:

1. Log on to the primary computer.
2. Create a group for the instance owner (for example, db2iadm1), the group that will execute UDFs or stored procedures (for example, db2fadm1), and the group that will own the DB2 administration server (for example, dasadm1) by entering the following commands:

```
mkgroup id=999 db2iadm1
mkgroup id=998 db2fadm1
mkgroup id=997 dasadm1
```

3. Create a user that belongs to each group that you created in the previous step using the following commands. The home directory for each user will be the DB2 home directory that you previously created and shared (db2home).

```
mkuser id=1004 pgrp=db2iadm1 groups=db2iadm1 home=/db2home/db2inst1
  core=-1 data=491519 stack=32767 rss=-1 fsize=-1 db2inst1
mkuser id=1003 pgrp=db2fadm1 groups=db2fadm1 home=/db2home/db2fenc1
  db2fenc1
mkuser id=1002 pgrp=dasadm1 groups=dasadm1 home=/home/dasusr1
  dasusr1
```

4. Set an initial password for each user that you created by entering the following commands:

```
passwd db2inst1
passwd db2fenc1
passwd dasusr1
```

5. Log out.
6. Log on to the primary computer as each user that you created (db2inst1, db2fenc1, and dasusr1). You may be prompted to change each user's password since this is the first time that these users have logged onto the system.
7. Log out.
8. Create the exact same user and group accounts on each computer that will participate in your partitioned database environment.

## Creating required users for a DB2 server installation in a partitioned database environment (HP-UX)

Three users and groups are required to operate a DB2 database. The user and group names used in the following instructions are documented in the following table. You may specify your own user and group names as long as they adhere to your system naming rules and DB2 naming rules.

If you are planning to use the DB2 Setup wizard to install your DB2 product, the DB2 Setup wizard will create these users for you.

*Table 20. Required users and groups*

| Required user                  | User name | Group name |
|--------------------------------|-----------|------------|
| Instance owner                 | db2inst1  | db2iadm1   |
| Fenced user                    | db2fenc1  | db2fadm1   |
| DB2 administration server user | dasusr1   | dasadm1    |

If the DB2 administration server user is an existing user, this user must exist on all the participating computers before the installation. If you use the DB2 Setup wizard to create a new user for the DB2 administration server on the instance-owning computer, then the new user is also created (if necessary) during the response file installations on the participating computers. If the user already exists on the participating computers, the user must have the same primary group.

### Prerequisites

- You must have root authority to create users and groups.
- If you manage users and groups with security software, additional steps might be required when defining DB2 users and groups.

### Restriction

The user names you create must conform to both your operating system's naming rules, and those of DB2.

To create all three of these users, perform the following steps:



1. Log on to the primary computer.
2. Create a group for the instance owner (for example, db2iadm1), the group that will execute UDFs or stored procedures (for example, db2fadm1), and the group that will own the DB2 administration server (for example, dasadm1) by entering the following commands:
 

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 dasadm1
```
3. Create a user that belongs to each group that you created in the previous step using the following commands. The home directory for each user will be the DB2 home directory that you previously created and shared (db2home).
 

```
useradd -u 1004 db2iadm1 -d /db2home/db2inst1 -m db2inst1
useradd -u 1003 db2fadm1 -d /db2home/db2fenc1 -m db2fenc1
useradd -u 1002 dbasgrp -d /home/dasusr1 -m dasusr1
```
4. Set an initial password for each user that you created by entering the following commands:
 

```
passwd db2inst1    passwd db2fenc1    passwd dasusr1
```
5. Log out.
6. Log on to the primary computer as each user that you created (db2inst1, db2fenc1, and dasusr1). You may be prompted to change each user's password since this is the first time that these users have logged onto the system.
7. Log out.
8. Create the exact same user and group accounts on each computer that will participate in your partitioned database environment.

## Creating required users for a DB2 server installation in a partitioned database environment (Linux)

Three users and groups are required to operate a DB2 database. The user and group names used in the following instructions are documented in the following table. You may specify your own user and group names as long as they adhere to your system naming rules and DB2 naming rules.

If you are planning to use the DB2 Setup wizard to install your DB2 product, the DB2 Setup wizard will create these users for you.

*Table 21. Required users and groups*

| Required user                  | User name | Group name |
|--------------------------------|-----------|------------|
| Instance owner                 | db2inst1  | db2iadm1   |
| Fenced user                    | db2fenc1  | db2fadm1   |
| DB2 administration server user | dasusr1   | dasadm1    |

If the DB2 administration server user is an existing user, this user must exist on all the participating computers before the installation. If you use the DB2 Setup wizard to create a new user for the DB2 administration server on the instance-owning computer, then the new user is also created (if necessary) during the response file installations on the participating computers. If the user already exists on the participating computers, the user must have the same primary group.

### Prerequisites

- You must have root authority to create users and groups.

- If you manage users and groups with security software, additional steps might be required when defining DB2 users and groups.

**Restriction**

The user names you create must conform to both your operating system’s naming rules, and those of DB2.

To create all three of these users, perform the following steps:

1. Log on to the primary computer.
2. Create a group for the instance owner (for example, db2iadm1), the group that will execute UDFs or stored procedures (for example, db2fadm1), and the group that will own the DB2 administration server (for example, dasadm1) by entering the following commands:

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 dasadm1
```

Ensure that the specific numbers you are using do not currently exist on any of the machines.

3. Create a user that belongs to each group that you created in the previous step using the following commands. The home directory for each user will be the DB2 home directory that you previously created and shared (db2home).

```
useradd -u 1004 -g db2iadm1 -m -d /db2home/db2inst1 db2inst1 -p password1
useradd -u 1003 -g db2fadm1 -m -d /db2home/db2fenc1 db2fenc1 -p password2
useradd -u 1002 -g dasadm1 -m -d /home/dasusr1 dasusr1 -p password3
```

4. Set an initial password for each user that you created by entering the following commands:

```
passwd db2inst1    passwd db2fenc1    passwd dasusr1
```

5. Log out.
6. Log on to the primary computer as each user that you created (db2inst1, db2fenc1, and dasusr1). You may be prompted to change each user’s password since this is the first time that these users have logged onto the system.
7. Log out.
8. Create the exact same user and group accounts on each computer that will participate in your partitioned database environment.

## Creating required users for a DB2 server installation in a partitioned database environment (Solaris Operating System)

Three users and groups are required to operate a DB2 database. The user and group names used in the following instructions are documented in the following table. You may specify your own user and group names as long as they adhere to your system naming rules and DB2 naming rules.

If you are planning to use the DB2 Setup wizard to install your DB2 product, the DB2 Setup wizard will create these users for you.

*Table 22. Required users and groups*

| Required user                  | User name | Group name |
|--------------------------------|-----------|------------|
| Instance owner                 | db2inst1  | db2iadm1   |
| Fenced user                    | db2fenc1  | db2fadm1   |
| DB2 administration server user | dasusr1   | dasadm1    |

If the DB2 administration server user is an existing user, this user must exist on all the participating computers before the installation. If you use the DB2 Setup wizard to create a new user for the DB2 administration server on the instance-owning computer, then the new user is also created (if necessary) during the response file installations on the participating computers. If the user already exists on the participating computers, the user must have the same primary group.

### Prerequisites

- You must have root authority to create users and groups.
- If you manage users and groups with security software, additional steps might be required when defining DB2 users and groups.

### Restriction

The user names you create must conform to both your operating system's naming rules, and those of DB2.

To create all three of these users, perform the following steps:

1. Log on to the primary computer.
2. Create a group for the instance owner (for example, `db2iadm1`), the group that will execute UDFs or stored procedures (for example, `db2fadm1`), and the group that will own the DB2 administration server (for example, `dasadm1`) by entering the following commands:

```
groupadd id=999 db2iadm1
groupadd id=998 db2fadm1
groupadd id=997 dasadm1
```

3. Create a user for each group using the following commands. The home directory for each user will be the DB2 home directory that you previously created and shared (`/db2home`).

```
useradd -u 1004 -g db2iadm1 -d /db2home/db2inst1 -m db2inst1 passwd mypasswd
useradd -u 1003 -g db2fadm1 -d /db2home/db2fenc1 -m db2fenc1 passwd mypasswd
useradd -u 1002 -g dasadm1 -d /export/home/dasusr1 -m dasusr1 passwd mypasswd
```

4. Set an initial password for each user that you created by entering the following commands:

```
passwd db2inst1    passwd db2fenc1    passwd dasusr1
```

5. Log out.
6. Log on to the primary computer as each user that you created (`db2inst1`, `db2fenc1`, and `dasusr1`). You may be prompted to change each user's password since this is the first time that these users have logged onto the system.
7. Log out.
8. Create the exact same user and group accounts on each computer that will participate in your partitioned database environment.

---

## Creating the DB2 Administration Server (DAS)

The DB2 Administration Server (DAS) provides support services for DB2 tools such as the Control Center and Configuration Assistant.

### Prerequisites

To create the DAS, you must have:

- Root authority.
- Created a DAS user.

## Restrictions

User IDs have the following restrictions and requirements:

- Must have a primary group other than guests, admins, users, and local
- Can include lowercase letters (a–z), numbers (0–9), and the underscore character ( \_ )
- Cannot be longer than eight characters
- Cannot begin with IBM, SYS, SQL, or a number
- Cannot be a DB2 reserved word (USERS, ADMINS, GUESTS, PUBLIC, or LOCAL), or an SQL reserved word
- Cannot include accented characters
- Cannot be IDs managed by NIS or NIS+
- If existing user IDs are specified instead of creating new user IDs, make sure that the user IDs:
  - Are not locked
  - Do not have expired passwords

To create the DAS:

1. Log in as user with root authority.
2. Issue the following command to create the DAS:

```
DB2DIR/instance/dascrt -u DASuser
```

where

- *DB2DIR* specifies the path where the DB2 product was installed. The default installation directory is:
  - for AIX, HP-UX or Solaris operating systems: /opt/IBM/db2/V9.5
  - for Linux operating systems: /opt/ibm/db2/V9.5
- *-u* specifies the DAS user you created when creating users and groups.

---

## Creating an instance using db2icrt

A DB2 instance is an environment in which you store data and run applications. Use the db2icrt command to create an instance.

On Linux or UNIX operating systems, you must have root authority. On Windows operating systems, you must be logged on as a Local Administrator.

To create an instance using db2icrt:

1. Log in with proper authority.
2. Run the db2icrt command. For example, on Linux or UNIX operating systems:

```
DB2DIR/instance/db2icrt -a AuthType -u FencedID InstName
```

On Windows operating systems:

```
DB2DIR\bin\db2icrt -u FencedID InstName
```

where:

### **DB2DIR**

is the DB2 installation directory.

- On AIX, HP-UX, or Solaris operating systems, the default DB2 installation directory is /opt/IBM/db2/V9.5

- On Linux operating systems, the default installation directory is `/opt/ibm/db2/V9.5`

**-a AuthType (Linux or UNIX)**

Represents the authentication type for the instance. AuthType can be one of `SERVER`, `CLIENT`, `DCS`, `SERVER_ENCRYPT`, `DCS_ENCRYPT`. `SERVER` is the default. This parameter is optional.

**-u FencedID**

Represents the name of the user under which fenced user defined functions (UDFs) and fenced stored procedures will run. This flag is not required if you are creating an instance on a client. Specify the name of the fenced user you created.

**InstName**

Represents the name of instance. The name of the instance must be the same as the name of the instance owning user. Specify the name of the instance owning user you created. The instance will be created in the instance owning user's home directory.

For example, if you are using server authentication, your fenced user is `db2fenc1`, and your instance owning user is `db2inst1`, use the following command to create an instance on an AIX system:

```
/opt/IBM/db2/V9.5/instance/db2icrt -a server -u db2fenc1 db2inst1
```

(Optional) After you create an instance you can configure notification for health monitoring. This task can be performed using the Health Center or CLP.

## Creating links for DB2 files

You can create links for the DB2 files to the `/usr/lib` directory, and for the include files to the `/usr/include` directory for a particular DB2 version and release level.

To perform this task, you must be logged on as a user with root authority.

This task is not required for normal DB2 operation.

You should consider creating links for the DB2 files only if both of the following conditions are met:

- You have only one copy of DB2 on the current computer.
- You are developing or running applications and want to avoid having to specify the full path to the product libraries and include files.

The following restrictions apply:

- Creating links for one DB2 copy will render the other DB2 copies nonfunctional. Links can be established for only one DB2 copy on a given system.
- If there are existing links to the `/usr/lib` and `/usr/include` directories from a previous DB2 version, they will automatically be removed.
- Links should not be created on systems where multiple DB2 copies are intended to coexist.

To create links for DB2 files:

1. Log on as a user with root authority
2. Run the `db2ln` command. For example:

```
DB2DIR/cfg/db2ln
```

where:

### **DB2DIR**

is the DB2 installation directory.

- On AIX, HP-UX, or Solaris operating systems, the default DB2 installation directory is `/opt/IBM/db2/V9.5`
- On Linux operating systems, the default installation directory is `/opt/ibm/db2/V9.5`

If there are existing links to the `/usr/lib` and `/usr/include` directories from a previous DB2 version, they will automatically be removed by entering the `db2ln` command to create links for this DB2 version. If you want to reestablish the links to the libraries of the previous version, then you must execute the `db2rmln` command from your current DB2 version before you execute the `db2ln` command from the previous DB2 version.

---

## **Configuring TCP/IP communications for a DB2 instance**

This task describes how to configure TCP/IP communications on your DB2 server using the DB2 Command Line Processor (CLP). Communication protocols on the DB2 server must be configured in order for your DB2 server to accept inbound requests from remote DB2 clients.

Before you configure TCP/IP communications for a DB2 instance:

- Ensure that TCP/IP is functional on the DB2 server. TCP/IP must also be functional on the DB2 client to establish a connection.
- Identify either a Connection Service name *and* Connection Port, or just a Connection Port.

### **Connection Service Name and Connection Port**

The service name is used to update the Service name (*svcname*) parameter in the database manager configuration file at the server. When a Connection Service name is specified, the services file must be updated with the same Service name, a port number, and the protocol. The Service name is arbitrary but must be unique within the services file. A sample value for the service name could be `server1`. If you are using DB2 Enterprise Server Edition in a partitioned format, ensure that the port number does not conflict with the port numbers used by the Fast Communications Manager (FCM).

The Connection port must be unique within the services file. A sample value for the port number and protocol could be `3700/tcp`.

### **Connection Port**

The Service name (*svcname*) parameter in the database manager configuration file at the server can be updated with a port number. If this is the case, it is not necessary to update the services file. If you are using DB2 Enterprise Server Edition in a partitioned format, ensure that the port number does not conflict with the port numbers used by the Fast Communications Manager (FCM) or any other applications on the system. A sample value for the port number could be `3700`.

Most protocols are automatically detected and configured when you set up DB2 using the DB2 Setup wizard. Perform the current task if:

- You deselected the TCP/IP communication protocol when you set up DB2 using the DB2 Setup wizard.

- You added the TCP/IP communication protocol to your network after you set up DB2 using the DB2 Setup wizard.
- The TCP/IP communication protocol was not detected by the DB2 Setup wizard.
- You installed a DB2 product using the `db2_install` command or the payload file method.

To configure TCP/IP communications for a DB2 instance:

1. Update the services file on the server.
2. Update the database manager configuration file on the server.
3. Set communication protocols using one of the following methods:
  - CLP
  - Control Center





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## **Part 3. After you install a DB2 Server product**



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## Chapter 15. Verifying your installation

---

### Verifying the installation of DB2 servers using First Steps (Linux and Windows)

You should verify that the DB2 server installation has completed successfully by accessing data from the SAMPLE database.

You must have the Control Center and the First Steps component installed to perform this task.

First Steps is listed as a getting started component in the feature selection window in the DB2 Setup wizard. It is installed as part of a Typical installation or may be selected when performing a Custom installation.

The Control Center component is only available on Linux (x86 and AMD64/EM64T only) and Windows (x86 and AMD64/EM64T only).

1. On Linux, log on to the system as the instance owner.
2. Start First Steps:
  - On Windows operating systems, click **Start** and, select **Programs -> IBM DB2 -> [DB2 Copy Name] -> Set-up Tools > First Steps**
  - On Linux and Windows operating systems, you can start First Steps by typing the **db2fs** command.
3. Select **Database Creation** in the First Steps launchpad. On the Database Creation page, you will see links to the DB2 Information Center for creating the SAMPLE database and the **Create SAMPLE Database** button. Click **Create SAMPLE Database** to launch the Create SAMPLE Database window.
4. You have the options to choose the type of database objects to create and the database location. You can choose the drive on which to create the SAMPLE database on Windows, and the directory in which to create the SAMPLE database on Linux.
5. This command may take a few minutes to process. When the SAMPLE database has been created, you will receive a completion message. Click **OK**.
6. Launch the Control Center. On Windows, click **Start** and, select **Programs -> IBM DB2 -> [DB2 Copy Name] -> General Administration Tools -> Control Center**. On Linux systems, type the **db2cc** command.
7. In the left pane of the Control Center screen, expand the object tree to view the SAMPLE database and SAMPLE database objects. Select the Tables object to view the SAMPLE database tables in the right pane of the Control Center screen. Right-click on the table name staff and select Query. In the command editor window, click the run button to execute the query and see the result set.

After you have verified the installation, you can remove the SAMPLE database to free up disk space. However, you will need to keep the SAMPLE database if you plan to make use of the sample applications.

Enter the **db2 drop database sample** command to drop the SAMPLE database.

---

## Verifying the installation using the command line processor (CLP)

You can verify the installation by creating the SAMPLE database and running SQL commands to retrieve sample data.

### Prerequisites

- The SAMPLE database component, found in the features selection, must be installed on your system and is included in a typical installation.
- You require a user with SYSADM authority.

To verify the installation:

1. Log on to the system as a user with SYSADM authority.
2. Start the database manager by entering the db2start command.
3. Enter the db2sampl command to create the SAMPLE database.

This command may take a few minutes to process. There is no completion message; when the command prompt returns, the process is complete.

The SAMPLE database is automatically cataloged with the database alias SAMPLE when it is created.

4. Connect to the SAMPLE database, retrieve a list of all the employees that work in department 20, and reset the database connection. Enter the following commands from the command line processor (CLP):

```
connect to sample
"select * from staff where dept = 20"
connect reset
```

The output should be similar to the following:

| ID  | NAME    | DEPT | JOB   | YEARS | SALARY   | COMM   |
|-----|---------|------|-------|-------|----------|--------|
| 10  | Sanders | 20   | Mgr   | 7     | 98357.50 | -      |
| 20  | Pernal  | 20   | Sales | 8     | 78171.25 | 612.45 |
| 80  | James   | 20   | Clerk | -     | 43504.60 | 128.20 |
| 190 | Sneider | 20   | Clerk | 8     | 34252.75 | 126.50 |

4 record(s) selected.

After you have verified the installation, you can remove the SAMPLE database to free up disk space. Enter the db2 drop database sample command to drop the SAMPLE database.

---

## Verifying a partitioned database environment installation (Windows)

To verify that your DB2 server installation was successful, you will create a sample database and run SQL commands to retrieve sample data and to verify that the data has been distributed to all participating database partition servers.

You have completed all of the installation steps.

To create the SAMPLE database:

1. Log on to the primary computer (ServerA) as user with SYSADM authority.
2. Enter the db2sampl command to create the SAMPLE database.

This command may take a few minutes to process. When the command prompt returns, the process is complete.

The SAMPLE database is automatically cataloged with the database alias SAMPLE when it is created.

3. Start the database manager by entering the db2start command.
4. Enter the following DB2 commands from a DB2 command window to connect to the SAMPLE database, retrieve a list of all the employees that work in department 20:

```
db2 connect to sample
db2 "select * from staff where dept = 20"
```

5. To verify that data has been distributed across database partition servers, enter the following commands from a DB2 command window:

```
db2 "select distinct dbpartitionnum(empno) from employee"
```

The output will list the database partitions used by the employee table. The specific output will depend on the number of database partitions in the database and the number of database partitions in the database partition group that is used by the table space where the employee table was created.

After you have verified the installation, you can remove the SAMPLE database to free up disk space. However, it is useful to keep the sample database, if you plan to make use of the sample applications.

Enter the db2 drop database sample command to drop the SAMPLE database.

---

## Verifying a partitioned database server installation (Linux and UNIX)

To verify that your DB2 server installation was successful, you will create a sample database and run SQL commands to retrieve sample data and to verify that the data has been distributed to all participating database partition servers.

Before following these steps, make sure you have completed all of the installation steps.

To create the SAMPLE database:

1. Log on to the primary computer (ServerA) as the instance-owning user. For this example, db2inst1 is the instance-owning user.
2. Enter the db2sampl command to create the SAMPLE database. By default, the sample database will be created in the instance-owner's home directory. In our example /db2home/db2inst1/ is the instance owner's home directory. The instance owner's home directory is the default database path.

This command may take a few minutes to process. There is no completion message; when the command prompt returns, the process is complete.

The SAMPLE database is automatically cataloged with the database alias SAMPLE when it is created.

3. Start the database manager by entering the db2start command.
4. Enter the following DB2 commands from a DB2 command window to connect to the SAMPLE database, retrieve a list of all the employees that work in department 20:

```
db2 connect to sample
db2 "select * from staff where dept = 20"
```

5. To verify that data has been distributed across database partition servers, enter the following commands from a DB2 command window:

```
db2 "select distinct dbpartitionnum(empno) from employee"
```

The output will list the database partitions used by the employee table. The specific output will depend on:

- The number of database partitions in the database
- The number of database partitions in the database partition group that is used by the table space where the employee table was created

After you have verified the installation, you can remove the SAMPLE database to free up disk space. Enter the db2 drop database sample command to drop the SAMPLE database.

---

## Directory structure for your installed DB2 database product (Windows)

After installation, the DB2 objects are created in various directories. Although during installation you have the option to specify your own DB2 product installation path, the following table shows the location of DB2 objects after a default installation.

*Table 23. DB2 objects and their locations*

| DB2 Object                                                                                                                                                                                                                                                      | Location                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| DAS information                                                                                                                                                                                                                                                 | C:\Documents and Settings\All Users\Application Data\IBM\DB2\DB2COPY1     |
| Database configuration file SQLDBCON                                                                                                                                                                                                                            | C:\DB2\NODE0000\SQL00001                                                  |
| Database directory<br>Contains files needed for: <ul style="list-style-type: none"> <li>• buffer pool information</li> <li>• history information</li> <li>• log control files</li> <li>• storage path information</li> <li>• table space information</li> </ul> | C:\DB2\NODE0000\SQL00001                                                  |
| Database manager configuration file db2system                                                                                                                                                                                                                   | C:\Documents and Settings\All Users\Application Data\IBM\DB2\DB2COPY1\DB2 |
| DB2 commands                                                                                                                                                                                                                                                    | C:\Program Files\IBM\SQLLIB\BIN                                           |
| DB2 error messages file db2diag.log                                                                                                                                                                                                                             | C:\Documents and Settings\All Users\Application Data\IBM\DB2\DB2COPY1\DB2 |
| DB2 installation path                                                                                                                                                                                                                                           | C:\Program Files\IBM\SQLLIB                                               |
| Directory for event monitor data                                                                                                                                                                                                                                | C:\DB2\NODE0000\SQL00001\DB2EVENT                                         |
| Directory for transaction log files                                                                                                                                                                                                                             | C:\DB2\NODE0000\SQL00001\SQLOGDIR                                         |
| Installation log file                                                                                                                                                                                                                                           | C:\Documents and Settings\Administrator\My Documents\DB2LOG               |
| Instance                                                                                                                                                                                                                                                        | C:\Documents and Settings\All Users\Application Data\IBM\DB2\DB2COPY1\DB2 |
| Instance information                                                                                                                                                                                                                                            | C:\Documents and Settings\All Users\Application Data\IBM\DB2\DB2COPY1\DB2 |
| Local database directory for the instance called DB2                                                                                                                                                                                                            | C:\DB2\NODE0000\SQLDBDIR                                                  |

Table 23. DB2 objects and their locations (continued)

| DB2 Object                                         | Location                                                                           |
|----------------------------------------------------|------------------------------------------------------------------------------------|
| Node directory                                     | C:\Documents and Settings\All Users\Application Data\IBM\DB2\DB2COPY1\DB2\SQLNODIR |
| Partitioned database environment file db2nodes.cfg | C:\Documents and Settings\All Users\Application Data\IBM\DB2\DB2COPY1\DB2          |
| System database directory                          | C:\Documents and Settings\All Users\Application Data\IBM\DB2\DB2COPY1\DB2\SQLDBDIR |

These figures illustrate an example of the DB2 directory structure after installation. In these examples, there are two instances, DB2 and MYINST. The directories DB2 and MYINST under the local disk C: will only appear if a database has been created under the appropriate instance.

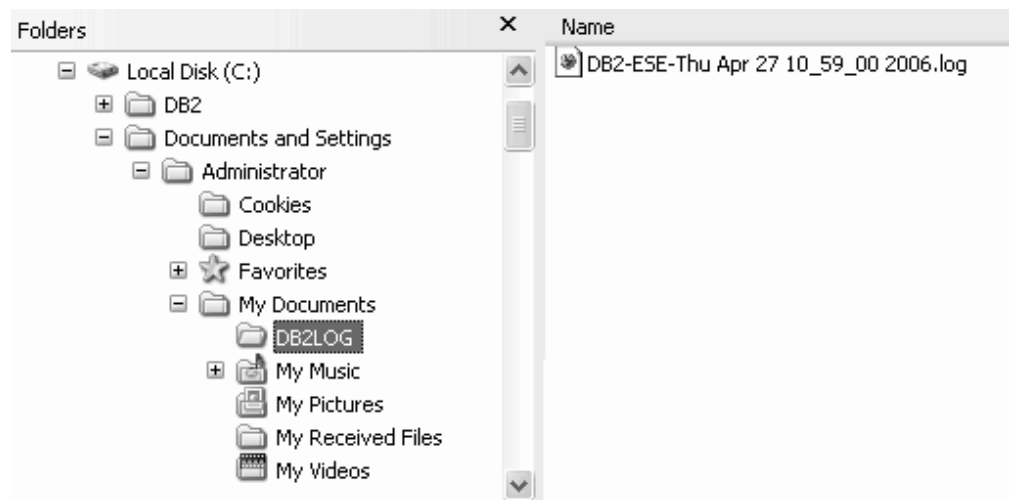






### 3. Database configuration file

#### Directory structure - installation log file location



---

## Directory structure for your installed DB2 database product (Linux)

This topic explains the DB2 directory structure after a root installation. The topic also describes what gets installed, in terms of DB2 product files and DB2 instance files.

**Note:** For non-root installations, all DB2 files (program files and instance files) are located in or beneath the `$HOME/sqllib` directory, where `$HOME` represents the non-root user's home directory.

After installation, the DB2 objects are created in various directories. The following table shows the location of DB2 objects after a default root installation.

*Table 24. Location of DB2 objects after a default root installation*

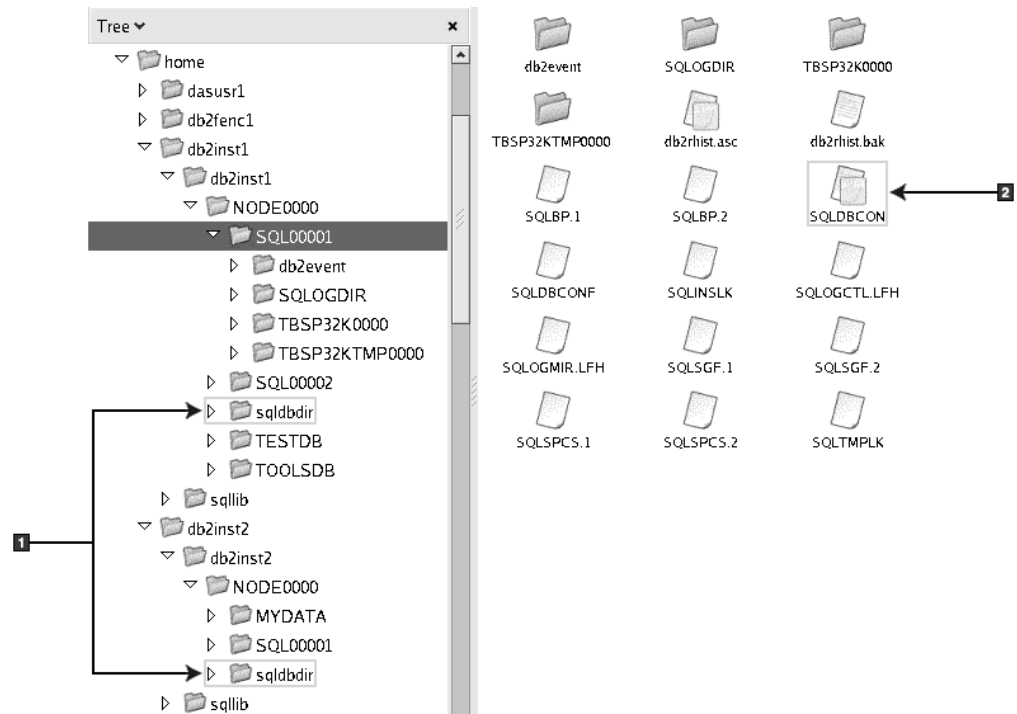
| DB2 Object                                                                                                                                                                                                                                                | Location                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| DAS home directory                                                                                                                                                                                                                                        | home/dasusr1                                 |
| DAS information                                                                                                                                                                                                                                           | home/dasusr1/das                             |
| Database configuration file SQLDBCON                                                                                                                                                                                                                      | home/db2inst1/db2inst1/NODE0000/<br>SQL00001 |
| Database directory<br>Contains files needed for: <ul style="list-style-type: none"><li>• buffer pool information</li><li>• history information</li><li>• log control files</li><li>• storage path information</li><li>• table space information</li></ul> | home/db2inst1/db2inst1/NODE0000/<br>SQL00001 |
| Database manager configuration file db2system                                                                                                                                                                                                             | home/db2inst1/sqllib                         |
| DB2 commands                                                                                                                                                                                                                                              | /opt/IBM/db2/V9.5/bin                        |
| DB2 error messages file db2diag.log                                                                                                                                                                                                                       | home/db2inst1/sqllib/db2dump                 |

Table 24. Location of DB2 objects after a default root installation (continued)

| DB2 Object                                         | Location                                           |
|----------------------------------------------------|----------------------------------------------------|
| DB2 installation path                              | default is /opt/IBM/db2/V9.5                       |
| Directory for event monitor data                   | home/db2inst1/db2inst1/NODE0000/SQL00001/db2event  |
| Directory for transaction log files                | home/db2inst1/db2inst1/NODE0000/SQL00001/SQLLOGDIR |
| Installation log file db2install.history           | /opt/IBM/db2/V9.5/install/logs                     |
| Instance home directory                            | home/db2inst1                                      |
| Instance information                               | home/db2inst1/sqllib                               |
| Local database directory for the instance          | home/db2inst1/db2inst1/NODE0000/sqlldbdir          |
| Partitioned database environment file db2nodes.cfg | home/db2inst1/sqllib                               |
| System database directory                          | home/db2inst1/sqllib/sqlldbdir                     |

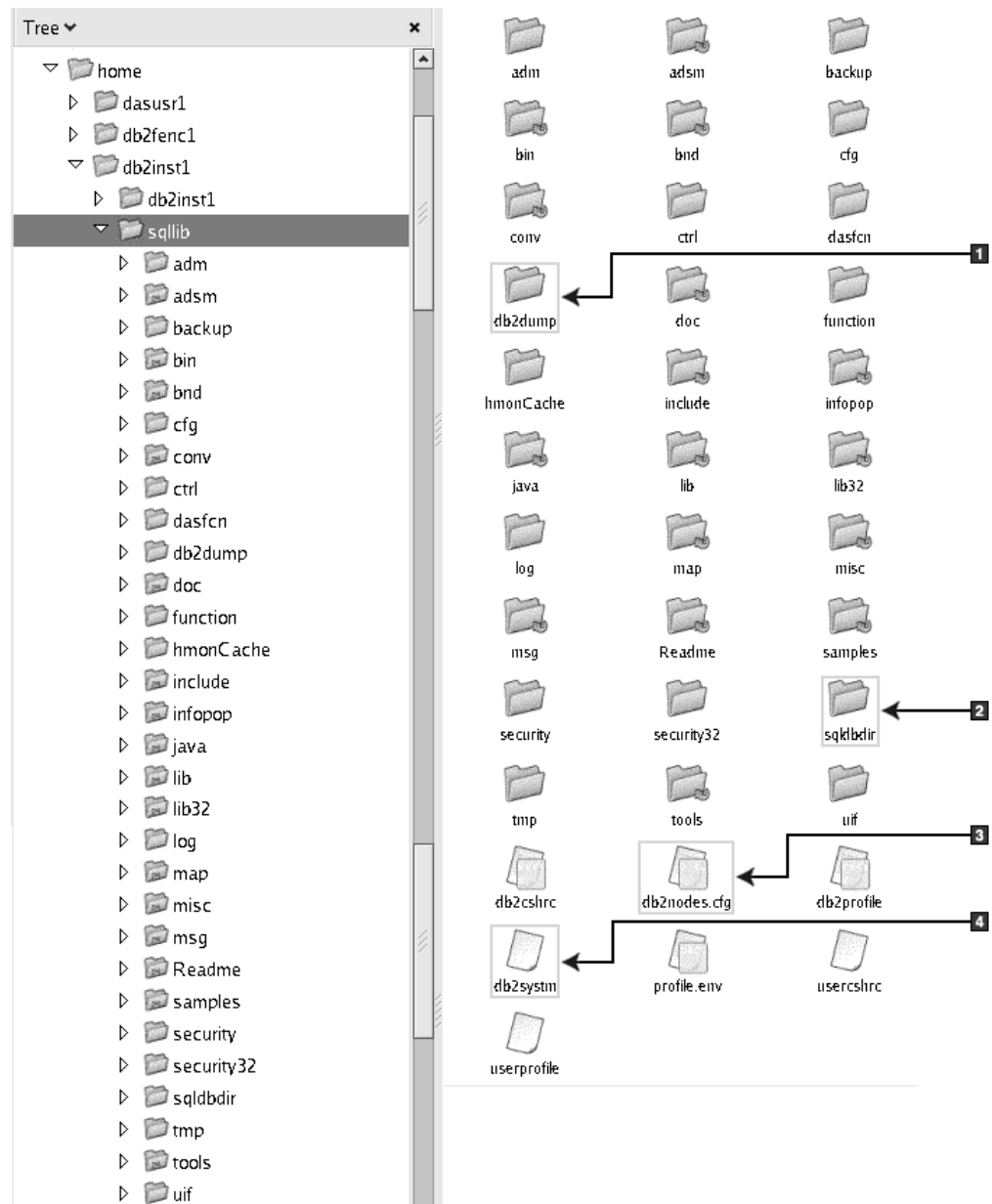
The following figures illustrate an example of the DB2 directory structure after a root installation. In these examples, there are two instances, db2inst1 and db2inst2.

### Directory structure - default local database directory information for the DB2 instance db2inst1



1. Local database directories.
2. Database configuration file

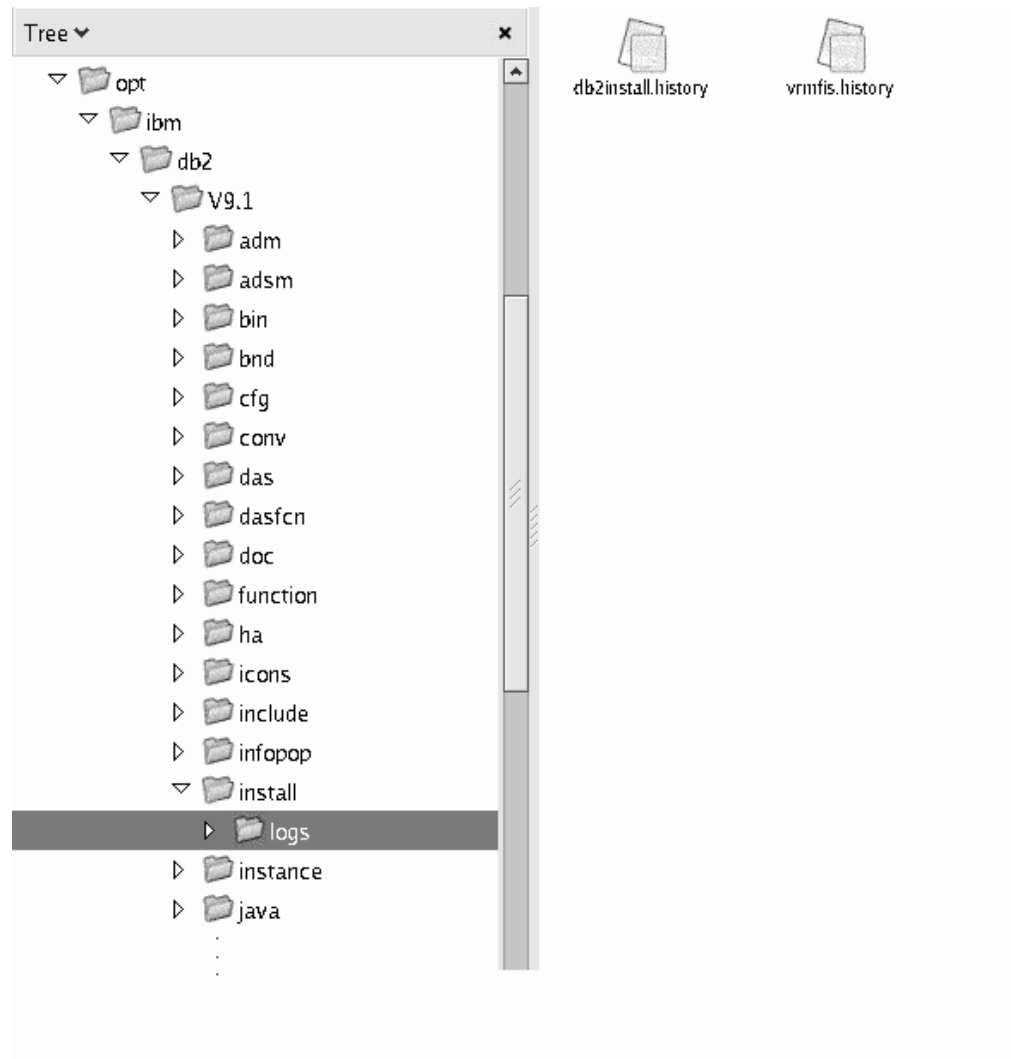
## Directory structure - directory information for the DB2 instance db2inst1



1. The db2diag.log file in this directory logs DB2 error messages.
2. System database directory
3. The db2nodes.cfg file is used in a partitioned database environment.
4. Database manager configuration file

The **dasusr1** directory contains the DB2 administration server (DAS) configuration files and the symbolic links to DB2 core files.

## Directory structure - install log file location for the DB2 product installed at /opt/IBM/db2/V9.5



This figure illustrates the location of your install log file. If there were multiple installations under the same installation path, the db2install.history file will be indexed as db2install.history.n where n represents a four digit number, for example, 0000, or 0001.

The DB2 installation directory /opt/IBM/db2/V9.5 contains the installed DB2 files.



---

## Chapter 16. Post-installation tasks

---

### Listing DB2 products installed on your system (Linux and UNIX)

At least one DB2 Version 9 product must already be installed by a root user for a symbolic link to the `db2ls` command to be available in the `/usr/local/bin` directory.

With the ability to install multiple copies of DB2 products on your system and the flexibility to install DB2 products and features in the path of your choice, you need a tool to help you keep track of what is installed and where it is installed. On supported Linux and UNIX operating systems, the `db2ls` command lists the DB2 products and features installed on your system, including the DB2 Version 9 HTML documentation.

The `db2ls` command can be used to list:

- Where DB2 products are installed on your system and list the DB2 product level
- All or specific DB2 products and features in a particular installation path

The output that the `db2ls` command lists is different depending on the ID used:

- When the `db2ls` command is run with root authority, only root DB2 installations are queried.
- When the `db2ls` command is run with a non-root ID, root DB2 installations and the non-root installation owned by matching non-root ID are queried. DB2 installations owned by other non-root IDs are not queried.

The `db2ls` command is the only method to query a DB2 product. You *cannot* query DB2 products using Linux or UNIX operating system native utilities, such as `pkginfo`, `rpm`, `SMIT`, or `swlist`. Any existing scripts containing a native installation utility that you use to query and interface with DB2 installations will need to change.

You *cannot* use the `db2ls` command on Windows operating systems.

To list the path where DB2 products are installed on your system and list the DB2 product level, enter:

```
db2ls
```

The command lists the following information for each DB2 product installed on your system:

- Installation path
- Level
- Fix pack
- Special Install Number. This column is used by IBM DB2 Support.
- Installation date. This column shows when the DB2 product was last modified.
- Installer UID. This column shows the UID with which the DB2 product was installed.

To list information about DB2 products or features in a particular installation path the `q` parameter must be specified:

```
db2ls -q -p -b baseInstallDirectory
```

where:

- *q* specifies that you are querying a product or feature. This parameter is mandatory. If a DB2 Version 8 product is queried, a blank value is returned.
- *p* specifies that the listing displays products rather than listing the features.
- *b* specifies the installation directory of the product or feature. This parameter is mandatory if you are not running the command from the installation directory.

Depending on the parameters provided, the command lists the following information:

- Installation path. This is specified only once, not for each feature.
- The following information is displayed:
  - Response file ID for the installed feature, or if the *p* option is specified, the response file ID for the installed product. For example, ENTERPRISE\_SERVER\_EDITION.
  - Feature name, or if the *p* option is specified, product name.
  - Product version, release, modification level, fix pack level (VRMF). For example, 9.5.0.0
  - Fix pack, if applicable. For example, if Fix Pack 1 is installed, the value displayed is 1. This includes interim fix packs, such as Fix Pack 1a.
- If any of the product's VRMF information do not match, a warning message displays at the end of the output listing. The message suggests the fix pack to apply.

---

## First Steps interface

First Steps is a DB2 setup tool which introduces you to basic database maintenance tasks, application development, and technical resources available for your DB2 products.

First Steps has been redesigned to be more like a portal, where you can find information from a wide range of sources to perform tasks. The information in First Steps is tailored by DB2 products. For example, if you have installed a DB2 database system, you can perform any of the following tasks with the assistance of First Steps:

- Create the sample database or your own database.
- Basic administration tasks, such as back up, load data, and set up access.
- Database administration tasks, such as migration and access configuration.
- Create an application using any of the supported development environments.
- Review technical resources that provide more in-depth knowledge.
- Check for product updates.

### Database administration

The instructions for database administration tasks reference mostly the Command Line Processor (CLP) interface and the Control Center interface to execute each task. The CLP is a text-based interface that is used to execute DB2 commands, database utilities, and SQL statements. The Control Center is a graphic interface that is used to manage and administer database systems, databases, and database objects, and to open other centers and tools. The CLP is delivered with the IBM Data Server Client.



The Control Center is delivered with the IBM Data Server Client for 32-bit Linux (x86-32), 64-bit Linux (x64), and Windows.

In addition to the CLP and the Control Center, First Steps makes references to the data server administrator tool. This web-based application facilitates data server management and enhances the user experience when managing multiple data servers. The administrator tool is a separate application that can be obtained from the data server administrator tool Web site.

### Application development

First Steps includes information about development tools, programming languages, and sample files available for DB2 application development. It introduces DB2 database system programming features such as stored procedures and user-defined functions that can extend your application and use the DB2 server system resources. First Steps also includes references to assist you in implementing Web services and migrating application to DB2 database systems.

### Technical resources

There are many technical resources available from DB2 Information Management software Web sites, user communities, and IBM programs. First Steps highlights the most relevant of these technical resources to assist you with database administration, application development, and education.

### Running First Steps

You can manually launch First Steps using the `db2fs` command:

```
$ db2fs
```

#### On Linux and UNIX operating systems

The `db2fs` command is located in the `INSTHOME/sqllib/bin` directory, where `INSTHOME` is the instance home directory. You need *sysadm* authority to run this command.

#### On Windows operating system

The `db2fs` command is located in the `DB2DIR\bin` directory, where `DB2DIR` is set to the location you specified during the DB2 Version 9 installation.

Alternatively, you can launch First Steps on Windows operating system from the Start menu by selecting **Programs** → **IBM DB2** → **[DB2 Copy Name]** → **Set Up Tools** → **First Steps** or from the DB2 product folder on the desktop.

To make full use of the resources provided by First Steps, you must have an internet connection and access to the online DB2 Information Center.

---

## Deleting a Firefox or Netscape browser profile

If you use either of these profiles to view other Web pages that have JavaScript™, the JavaScript will run automatically without warnings. After you have run the DB2 Setup wizard or DB2 First Steps, you might want to delete the browser profile to prevent JavaScript from running automatically when visiting other Web pages with these profiles.

If you use Firefox or Netscape 8 as your Web browser, a browser profile is created in the following scenarios:

### DB2 Setup Launchpad

On Windows, if you install your DB2 product using the setup wizard, the DB2 Setup Launchpad runs in a browser and automatically creates a browser profile named DB2\_LP.

### DB2 First Steps

When you run DB2 First Steps, you are prompted to create a browser profile. If you agree, a browser profile named DB2\_FIRSTSTEPS is created.

Previous versions of Netscape older than Netscape 8 do not require you to manually remove the browser profile.

To delete a Firefox browser profile:

1. If any Firefox browsers are open, close them now.
2. Open the Firefox Profile Manager:

#### On Windows

- a. Open the Windows Start menu and select Run...
- b. Type `firefox.exe -profilemanager` and click **OK**. The **Firefox - Choose User Profile** dialog opens.

#### On Linux and UNIX

- a. Open a command prompt
- b. Switch to the Firefox directory
- c. Start Firefox with the `-profilemanager` switch. For example:  

```
./firefox -profilemanager
```
3. Select the DB2\_LP or DB2\_FIRSTSTEPS profile.
4. Click **Delete Profile...**
5. Click **Exit** to close the **Firefox - Choose User Profile** dialog.

For further information on Firefox profiles, visit <http://www.mozilla.org/support/firefox/profile>

To delete a Netscape 8 profile:

1. Open a Netscape 8 browser.
2. Select **Options...** from the **Tools** menu. The **Options** dialog opens.
3. Select **Profiles** under **Browser Options**.
4. Select the DB2\_LP or DB2\_FIRSTSTEPS profile and click **Remove**.
5. Click **OK** to close the **Options** dialog.

---

## Adding your user ID to the DB2ADMNS and DB2USERS user groups (Windows)

After successfully completing a DB2 installation, you now have to add users to the DB2ADMNS or the DB2USERS groups for users that need to run local DB2 applications and tools on the machine. The DB2 installer creates two new groups. You can either use a new name or accept the default names. The default group names are DB2ADMNS and DB2USERS.

### Prerequisites

- You must have installed a DB2 product.

- You must have selected the Enable operating system security check box on the Enable operating system security for DB2 object panel during the installation of your DB2 product.

To add users to the appropriate group:

1. Click **Start** and select **Run**.
2. Type `lusrmgr.msc` and click **OK**.
3. Select **Local Users and Groups**.
4. Select **Users**.
5. Select the user you want to add.
6. Click **Properties**.
7. Click the **Member Of** tab.
8. Click **Add**.
9. Select the appropriate group.
10. Click **OK**.

If you did the install and chose not to enable the new security feature you can still do so post-install by running the `db2extsec.exe` command. Adding a user to a group takes effect the first time the user logs on after the user has been added. For example, if you add your user ID to the DB2ADMNS group, you need to log out and then log in again for this change to take effect.

---

## Upgrading your 32-bit DB2 instances to 64-bit instances (Windows)

### Restrictions

- DB2 32-bit and 64-bit instances cannot exist on the same system.
- You cannot install a 64-bit DB2 Version 9 copy on a system with multiple 32-bit DB2 Version 9 copies.
- You cannot migrate from a 32-bit DB2 Version 9.1 copy to a 64-bit DB2 Version 9.5 copy. You only can migrate from DB2 Version 9.5 32-bit to DB2 Version 9.5 64-bit.

If you have more than one 32-bit DB2 Version 9 copy on your system and want to upgrade to 64-bit, perform the following steps:

1. Move all your 32-bit instances over to one DB2 copy using the `db2iupdt` command.
2. Uninstall the 32-bit DB2 copies, except for the one where you have moved all your 32-bit instances over to.
3. Install DB2 Version 9 64-bit which will upgrade your 32-bit DB2 Version 9 instances to 64-bit DB2 Version 9 instances.

---

## Setting up notification and contact lists

For your DB2 product to contact you or others regarding the health of your databases, you will have to set up notification and contact lists. If you did not do this during the DB2 installation, you can manually set up these lists.

To set up notification and contact lists:

1. Log on as the instance owner or a user with SYSADM authority.
2. If the SMTP server was not specified during the installation process, you can configure it manually using the following command:

```
db2 update admin cfg using smtp_server host1
```

where host1 represents the TCP/IP host name for the SMTP server used for e-mail notification. You can also update this information using the Create Database with Automatic Maintenance wizard, or the Troubleshoot Alert Notification wizard in the Health Center.

3. If you want the contact information to be located on a remote DB2 administration server (DAS), you can specify the contact\_host parameter using the following command:

```
db2 update admin cfg using contact_host host2
```


where host2 represents the TCP/IP host name where the DAS is running. If the contact\_host parameter is not specified, the DAS assumes the contact information is local.

4. Turn on the scheduler using the following command:

```
db2 update admin cfg using sched_enable on
```

5. For these changes to take effect, you need to restart the DAS use the following commands:

```
db2admin stop  
db2admin start
```

6. From either the Task Center or the Health Center, click the Contacts icon  in the Task bar. Select **System name**, then click **Add Contact**. Type in contact information and then click **OK**.

---

## Changing the default DB2 and default IBM database client interface copy after installation (Windows)

The db2swtch command can be run from any DB2 copy, IBM data server driver copy, Version 9 or greater. Also, the options **-db2** and **-client** can only be used in Version 9.5 or later.

**Prerequisite:** Multiple DB2 copies (Version 9 or later) or multiple IBM database client interface copies (Version 9.5 or later) are installed on the same computer.

### DB2COPY1

```
-ESE  
-WSE  
-...
```

DB2COPY1 is the default name of the DB2 copy that is the first installation of a DB2 product on your machine. This same name is part of the instance directory where the database manager code and user data is stored.

If there are further DB2 copies installed on your machine, they will receive default names DB2COPY2, DB2COPY3, and so on.

## IBMDBCL1

### DSDRIVER

IBMDBCL1 is the default name of the IBM Data Server Driver for ODBC, CLI, and .NET (DSDRIVER) that is the first installation of a driver on your machine.

If there are further DSDRIVER products installed on your machine, they will receive default names: IBMDBCL2, IBMDBCL3, and so on.

#### Changing the default DB2 copy after installation (Windows)

To change the default DB2 copy using the Default DB2 and Database Client Interface Selection wizard:

1. Open the Default DB2 and Database Client Interface Selection wizard:  
From a command window, run the db2swtch command without any additional parameters. Or, from the Start Menu, select **Programs -> IBM DB2 -> (DB2 copy name) -> Set-up Tools -> Default DB2 and Database Client Interface Selection wizard**. The Default DB2 and Database Client Interface Selection wizard opens.
2. On the Configuration page, select the copy type you want to work with (Default DB2 Copy).
3. On the default DB2 copy page, select the copy that you want to make the default so that it is highlighted and click **Next** to make it the default DB2 copy.
4. On the summary page, the wizard indicates the result of the operation.
5. Run the dasupdt command to move the DB2 Administration Server (DAS) to the new default copy.

This procedure switches the current default DB2 copy to the new default DB2 copy and makes the necessary changes to the registry. To access and use the new default DB2 copy, after you have moved the DAS to the new default DB2 copy, open a new command window. You can still access the original default DB2 copy by using the shortcuts in the Start menu for the original default DB2 copy.

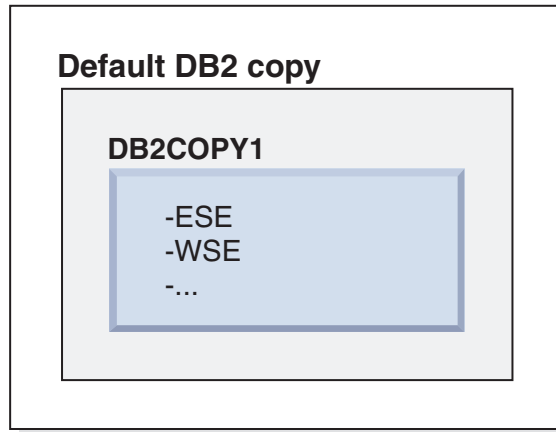
To change the default DB2 copy using the command line, you can use db2swtch command:

- The db2swtch -d <new default copy name> command is used to change both the default DB2 copy and the default IBM database client interface copy to the new default copy name.
- The db2swtch -db2 -d <new default copy name> command is used to change the default DB2 copy to the new default copy name.

This procedure removes registration of the current default DB2 copy and registers the specified DB2 copy as the default DB2 copy. It also makes the necessary changes to the registry, to the environment variables, to the ODBC and CLI drivers and the .NET data provider (when the change also makes the DB2 copy the default IBM database client interface copy), to the WMI registration, and to various other objects, and moves the DAS to the specified default DB2 copy. To access and use the new default DB2 copy, open a new command window.

**Differences between Version 9.1 and Version 9.5 when changing the default DB2 copy** In Version 9.1, once you install the first DB2 copy, it becomes the default DB2 copy.

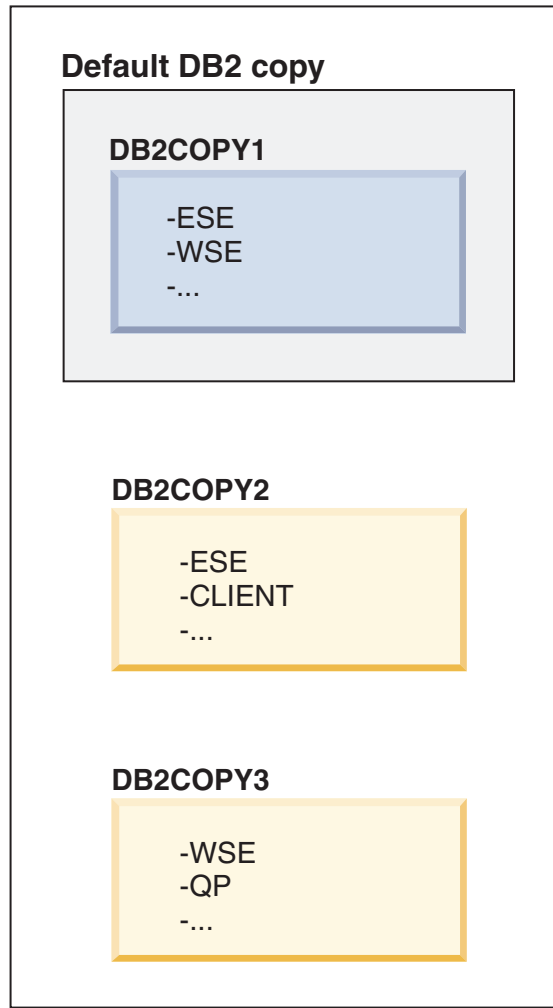
### **DB2 Version 9.1**



Any database actions requiring the use of the DB2 server code will access the code and the data that is from the default DB2 copy.

In Version 9.1, over time you can install other Version 9.1 or later DB2 copies.

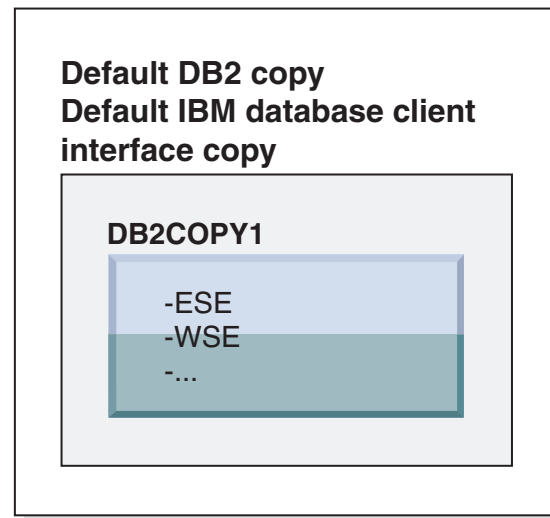
## DB2 Version 9.1



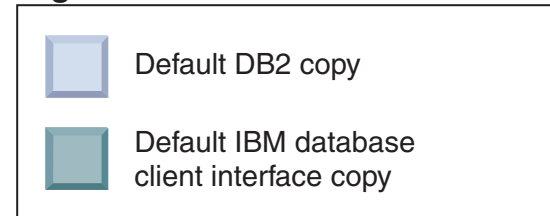
However, only one DB2 copy is the default DB2 copy. If not explicitly referenced, requested database actions will use the code and data that is from the default DB2 copy. If you wish to use the code and data from the other DB2 copies (like DB2COPY2 or DB2COPY3 in this example) and not from the default DB2 copy (DB2COPY1), then you must explicitly reference the code and data from the other DB2 copies.

In Version 9.5, once you install the first DB2 copy, it becomes the default DB2 copy and the default IBM database client interface copy.

## DB2 Version 9.5



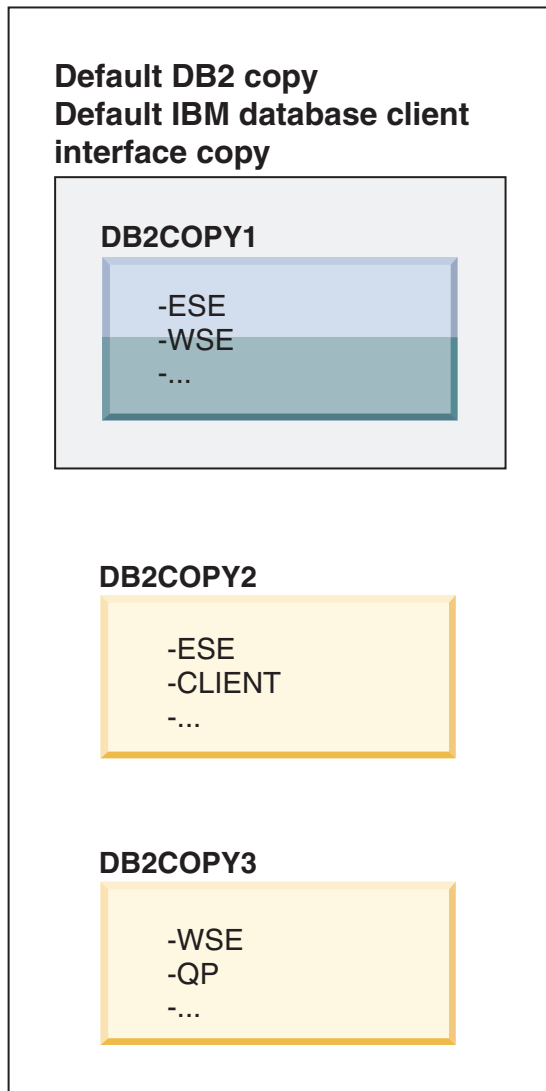
## Legend



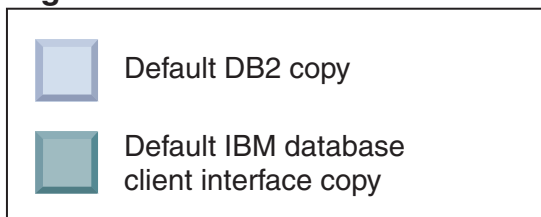
In Version 9.5, over time you can install other Version 9.5 or later DB2 copies.



## DB2 Version 9.5



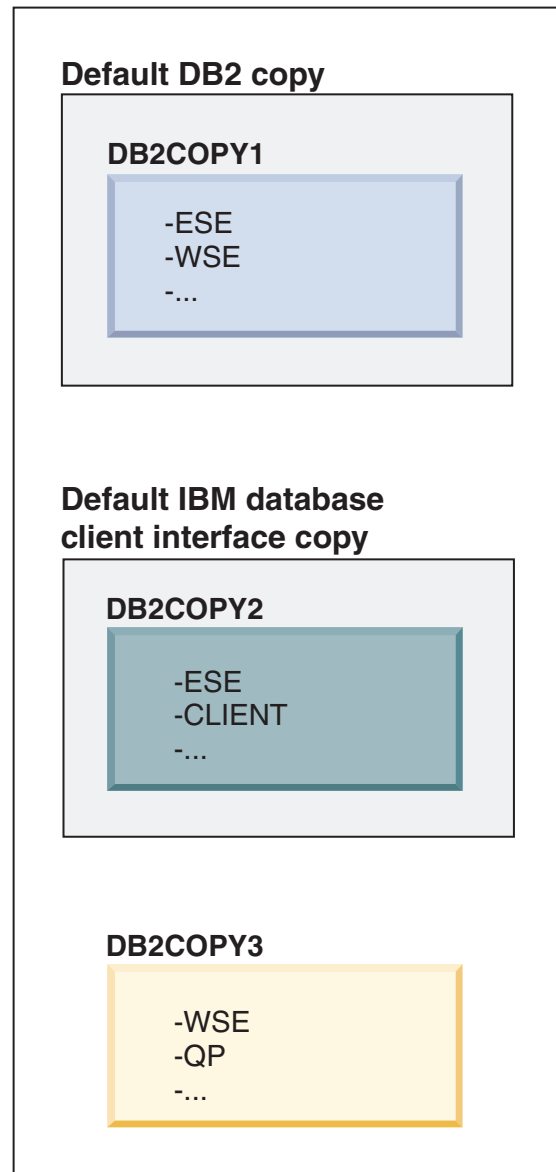
### Legend



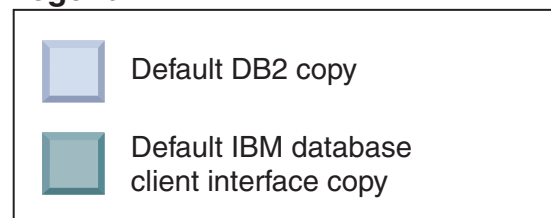
However, only one DB2 copy is the default DB2 copy or IBM Data Server driver copy. In this case, following the installation of two additional DB2 copies, both defaults remain associated with the original DB2 copy (DB2COPY1).

In Version 9.5, when you have installed more than one DB2 copy, you can choose to have one DB2 copy as the default DB2 copy and a different DB2 copy as the default IBM database client interface copy.

## DB2 Version 9.5



### Legend



If not requiring the code associated with the default IBM database client interface copy (DB2COPY2), then applications or users requiring client interface code must explicitly reference the code that is from one of the other two DB2 copies (DB2COPY1 and DB2COPY3). If not explicitly referenced, the client interface code that is from the default IBM database client interface copy is used.

## Changing the default IBM database client interface copy after installation (Windows)

To change the default IBM database client interface copy using the Default DB2 and Database Client Interface Selection wizard:

1. Open the Default DB2 and Database Client Interface Selection wizard: From the Start Menu, select **Programs** -> **IBM DB2** -> **(DB2 copy name)** -> **Set-up Tools** -> **Default DB2 and Database Client Interface Selection wizard**. Or go to the installdir\bin and run the db2swtch command. The Default DB2 and Database Client Interface Selection wizard open.
2. On the Configuration page, select the copy type you want to work with (Default IBM Database Client Interface Copy).
3. On the default IBM database client interface copy page, select the DB2 copy or the IBM data server driver copy that you want to make the default so that it is highlighted and click **Next** to make it the default IBM database client interface copy. (Recall that the code for the IBM database client interface copy was included with the DB2 copy.)
4. On the summary page, the wizard indicates the result of the operation.

This procedure switches the current default IBM database client interface copy to the new IBM data server driver copy making it the new default IBM database client interface copy. The procedure also makes the necessary changes to the registry. After the switching, the default ODBC and CLI drivers and the .NET data provider will point to the new copy. All the other ODBC drivers with copy name appended can also be accessed.

To change the default IBM database client interface copy using the command line, you can use db2swtch command:

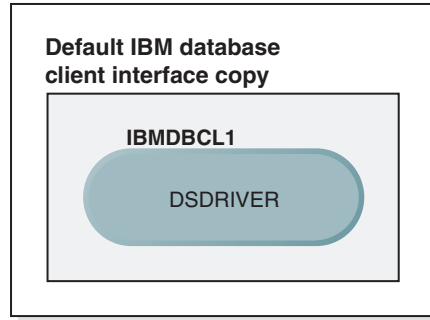
- The db2swtch -d <new default copy name> command is used to change both the default DB2 copy and the default IBM database client interface copy to the new default copy name.
- The db2swtch -client -d <new default copy name> command is used to change the default IBM database client interface copy to the new default copy name.

This procedure unregisters the current default IBM database client interface copy and registers the specified copy as the default IBM database client interface copy.

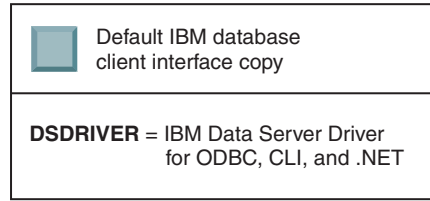
### Changing the default IBM database client interface copy

In an environment with no other DB2 products installed, you install the IBM Data Server Driver for ODBC, CLI, and .NET (DSDRIVER).

## DB2 Version 9.5



### Legend

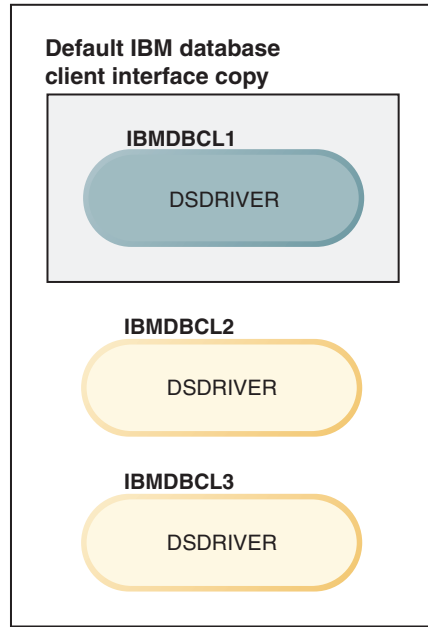


By default, the name given to the DSDRIVER is IBMDBCL1.


With no other DB2 server products (like Enterprise Server Edition, or Workstation Server Edition) or other DSDRIVERS, this DSDRIVER is the default IBM database client interface copy. Any database actions requiring the use of application requestor code will access the code and data that is from the default IBM database client interface copy by default.

Over time, you can install DSDRIVERS in other IBM data server driver copies. However, only one IBM data server driver copy (or DB2 copy that is not shown in this example) is the default IBM database client interface copy.

## DB2 Version 9.5



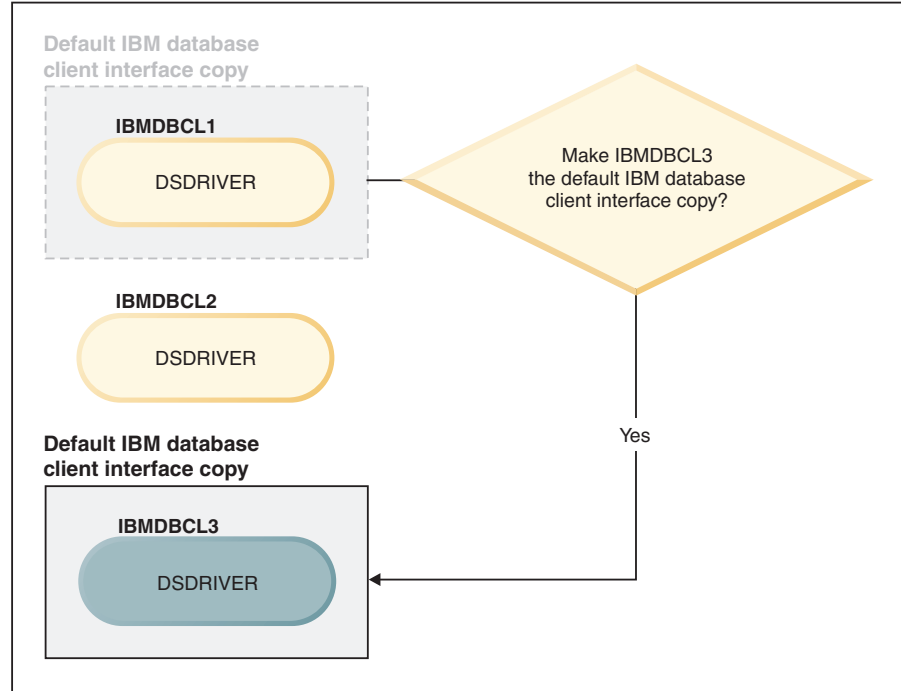
### Legend

|                                                                                   |                                            |
|-----------------------------------------------------------------------------------|--------------------------------------------|
|  | Default IBM database client interface copy |
| <b>DSDRIVER</b> = IBM Data Server Driver for ODBC, CLI, and .NET                  |                                            |


If not explicitly referenced, application requests will use the code and data that is from the default IBM database client interface copy. If you wish to use the code from the other DSDRIVERs (like IBMDBCL2 or IBMDBCL3 in the example) and not from the default IBM database client interface copy (IBMDBCL1), then you must explicitly reference the code and data from the other DSDRIVERs.

Over time, you can have several DSDRIVERs installed. Only one IBM database client interface copy is the default. At some point you may decide to switch from one copy and make another copy the default IBM database client interface copy.

## DB2 Version 9.5



### Legend

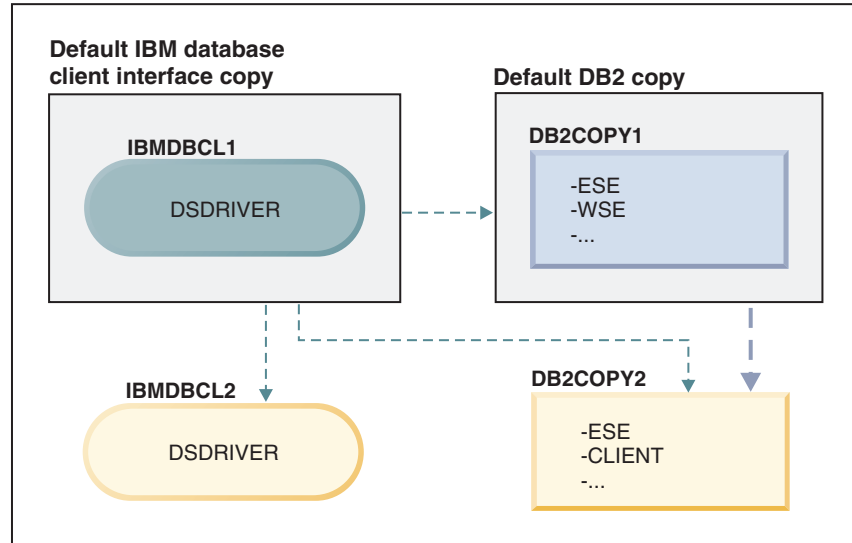
|                                                                                    |                                            |
|------------------------------------------------------------------------------------|--------------------------------------------|
|  | Default IBM database client interface copy |
| <b>DSDRIVER</b> = IBM Data Server Driver for ODBC, CLI, and .NET                   |                                            |

Use the switch default DB2 copy and database client interface copy command (db2swtch) to choose and set the new default IBM database client interface copy. Using db2swtch with no arguments launches the Default DB2 and IBM Database Client Interface Selection wizard.

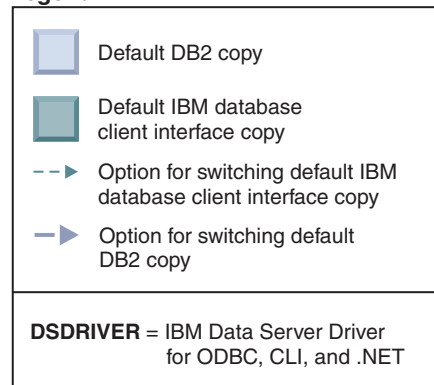
### When both IBM database client interface copies and DB2 copies are on your machine

Over time you can have several DSDRIVERS and several DB2 copies installed on your machine. In the scenario presented here, IBMDBCL1 is the default IBM database client interface copy and DB2COPY1 is the default DB2 copy.

## DB2 Version 9.5



### Legend



If you wish to change either or both defaults, use the `db2swtch` command with no arguments (Windows only) to launch the Default DB2 and IBM Database Client Interface Selection wizard. The wizard will show all possible candidates when choosing a new default. You can also use the `db2swtch` command with `-client` or `-db2` option to do the switching.

When choosing a new default DB2 copy, in this scenario there is only one other choice: `DB2COPY2`.

When choosing a new default IBM database client interface copy, in this scenario there are three choices: `IBMDBCL2`, `DB2COPY1`, and `DB2COPY2`. (Recall that DB2 copies have the needed database client interface code to be declared the default IBM database client interface copy.)

---

## IBM data server client connectivity using multiple copies

Applications access DB2 databases in several ways. When using multiple DB2 copies of DB2 products or multiple data server driver copies, various options are available. Existing applications will continue to function properly. Only one copy can be used within the same process for each of the following modes of connecting to databases.

While this topic mainly deals with issues on Windows platforms, on Linux and UNIX platforms, you also cannot access instances associated with multiple DB2 copies within the same process.

### **OLE DB**

To use a DB2 copy other than the default, in the connection string, specify the IBMDADB driver name for this DB2 copy, which will be of the format: IBMDADB2.\$DB2\_COPY\_NAME. Some applications might not have the ability to change the connection strings without recompiling, therefore these applications will only work with the Default DB2 copy. If an application uses the default program id, ibmdadb2, or the default clsid, it will always use the Default DB2 copy.

Specifically, you will need to change the value of "provider=IBMDADB2" in the connection string. For example, if the DB2 copy that you want to use is called MY\_COPY, you would specify "provider=IBMDADB2.MY\_COPY" in the connection string. In case you need to explicitly specify a GUID during installation, a response file keyword, OLEDB\_GUID, is used to do this and allows you to enter your own GUID. Otherwise, the generated ID is used, as listed in the DB2 installation log.

**Note:** If you continue to use the IBMDADB2 provider name, then you will only be able to access data sources from the default DB2 copy.

### **IBM Data Server Driver for ODBC and CLI**

The IBM Data Server Driver for ODBC and CLI contains the copy name as part of the driver name. The default driver, IBM DB2 ODBC DRIVER, is set to the default IBM database client interface copy. The name of the driver for each installation is "IBM DB2 ODBC DRIVER - <Copy Name>".

#### **Note:**

- You can use only one copy in the same ODBC application at the same time
- Even when you set up a Data source with the default ODBC driver, it will be configured to access the DB2 copy that was the default at the time the Data source was cataloged.
- If you move or migrate instances from one copy to another, you will need to reconfigure the associated Data sources.

### **IBM Data Server Provider for .Net**

The IBM Data Server Provider for .NET is not accessed by the DB2 product identified by the copy name. Instead, depending on the version of the provider that the application requires, it finds that version and uses it using the standard methods.

### **JDBC/SQLJ**

JDBC uses the current version of the driver in the classpath. The Type 2 JDBC driver uses the native DLL. By default, the classpath is configured to point to the default DB2 copy. Running db2envar.bat from the DB2 copy you want to use will update your PATH and CLASSPATH settings for this copy.

### **MMC Snap-in**

The MMC Snap-in launches the DB2 Control Center for the Default DB2 copy.

**WMI** WMI does not support multiple DB2 copies. You can register only one copy of WMI at a time. To register WMI, follow this process:



- Unregister the WMI Schema extensions.
- Unregister the COM object.
- Register the new COM object.
- Use MOFCOMP to extend the WMI schema.

WMI is not registered during DB2 installation. You still need to complete the two registration steps. WMI is a selectable feature in DB2 products, in Personal Edition and above. You must select this feature during a customer installation. It is not included in a typical installation.

### CLI applications

CLI applications that dynamically load the IBM data server client libraries should use the LoadLibraryEx API with the LOAD\_WITH\_ALTERED\_SEARCH\_PATH option, instead of the LoadLibrary option. If you do not use the LoadLibraryEx API with the LOAD\_WITH\_ALTERED\_SEARCH\_PATH option, you will need to specify db2app.dll in the Path by running db2envar.bat from the bin directory of the DB2 copy that you want to use. For applications that link using db2apie.lib, to use a different DB2 copy, you can use the /delayload option in your link command to delay load db2app.dll and call the db2SelectDB2Copy API prior to any DB2 calls.

### DB2 System Tray

To reduce the number of system tray executables running on the system, by default any items in the system tray that are running in the previous Default DB2 copy when the default copy is changed are disabled.

---

## Working with existing DB2 copies

You can install and run multiple DB2 copies on the same computer. Each DB2 installation copy can either be at the same DB2 product level or at a different DB2 product level.

### Restrictions

- On Linux and UNIX, non-root installations allow only one DB2 copy for each valid non-root user.
- On Windows, no other DB2 product can be installed in the same path if either of the following products is already installed:
  - IBM Data Server Runtime Client
  - IBM Data Server Driver for ODBC, CLI, and .NET
  - DB2 Information Center

When you start the DB2 Launchpad, it will display the available products that you can install.

You can install a new DB2 copy or you can also click **Work with Existing**. The **Work with Existing** window opens and displays the existing DB2 copies on your system and the possible operation that can be performed. Possible operations include:

- Install
- Add new function
- Upgrade (Windows only). Use this option to apply fix packs.
- Migrate (Windows only). Use this option to migrate your DB2 product to a new release.

- Not available

**Note:** Add-on products are always installed using the **Work with Existing** option.

---

## Applying fix packs

It is recommended that you keep your DB2 environment running at the latest fix pack level to ensure problem-free operation. To install a fix pack successfully, perform all of the necessary pre-installation and post-installation tasks.

A DB2 fix pack contains updates and fixes for problems (Authorized Program Analysis Reports, or "APARs") found during testing at IBM, as well as fixes for problems reported by customers. Each fix pack contains an APARLIST.TXT file, which describes the fixes it contains.

Fix packs are cumulative. This means that the latest fix pack for any given version of DB2 contains all of the updates from previous fix packs for the same version of DB2.

The fix pack images available are:

- A single server image.

The single server image contains the new and updated code required for all DB2 server products and the IBM Data Server Client. If more than one DB2 server product is installed in a single location, the DB2 server fix pack applies maintenance code updates to all the installed DB2 server products. The Data Server Client fix pack is contained within the one DB2 server fix pack (namely the fix pack that can service any one of the following server products: Enterprise Server Edition, Workgroup Server Edition, Express Edition, Personal Edition, Connect Enterprise Edition, Connect Application Server Edition, Connect Unlimited Edition for zSeries, and Connect Unlimited Edition for i5/OS®). You can use the DB2 server fix pack to upgrade a Data Server Client.

A single server image can also be used to install any of the DB2 database server products, at a particular fix pack level, with a DB2 try and buy license by default.

- A fix pack for each of the other DB2 database products.

Use this fix pack only if you only have non-server database products or add-on products installed. For example, IBM Data Server Runtime Client or Query Patroller.

Do not use this type of fix pack if the installed DB2 products are only DB2 server products or a Data Server Client. Instead, use the single server image fix pack.

For Windows platforms, if you have more than one DB2 database product (which includes at least one product that is not a Data Server Client or a DB2 server) installed in a single DB2 copy, you must download and uncompress all of the corresponding product-specific fix packs before starting the fix pack installation process.

- A universal fix pack (on Linux or UNIX platforms only).

The universal fix pack services installations where more than one DB2 database product has been installed.

The universal fix pack is not needed if the installed DB2 products are only DB2 server products or a Data Server Client. In this case, the single server image fix pack should be used.

## Restrictions

- A DB2 Version 9.5 fix pack can only be applied to DB2 Version 9.5 general availability (GA) or fix pack level copies.
- All DB2 instances, DAS, and applications related to the DB2 copy being updated must be stopped before installing a fix pack.
- If you are using the database partitioning feature (DPF), prior to installing the fix pack, you must stop the database manager on all nodes. You must install the fix pack on the instance owning node and all other partitioned nodes. All computers participating in the instance must be upgraded to the same fix pack level.
- On Linux or UNIX operating systems:
  - If you have DB2 products on a Network File System (NFS), you must ensure the following are stopped completely before installing the fix pack: all instances, the DB2 administration server (DAS), interprocess communications (IPC), and applications on other machines using the same NFS mounted installation.
  - If the system commands `fuser` or `lsof` are not available, the `installFixPack` command cannot detect loaded DB2 files. You must ensure no DB2 files are loaded and provide an override option to install the fix pack. On UNIX, the `fuser` command is required to check for loaded files. On Linux, either the `fuser` command or `lsof` command is required.  
For details on the override option, see the `installFixPack` command.
- On client applications, after a fix pack has been applied, to perform autobind of applications, the user must have bind authority.
- Installation of a DB2 fix pack will not service data server administrator tool or data server developer tool.

For non-root installations on Linux or UNIX, root-based features (such as High Availability and operating system-based authentication) can be enabled using the `db2rfe` command. If root-based features were enabled after installing your DB2 product, you must rerun the `db2rfe` command each time a fix pack is applied in order to re-enable those features. For details, see the non-root related links below.

On Linux or UNIX operating systems, if national languages have been installed, you also require a separate national language fix pack. The national language fix pack can not be installed alone. A universal or product-specific fix pack must be applied at the same time and they must both be at the same fix pack level. For example, if you are applying a universal fix pack to non-English DB2 database products on Linux or UNIX, you must apply both the universal fix pack and the national language fix pack to update the DB2 database products.

If you have multiple DB2 copies on the same system, those copies can be at different version and fix pack levels. If you want to apply a fix pack to one or more DB2 copies, you must install the fix pack on those DB2 copies one by one.

To install a fix pack:

1. Access and download the latest DB2 fix pack by selecting the link for fix pack downloads from the DB2 Support Web site at <http://www.ibm.com/software/data/db2/udb/support.html>.
2. Check fix pack prerequisites, and perform the necessary tasks prior to installing a fix pack. If you already have DB2 database products installed, you must also stop various DB2 processes. See the fix pack Readme for details.

3. Choose a fix pack installation method and install the fix pack.

Check the log file for any post-installation steps, or error messages and recommended actions.

---

## Applying fix packs to a non-root installation

The task of applying fix packs to a non-root installation is essentially the same as applying fix packs to a root installation, with a few exceptions.

Before applying fix packs to a non-root installation, you must log on with the user ID that was used to install the non-root installation.

If you enabled root features in your non-root installation using the `db2rfe` command, you should locate the configuration file that was used when running the `db2rfe` command. That configuration file will be needed to re-enable the root features after you apply the fix pack.

To apply a fix pack to a non-root installation:

1. Apply your fix pack according to the Applying fix packs topic.

**Note:** The `installFixPack` command's `-b` option is invalid for non-root installations.

2. Optional: Run the `db2rfe` command. If you had root-based features enabled in your non-root installation, and if you want to re-enable those features, the `db2rfe` command must be rerun. Running this command requires root authority.

**Note:** If you edited `$HOME/sqllib/instance/db2rfe.cfg` when you first enabled root features, that configuration file will not have been overwritten when applying the fix pack, so you can reuse that file when running the `db2rfe` command. However, you should also check `$HOME/sqllib/cfg/db2rfe.cfg.sample`. If the fix pack introduced any new root features available to non-root installations, `$HOME/sqllib/cfg/db2rfe.cfg.sample` shows the new features.

---

## Partitioned database environment

### Format of the DB2 node configuration file

This topic provides information about the format of the node configuration file (`db2nodes.cfg`). The `db2nodes.cfg` file is used to define the database partition servers that participate in a DB2 instance. The `db2nodes.cfg` file is also used to specify the IP address or host name of a high-speed interconnect, if you want to use a high-speed interconnect for database partition server communication.

The format of the `db2nodes.cfg` file on Linux and UNIX operating systems is as follows:

```
nodenumber    hostname    logicalport  netname    resourcesetname
```

`nodenumber`, `hostname`, `logicalport`, `netname`, and `resourcesetname` are defined in the following section.

The format of the `db2nodes.cfg` file on Windows operating systems is as follows:

```
nodenumber hostname computername logicalport netname resourcesetname
```

On Windows operating systems, these entries to the db2nodes.cfg are added by the db2nrcrt or db2 add db partition commands. You should not add these lines directly or edit this file.

**nodenumber**

A unique number, between 0 and 999, that identifies a database partition server in a partitioned database system.

To scale your partitioned database system, you add an entry for each database partition server to the db2nodes.cfg file. The *nodenumber* value that you select for additional database partition servers must be in ascending order, however, gaps can exist in this sequence. You can choose to put a gap between the *nodenumber* values if you plan to add logical partition servers and wish to keep the nodes logically grouped in this file.

This entry is required.

**hostname**

The TCP/IP host name of the database partition server for use by the Fast Communications Manager (FCM).

This entry is required.

**logicalport**

Specifies the logical port number for the database partition server. This field is used to specify a particular database partition server on a workstation that is running logical database partition servers.

DB2 reserves a port range (for example, 60000 - 60003) in the /etc/services file for inter-partition communications at the time of installation. This logicalport field in db2nodes.cfg specifies which port in that range you want to assign to a particular logical partition server.

If there is no entry for this field, the default is 0. However, if you add an entry for the *netname* field, you must enter a number for the *logicalport* field.

If you are using logical database partitions, the *logicalport* value you specify *must* start at 0 and continue in ascending order (for example, 0,1,2).

Furthermore, if you specify a *logicalport* entry for one database partition server, you must specify a *logicalport* for each database partition server listed in your db2nodes.cfg file.

This field is optional only if you are *not* using logical database partitions or a high speed interconnect.

**netname**

Specifies the host name or the IP address of the high speed interconnect for FCM communication.

If an entry is specified for this field, all communication between database partition servers (except for communications as a result of the db2start, db2stop, and db2\_all commands) is handled through the high speed interconnect.

This parameter is required only if you are using a high speed interconnect for database partition communications.

**resourcesetname**

The resourcesetname defines the operating system resource that the node should be started in. The resourcesetname is for process affinity support,

used for Multiple Logical Nodes (MLNs). This support is provided with a string type field formerly known as quadname.

This parameter is only supported on AIX, HP-UX, and Solaris Operating System.

On AIX, this concept is known as "resource sets" and on Solaris Operating System it is called "projects". Refer to your operating systems documentation for more information on resource management.

On HP-UX, the resourcename parameter is a name of PRM group. Refer to "HP-UX Process Resource Manager. User Guide. (B8733-90007)" documentation from HP for more information.

On Windows operating systems, process affinity for a logical node can be defined through the DB2PROCESSORS registry variable.

On Linux operating systems, the resourcesetname column defines a number that corresponds to a Non-Uniform Memory Access (NUMA) node on the system. The system utility numactl must be available as well as a 2.6 Kernel with NUMA policy support.

The netname parameter must be specified if the resourcesetname parameter is used.

## Example configurations

Use the following example configurations to determine the appropriate configuration for your environment.

### One computer, four database partitions servers

If you are not using a clustered environment and want to have four database partition servers on one physical workstation called ServerA, update the db2nodes.cfg file as follows:

```
0          ServerA      0
1          ServerA      1
2          ServerA      2
3          ServerA      3
```

### Two computers, one database partition server per computer

If you want your partitioned database system to contain two physical workstations, called ServerA and ServerB, update the db2nodes.cfg file as follows:

```
0          ServerA      0
1          ServerB      0
```

### Two computers, three database partition server on one computer

If you want your partitioned database system to contain two physical workstations, called ServerA and ServerB, and ServerA is running 3 database partition servers, update the db2nodes.cfg file as follows:

```
4          ServerA      0
6          ServerA      1
8          ServerA      2
9          ServerB      0
```

### Two computers, three database partition servers with high speed switches

If you want your partitioned database system to contain two computers, called ServerA and ServerB (with ServerB running two database partition servers), and use a high speed interconnect called switch1 and switch2, update the db2nodes.cfg file as follows:

|   |         |   |         |
|---|---------|---|---------|
| 0 | ServerA | 0 | switch1 |
| 1 | ServerB | 0 | switch2 |
| 2 | ServerB | 1 | switch2 |

## Examples using resourcename

These restrictions apply to the following examples:

- This example shows the usage of resourcename when there is no high speed interconnect in the configuration.
- The netname is the fourth column and a hostname also can be specified on that column where there is no switch name and you want to use resourcename. The fifth parameter is resourcename if it is defined. The resource group specification can only show as the fifth column in the db2nodes.cfg file. This means that for you to specify a resource group, you must also enter a fourth column. The fourth column is intended for a high speed switch.
- If you do not have a high speed switch or you do not want to use it, you must then enter the hostname (same as the second column). In other words, the DB2 database management system does not support column gaps (or interchanging them) in the db2nodes.cfg files. This restriction already applies to the first three columns, and now it applies to all five columns.

## AIX example

Here is an example of how to set up the resource set for AIX operating systems.

In this example, there is one physical node with 32 processors and 8 logical database partitions (MLNs). This example shows how to provide process affinity to each MLN.

1. Define resource sets in /etc/rset:

```
DB2/MLN1:
  owner      = db2inst1
  group      = system
  perm       = rwr-r-
  resources  = sys/cpu.00000,sys/cpu.00001,sys/cpu.00002,sys/cpu.00003
```

```
DB2/MLN2:
  owner      = db2inst1
  group      = system
  perm       = rwr-r-
  resources  = sys/cpu.00004,sys/cpu.00005,sys/cpu.00006,sys/cpu.00007
```

```
DB2/MLN3:
  owner      = db2inst1
  group      = system
  perm       = rwr-r-
  resources  = sys/cpu.00008,sys/cpu.00009,sys/cpu.00010,sys/cpu.00011
```

```
DB2/MLN4:
  owner      = db2inst1
  group      = system
  perm       = rwr-r-
  resources  = sys/cpu.00012,sys/cpu.00013,sys/cpu.00014,sys/cpu.00015
```

```
DB2/MLN5:
  owner      = db2inst1
  group      = system
  perm       = rwr-r-
  resources  = sys/cpu.00016,sys/cpu.00017,sys/cpu.00018,sys/cpu.00019
```

```
DB2/MLN6:
```

```

owner      = db2inst1
group      = system
perm       = rwr-r-
resources  = sys/cpu.00020,sys/cpu.00021,sys/cpu.00022,sys/cpu.00023

```

```

DB2/MLN7:
owner      = db2inst1
group      = system
perm       = rwr-r-
resources  = sys/cpu.00024,sys/cpu.00025,sys/cpu.00026,sys/cpu.00027

```

```

DB2/MLN8:
owner      = db2inst1
group      = system
perm       = rwr-r-
resources  = sys/cpu.00028,sys/cpu.00029,sys/cpu.00030,sys/cpu.00031

```

2. Enable memory affinity by typing the following command:

```
vmo -p -o memory_affinity=1
```

3. Give instance permissions to use resource sets:

```

chuser capabilities=
CAP_BYPASS_RAC_VMM,CAP_PROPAGATE,CAP_NUMA_ATTACH db2inst1

```

4. Add the resource set name as the fifth column in db2nodes.cfg:

```

1 regatta 0 regatta DB2/MLN1
2 regatta 1 regatta DB2/MLN2
3 regatta 2 regatta DB2/MLN3
4 regatta 3 regatta DB2/MLN4
5 regatta 4 regatta DB2/MLN5
6 regatta 5 regatta DB2/MLN6
7 regatta 6 regatta DB2/MLN7
8 regatta 7 regatta DB2/MLN8

```

## HP-UX example

This example shows how to use PRM groups for CPU shares on a machine with 4 CPUs and 4 MLNs and 24% of CPU share per MLN, leaving 4% for other applications. The DB2 instance name is db2inst1.

1. Edit GROUP section of /etc/prmconf:

```

OTHERS:1:4::
db2prm1:50:24::
db2prm2:51:24::
db2prm3:52:24::
db2prm4:53:24::

```

2. Add instance owner entry to /etc/prmconf:

```
db2inst1:::OTHERS,db2prm1,db2prm2,db2prm3,db2prm4
```

3. Initialize groups and enable CPU manager by entering the following command:

```

prmconfig -i
prmconfig -e CPU

```

4. Add PRM group names as a fifth column to db2nodes.cfg:

```

1 voyager 0 voyager db2prm1
2 voyager 1 voyager db2prm2
3 voyager 2 voyager db2prm3
4 voyager 3 voyager db2prm4

```

PRM configuration (steps 1-3) may be done using interactive GUI tool xprm.

## Linux example

On Linux operating systems, the resourcesetname column defines a number that corresponds to a Non-Uniform Memory Access (NUMA) node on the system. The



numactl system utility must be available in addition to a 2.6 kernel with NUMA policy support. Refer to the man page for numactl for more information about NUMA support on Linux operating systems.

This example shows how to set up a four node NUMA computer with each logical node associated with a NUMA node.

1. Ensure that NUMA capabilities exist on your system.
2. Issue the following command:

```
$ numactl --hardware
```

Output similar to the following displays:

```
available: 4 nodes (0-3)
node 0 size: 1901 MB
node 0 free: 1457 MB
node 1 size: 1910 MB
node 1 free: 1841 MB
node 2 size: 1910 MB
node 2 free: 1851 MB
node 3 size: 1905 MB
node 3 free: 1796 MB
```

3. In this example, there are four NUMA nodes on the system. Edit the db2nodes.cfg file as follows to associate each MLN with a NUMA node on the system:

```
0 hostname 0 hostname 0
1 hostname 1 hostname 1
2 hostname 2 hostname 2
3 hostname 3 hostname 3
```

## Solaris example

Here is an example of how to set up the project for Solaris Version 9.

In this example, there is 1 physical node with 8 processors: one CPU will be used for the default project, three (3) CPUs will be used by the Application Server, and four (4) CPUs for DB2. The instance name is db2inst1.

1. Create a resource pool configuration file using an editor. For this example, the file will be called pool.db2. Here's the content:

```
create system hostname
create pset pset_default (uint pset.min = 1)
create pset db0_pset (uint pset.min = 1; uint pset.max = 1)
create pset db1_pset (uint pset.min = 1; uint pset.max = 1)
create pset db2_pset (uint pset.min = 1; uint pset.max = 1)
create pset db3_pset (uint pset.min = 1; uint pset.max = 1)
create pset appsrv_pset (uint pset.min = 3; uint pset.max = 3)
create pool pool_default (string pool.scheduler="TS";
    boolean pool.default = true)
create pool db0_pool (string pool.scheduler="TS")
create pool db1_pool (string pool.scheduler="TS")
create pool db2_pool (string pool.scheduler="TS")
create pool db3_pool (string pool.scheduler="TS")
create pool appsrv_pool (string pool.scheduler="TS")
associate pool pool_default (pset pset_default)
associate pool db0_pool (pset db0_pset)
associate pool db1_pool (pset db1_pset)
associate pool db2_pool (pset db2_pset)
associate pool db3_pool (pset db3_pset)
associate pool appsrv_pool (pset appsrv_pset)
```

2. Edit the /etc/project file to add the DB2 projects and appsrv project as follows:

```

system:0:::
user.root:1:::
noproject:2:::
default:3:::
group.staff:10:::
appsrv:4000:App Serv project:root::project.pool=appsrv_pool
db2proj0:5000:DB2 Node 0 project:db2inst1,root::project.pool=db0_pool
db2proj1:5001:DB2 Node 1 project:db2inst1,root::project.pool=db1_pool
db2proj2:5002:DB2 Node 2 project:db2inst1,root::project.pool=db2_pool
db2proj3:5003:DB2 Node 3 project:db2inst1,root::project.pool=db3_pool

```

3. Create the resource pool: # poolcfg -f pool.db2.
4. Activate the resource pool: # pooladm -c
5. Add the project name as the fifth column in db2nodes.cfg file:

```

0 hostname 0 hostname db2proj0
1 hostname 1 hostname db2proj1
2 hostname 2 hostname db2proj2
3 hostname 3 hostname db2proj3

```

## Updating the node configuration file (Linux and UNIX)

This task provides steps for updating the db2nodes.cfg file to include entries for participating computers.

The node configuration file (db2nodes.cfg), located in the instance owner's home directory, contains configuration information that tells DB2 which servers participate in an instance of the partitioned database environment. A db2nodes.cfg file exists for each instance in a partitioned database environment.

The db2nodes.cfg file must contain one entry for each server participating in the instance. When you create an instance, the db2nodes.cfg file is automatically created and an entry for the instance-owning server is added.

For example, when you created the DB2 instance using the DB2 Setup wizard, on the instance-owning server ServerA, the db2nodes.cfg file is updated as follows:

```

0 ServerA 0

```

### Prerequisites

- The DB2 application must be installed on all participating computers.
- A DB2 instance must exist on the primary computer.
- You must be a user with SYSADM authority.
- Review the configuration examples and file format information provided in the Format of the DB2 node configuration file topic if either of the following conditions apply:
  - You plan to use a high speed switch for communication between database partition servers
  - Your partitioned configuration will have multiple logical partitions

### Restriction

The hostnames used in the steps of the Procedure section must be fully qualified hostnames.

To update the db2nodes.cfg file:

1. Log on as the instance owner (in our example, db2inst1 is the instance owner).
2. Ensure that the DB2 instance is stopped by entering:

```

INSTHOME/sqllib/adm/db2stop

```

where *INSTHOME* is the home directory of the instance owner (the *db2nodes.cfg* file is locked when the instance is running and can only be edited when the instance is stopped).

For example, if your instance home directory is */db2home/db2inst1*, enter the following command:

```
/db2home/db2inst1/sqllib/adm/db2stop
```

3. Add an entry to the *.rhosts* file for each DB2 instance. Update the file by adding the following:

```
<hostname> <db2instance>
```

where *<hostname>* is the TCP/IP host name of the database server and *<db2instance>* is the name of the instance you use to access the database server.

4. Add an entry to the *db2nodes.cfg* file of each participating server. When you first view the *db2nodes.cfg* file, it should contain an entry similar to the following:

```
0 ServerA 0
```

This entry includes the database partition server number (node number), the TCP/IP host name of the server where the database partition server resides, and a logical port number for the database partition server.

For example, if you are installing a partitioned configuration with four computers and a database partition server on each computer, the updated *db2nodes.cfg* should appear similar to the following:

```
0 ServerA 0
1 ServerB 0
2 ServerC 0
3 ServerD 0
```

5. When you have finished updating the *db2nodes.cfg* file, enter the *INSTHOME/sqllib/adm/db2start* command, where *INSTHOME* is the home directory of the instance owner. For example, if your instance home directory is */db2home/db2inst1*, enter the following command:

```
/db2home/db2inst1/sqllib/adm/db2start
```

6. Log out.

## Enabling communications between database partition servers (Linux and UNIX)

This task describes how to enable communication between the database partition servers that participate in your partitioned database system. Communication between database partition servers is handled by the Fast Communications Manager (FCM). To enable FCM, a port or port range must be reserved in the */etc/services* file on each computer in your partitioned database system.

You must have a user ID with root authority.

You must perform this task on all computers that participate in the instance.

The number of ports to reserve for FCM is equal to the maximum number of database partitions hosted, or potentially hosted, by any computer in the instance.

In the following example, the *db2nodes.cfg* file contains these entries:

```
0 server1 0
1 server1 1
2 server2 0
```

```
3 server2 1
4 server2 2
5 server3 0
6 server3 1
7 server3 2
8 server3 3
```

Assume that the FCM ports are numbered starting at 60000. In this situation:

- server1 uses two ports (60000, 60001) for its two database partitions
- server2 uses three ports (60000, 60001, 60002) for its three database partitions
- server3 uses four ports (60000, 60001, 60002, 60003) for its four database partitions

All computers must reserve 60000, 60001, 60002, and 60003, since this is the largest port range required by any computer in the instance.

If you use a high availability solution such as High Availability Cluster Multi-Processing (HACMP™) or Tivoli System Automation (TSA) to fail over database partitions from one computer to another, you must account for potential port requirements. For example, if a computer normally hosts four database partitions, but another computer's two database partitions could potentially fail over to it, six ports must be planned for that computer.

When you create an instance, a port range is reserved on the primary computer. The primary computer is also known as the instance-owning computer. However, if the port range originally added to the `/etc/services` file is not sufficient for your needs, you will need to extend the range of reserved ports by manually adding additional entries.

To enable communications between servers in a partitioned database environment using `/etc/services`:

1. Log on to the primary computer (instance owning computer) as a user with root authority.
2. Create an instance.
3. View the default port range that has been reserved in the `/etc/services` file. In addition to the base configuration, the FCM ports should appear similar to the following:

```
db2c_db2inst1      50000/tcp
#Add FCM port information
DB2_db2inst1      60000/tcp
DB2_db2inst1_1    60001/tcp
DB2_db2inst1_2    60002/tcp
DB2_db2inst1_END  60003/tcp
```

By default, the first port (50000) is reserved for connection requests, and the first available four ports above 60000 are reserved for FCM communication. One port is for the instance-owning database partition server and three ports are for logical database partition servers that you might choose to add to the computer after installation is complete.

The port range must include a start and an END entry. Intermediate entries are optional. Explicitly including intermediate values can be useful for preventing other applications from using these ports, but these entries are not verified by the database manager.

DB2 port entries use the following format:

```
DB2_instance_name_suffix port_number/tcp # comment
```

where:

- *instance\_name* is the name of the partitioned instance.
  - *suffix* is not used for the first FCM port. Intermediate entries are those between the lowest and highest port. If you include the intermediate entries between the first and ending FCM port, the *suffix* consists of an integer that you increment by one for each additional port. For example, the second port is numbered 1, and third is numbered 2, and so on to ensure uniqueness. The word END must be used as the *suffix* for the last entry.
  - *port\_number* is the port number that you reserve for database partition server communications.
  - *comment* is an optional comment describing an entry.
4. Ensure that there are sufficient ports reserved for FCM communication. If the range of reserved ports is insufficient, add new entries to the file.
  5. Log on as a root user to each computer participating in the instance and add identical entries to the `/etc/services` file.

## Enabling the execution of remote commands (Linux and UNIX)

You must update your `.rhosts` file to execute remote commands using `rsh`.

In a partitioned database system, each database partition server must have the authority to perform remote commands on all the other database partition servers participating in an instance. This authority can be granted by updating the `.rhosts` file in the home directory for the instance. Because the home directory for the instance is on the shared DB2 home file system, only one `.rhosts` file is required.

### Prerequisites

- You must have root authority.
- You must know the host name of each participating computer.
- You must know the instance owner's user name.

This topic describes how to enable execution of remote commands using `rsh`.

You can also use `ssh` enable execution of remote commands. To use `ssh` without being prompted for passwords or pass phrases, refer to:

- "Setting up a partitioned database environment" on page 81
- <http://www-128.ibm.com/developerworks/db2/library/techarticle/dm-0506finnie/index.html>

To update your `.rhosts` file to execute remote commands using `rsh`:

1. Log onto the primary computer as a user with root authority.
2. Create a `.rhosts` file in the instance home directory. For example, if your instance home directory is `/db2home/db2inst1`, you can use a text editor to create the `.rhosts` file by entering the following command:

```
vi /db2home/db2inst1/.rhosts
```

3. Add entries to the `.rhosts` file for each computer including the primary computer. The `.rhosts` file has the following format:

```
hostname instance_owner_user_name
```

Some systems might require a long host name to be specified, for example: `ServerA.yourdomain.com`. Before you add host name entries to the `.rhosts` file, make sure the host names in the `/etc/hosts` and the `/etc/resolv.conf` files can be resolved.

The `INSTHOME/.rhosts` file should contain entries similar to the following:

```
ServerA.yourdomain.com db2inst1
ServerB.yourdomain.com db2inst1
ServerC.yourdomain.com db2inst1
ServerD.yourdomain.com db2inst1
```

Rather than specifying each host name individually, you can specify the following entry in the `.rhosts` file, but this action may pose a security risk and should only be done in a test environment.

```
+ db2inst1
```

If you have specified a high speed switch (netname) in the `db2nodes.cfg` file, you should also add netname entries for each computer to the `.rhosts` file. The netname values are specified in the fourth column of the `db2nodes.cfg` file. A `.rhosts` file with high speed switch (netname) entries may look similar to the following:

```
ServerA.yourdomain.com db2inst1
ServerB.yourdomain.com db2inst1
ServerC.yourdomain.com db2inst1
ServerD.yourdomain.com db2inst1
Switch1.yourdomain.com db2inst1
Switch2.yourdomain.com db2inst1
Switch3.yourdomain.com db2inst1
Switch4.yourdomain.com db2inst1
```

An alternative to using a `.rhosts` file is to use `/etc/hosts.equiv` file. The `/etc/hosts.equiv` file would contain the exact same entries as the `.rhosts` file, but must be created on each computer.

For more information about the `.rhosts` file or the `/etc/hosts.equiv` file, see your operating system documentation.

## Enabling Control Center administration (Linux)

Before you can use the Control Center to administer your partitioned database system, you must start the DB2 Administration server (DAS) on all computers.

To enable Control Center administration for a partitioned database system:

1. In turn, log on to each computer (ServerA, ServerB, ServerC, ServerD) as the DAS user. In our example, `dasusr1` is the DAS user.
2. To start the DB2 Administration Server, run the `db2admin start` command.

---

## **Part 4. Installing the DB2 Information Center**





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## Chapter 17. DB2 Information Center installation options

The DB2 Information Center can be accessed from:

- the IBM Web site
- a server on your organization's network
- a copy installed on your computer

By default, DB2 products access the DB2 Information Center at the IBM Web site. However, if you want to access the DB2 Information Center on an intranet server or on your own computer, you must install the DB2 Information Center using the DB2 Information Center DVD found in your product Media Pack.

The following table provides recommendations on possible options for accessing DB2 product documentation in the DB2 Information Center based on your work environment.

| Internet access | Intranet access | Recommendation                                                                                                               |
|-----------------|-----------------|------------------------------------------------------------------------------------------------------------------------------|
| Yes             | Yes             | Access the DB2 Information Center at the IBM Web site, or access the DB2 Information Center installed on an intranet server. |
| Yes             | No              | Access the DB2 Information Center at the IBM Web site.                                                                       |
| No              | Yes             | Access the DB2 Information Center installed on an intranet server.                                                           |
| No              | No              | Access the DB2 Information Center on a local computer.                                                                       |

### Accessing the DB2 Information Center at the IBM Web site

The DB2 Information Center can be found on the Internet at <http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/index.jsp>. If you configure your local DB2 installation to use this version of the DB2 Information Center, you will always be accessing the most up-to-date information about the DB2 product.

On Windows platforms, use the `db2set` command to configure the registry variables on your computer to access the DB2 Information Center from either the IBM Web site or from your computer. You can also change these variables through the DB2 GUI tools, if you have installed the DB2 GUI tools on your system.

### Accessing the DB2 Information Center on your computer

After installing your DB2 product, you need to install the DB2 Information Center if you want to access DB2 documentation on this computer. Use the *DB2 Information Center DVD* in the media pack to install the DB2 Information Center.

### Accessing the DB2 Information Center on an intranet server

You may also choose to install a copy of the DB2 Information Center on an intranet server so that everyone on the intranet can have access to DB2 documentation without having to install the documentation on every machine.

Using a response file for product installation, you can configure every IBM data server client to access the documentation on the intranet server. The response file should contain the configuration information necessary to access the DB2 Information Center using the host name and the port number of the DB2 Information Center on the intranet server. This configuration can also be done using the `db2setup` command and choosing a custom installation from any of the DB2 server or IBM data server client products.

You can also change the settings for already-installed IBM Data Server Client to use the DB2 Information Center hosted on your Intranet. To change the DB2 Information Center registry variables on each computer, use either of the following methods:

- The `db2set` command
- The Tools Settings notebook from any DB2 GUI tool

`DB2_DOCHOST` is the registry variable used for the host name, and `DB2_DOCPORT` is the registry variable used for the port number. These values must match those set on the intranet server where the DB2 Information Center is installed.

---

## Chapter 18. Installation tasks

---

### Installing the DB2 Information Center using the DB2 Setup wizard (Windows)

DB2 product documentation can be accessed in three ways:

- at the IBM Web site
- on an intranet server
- on a version installed on your computer

By default, DB2 products access DB2 documentation at the IBM Web site. If you want to access the DB2 documentation on an intranet server or on your own computer, you must install the DB2 documentation from the *DB2 Information Center DVD*.

Using the DB2 Setup wizard, you can define your installation preferences and install the DB2 Information Center on a computer that uses the Windows operating system.

#### Prerequisites

This section lists the hardware, operating system, software, and communication requirements for installing the DB2 Information Center on Windows.

#### Operating system requirements

You require one of the following operating systems:

- Windows Vista
- Windows XP
- Windows Server 2003

The DB2 Information Center will run on Windows and Linux on AMD/EMT 64, but it does not exploit the 64-bit architecture.

#### Software requirements

You require one of the following browsers:

- Firefox 1.0 and higher
- Internet Explorer (IE) 6.0 and higher
- Mozilla-based browsers 1.7 and higher
- Safari 1.2
- Konqueror (UI base mode only). Base mode restricts the users basic functionality such as displaying topics, locating topics in the table of contents, and searching for topics.

#### Communication requirements

You require TCP/IP protocol.

#### Restrictions

- You require an account with administrative privileges to install the DB2 Information Center.
- You cannot install the DB2 Information Center in a location where a DB2 product is installed. Similarly, the DB2 Information Center cannot

co-exist in the same installation path of a previous version of the DB2 Information Center on the same system.

- You can only install one copy of the DB2 Version Information Center on your system. For example, you can install a copy of the DB2 Information Center Version 9.1 and DB2 Information Center Version 9.5 on the same system, but you cannot install two copies of the DB2 Information Center Version 9.5.
- If you install the DB2 Information Center on a system with a firewall, and you plan to allow other systems to access the DB2 Information Center, you must open the port in your firewall setting.

To install the DB2 Information Center using the DB2 Setup wizard:

1. Log on to the system with the account that you have defined for the DB2 Information Center installation.
2. Insert your DB2 product DVD into the drive. If enabled, the auto-run feature automatically starts the DB2 Setup launchpad. If the auto-run does not work, use Windows Explorer to browse the DB2 product DVD and double-click on the setup icon.
3. From the DB2 Setup Launchpad, you can view installation prerequisites and the release notes, or you can proceed directly to the installation. You should review the installation prerequisites and release notes for late-breaking information.
4. Click **Install a Product** and the **Install a Product** window displays.
5. On the **Install a Product** window, if you do not have an existing DB2 Information Center installed on your computer, launch the installation by clicking **Install New**.
6. On the **Welcome to the DB2 Setup wizard** window, click **Next**. The DB2 Setup wizard will guide you through the program setup process. The DB2 Setup wizard will determine the system language, and launch the setup program for that language. Online help is available to guide you through the remaining steps. To invoke the online help, click **Help** or press **F1**. You can click **Cancel** at any time to end the installation.

Your DB2 product will be installed, by default, in the <Program Files>\IBM\DB2 Information Center\Version 9.5 directory, where <Program Files> represents the location of the Program Files directory.

For information on errors encountered during installation, review the installation log file located, by default, in the My Documents\DB2LOG\ directory. You can specify the location of the log files. The log file uses the following format: DB2-DOCE-DateTime.log, for example, DB2-DOCE-Wed Apr 11 08\_38\_35 2007.log

---

## Installing the DB2 Information Center using the DB2 Setup wizard (Linux)

DB2 product documentation can be accessed in three ways:

- at the IBM Web site
- on an intranet server
- on a version installed on your computer

By default, DB2 products access DB2 documentation at the IBM Web site. If you want to access the DB2 documentation on an intranet server or on your own computer, you must install the documentation from the *DB2 Information Center DVD*.

Using the DB2 Setup wizard, you can define your installation preferences and install the DB2 Information Center on a computer that uses a Linux operating system.

### Prerequisite

Review the prerequisite information in the *Installation requirements for DB2 clients and servers (Linux)* topic.

For the most up-to-date prerequisite information, see <http://www.ibm.com/software/data/db2/udb/sysreqs.html>.

### Restrictions

- You must be logged on as a user with root authority to install the DB2 Information Center.
- You cannot install the DB2 Information Center in a location where a DB2 product is installed. Similarly, the DB2 Information Center cannot co-exist in the same installation path of a previous version of the DB2 Information Center on the same system.
- You can only install one copy of the DB2 Information Center of the same version on your system. For example, you can install a copy of the DB2 Information Center Version 9.1 and DB2 Information Center Version 9.5 on the same system, but you cannot install two copies of the DB2 Information Center Version 9.5.
- If you install the DB2 Information Center on a system with a firewall, and you plan to allow other systems to access the DB2 Information Center, you must open the port in your firewall setting.

To install the DB2 Information Center using the DB2 Setup wizard:

1. Log on to the system.
2. Insert and mount the DB2 Information Center product DVD on your system.
3. Change to the directory where the DVD is mounted by entering the following command:

```
cd /dvd
```

where */dvd* represents the mount point of the DVD.

4. Enter the `./db2setup` command to start the DB2 Setup wizard.
5. The DB2 Setup Launchpad opens. From the launchpad, you can view installation prerequisites and the release notes, or you can proceed directly to the installation. You should review the installation prerequisites and release notes for late-breaking information.
6. Click **Install a Product** and the **Install a Product** window displays.
7. On the **Install a Product** page, if you do not have an existing DB2 Information Center installed on your computer, launch the installation by clicking **Install New**.

If you already have an existing DB2 Version 9.5 Information Center installed on your computer, click **Work with Existing** to work with the existing DB2 Information Center.

8. On the **Welcome to the DB2 Setup wizard** page, click **Next**. The DB2 Setup wizard will guide you through the program setup process.

9. To proceed with the installation, you must accept the license agreement. On the **Software License Agreement** page, select **Accept** and click **Next**.
10. On the **Select installation, response file creation, or both** page, select **Install DB2 Information Center on this computer**. If you want to use a response file to install the DB2 Information Center on this or other computers at a later time, select **Install DB2 Information Center on this computer and save my settings in a response file**. You can specify where the response file will be saved. Click **Next**.
11. On the **Select the languages to install** page, select the languages the DB2 Information Center will install. By default, the DB2 Information Center is installed in the `/opt/ibm/db2ic/V9.5` directory. However, you can specify your own installation path. Click **Next**.
12. Configure the DB2 Information Center for incoming communication on the **Specify the DB2 Information Center port** page. Click **Next** to continue the installation.  

If you specify a port number other than the default and you receive the error "The service name specified is in use", you can correct this error by either choosing to use the default port number or by specifying a different service name.
13. Review the installation choices you have made in the **Start copying files** page. To change any settings, click **Back**. Click **Finish** to complete the installation of the DB2 Information Center files onto your computer.

The installation logs, `db2setup.log` and `db2setup.err` will be located, by default, in the `/tmp` directory. You can specify the location of the log files.

The `db2setup.log` file captures all DB2 installation information including errors. The `db2setup.err` file captures any error output that is returned by Java (for example, exceptions and trap information).

There is no longer a `db2setup.his` file. Instead, the DB2 installer saves a copy of the `db2setup.log` file in the `DB2_DIR/install/logs/` directory, and renames it to `db2install.history`. If `db2install.history` already exists, the copy of the `db2setup.log` will be renamed `db2install.history.xxxx` where `xxxx` are digits starting at 0000 and increasing by 1 for the next log file.

---

## Installing a DB2 product using the `db2_install` or `doce_install` command (Linux and UNIX)

Before you install DB2 products and features or the DB2 Information Center:

- You should refer to the installation documentation for the particular DB2 product you want to install. For example, if you want to install DB2 Enterprise Server Edition, then refer to the *Quick Beginnings for DB2 Servers* documentation to review installation prerequisites and other important setup information.
- You can install a DB2 product using either root or non-root authority. However, you cannot use the `doce_install` to install the DB2 Information Center under non-root authority. For more information on non-root installations and limitations, see the Related Links.
- The DB2 product image must be available. You can obtain a DB2 installation image either by purchasing a physical DB2 product DVD, or by downloading an installation image from Passport Advantage.

The `db2_install` command installs DB2 products and features on supported Linux and UNIX operating systems.

The `doce_install` command installs the DB2 Information Center on supported Linux and UNIX operating systems.

You *cannot* manually install a DB2 product or feature using an operating system's native installation utility such as `rpm`, `SMIT`, `swinstall` or `pkgadd`. Any existing scripts containing a native installation utility that you use to interface and query with DB2 installations will need to change.

The `db2_install` command is not supported on the National Language Package DVD.

Only one copy of the DB2 Information Center for the current release can be installed on your system. The Information Center cannot be installed in the same location where a DB2 product is installed. If you install the DB2 Information Center on a system with a firewall, and you plan to allow other systems to access the DB2 Information Center, you must open the port in your firewall setting.

To install a DB2 product or feature using the `db2_install` command, or to install the DB2 Information Center using the `doce_install` command:

1. If you have a physical DB2 product DVD, insert and mount the appropriate DVD or access the file system where the installation image was stored.
2. If you downloaded the DB2 product image, you must decompress and untar the product file.

- a. Decompress the product file:  
`gzip -d product.tar.gz`

For example,

```
gzip -d ese.tar.gz
```

- b. Untar the product file:

#### **On Linux operating systems**

```
tar -xvf product.tar
```

For example,

```
tar -xvf ese.tar
```

#### **On AIX, HP-UX, and Solaris operating systems**

```
gnutar -xvf product.tar
```

For example,

```
gnutar -xvf ese.tar
```

- c. Change directory into the product directory:  
`cd product`

For example,

```
cd ese
```

3. Enter the `./db2_install` or `./doce_install` command:  
`./db2_install -b DB2DIR -p productShortName -c NLPackLocation -L language... -n`

where:

- *DB2DIR* specifies the path where the DB2 product will be installed. If the path is not specified, you are prompted to either select the default path or to provide the path. The default installation path is:
  - for AIX, HP-UX or Solaris operating systems: /opt/IBM/db2/V9.5
  - for Linux operating systems: /opt/ibm/db2/V9.5

If you provide your own path, you must specify the full path name.

DB2 installation paths have the following rules:

- Can include lowercase letters (a–z), uppercase letters (A–Z), and the underscore character ( \_ )
- Cannot exceed 128 characters
- Cannot contain spaces
- Cannot contain non-English characters

**Note:** For DB2 products and components to work together, they must be installed to a single path. This is not to be confused with the ability to install DB2 products to multiple paths. But, for products and components to work together, they must be installed to the same path, and, must be at the same release level.

- *productShortName* specifies the DB2 product to be installed. This parameter is case insensitive and is mandatory when the *-n* parameter is specified. The product short name (*productShortName*) can be found in the file *ComponentList.htm* (under the product full name) located in the */db2/plat* directory on your media where *plat* is the platform name that you are installing on. You can only install one product at a time.
- *NLPackLocation* specifies the National Language Pack (NLPACK) location.
- *language* specifies national language support. You can install a non-English version of a DB2 product. However, you must run this command from the product DVD, not the National Language pack DVD. By default, English is always installed, therefore, English does not need to be specified. When more than one language is required this parameter is mandatory. To indicate multiple languages, specify this parameter multiple times. For example, to install both French and German specify *-L FR -L DE*.
- *n* parameter indicates noninteractive installation mode. When this parameter is specified, both *-b* and *-p* must also be specified. You only need to specify *-c* and *-L* if applicable.

When installing the DB2 Information Center, if you specify a port number other than the default, you might receive the error “The service name specified is in use”. You can correct this error by either choosing to use the default port number or by specifying a different service name.

After installation, you must manually configure your DB2 server. Tasks include user and instance creation and configuration.



---

## Chapter 19. Post-installation tasks

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### Starting or stopping the Information Center daemon (Linux)

The DB2 Information Center daemon is the background process that runs the Information Center on Linux. The daemon, which is part of the DB2 Information Center installation, is initialized by the script `db2icd` which can be found in `INST_PATH/doc/bin` where `INST_PATH` is the installation path for your DB2 product.

The only time you should need to start or stop the daemon manually is when you want to change the configuration variables for the daemon. Normally, the daemon is started at system startup, according to the run levels created during the installation of the DB2 Information Center.

To stop and start the Information Center daemon:

1. Log in as a user with root authority.
2. Halt the daemon if it is already running. At a command line, enter:

```
INIT_DIR/db2icd stop
```

where `INIT_DIR` is the installation directory of the `db2icd` file listed previously.

3. Change any of the variables for the daemon by editing the `db2ic.conf` file. Currently, you can modify the TCP port number for the documentation service, and the location of the temporary workspace used by the daemon while it is running.
4. Start the daemon. At a command line, enter:

```
INIT_DIR/db2icd start
```

where `INIT_DIR` is the installation directory of the `db2icd` file listed previously.

When the daemon restarts, it uses the new environment variables.

There is also an option to shut down and restart the daemon immediately. At a command line, enter:

```
INIT_DIR/db2icd restart
```

where `INIT_DIR` is the installation directory of the `db2icd` file listed previously.

You can check the status of the daemon at any time. At a command line, enter:

```
INIT_DIR/db2icd status
```

where `INIT_DIR` is the installation directory of the `db2icd` file listed previously.

The daemon returns the current status, and displays the process ID of the daemon if it is active.

---

## Updating the DB2 Information Center installed on your computer or intranet server

If you have installed the DB2 Information Center locally, you can download and install updates that IBM might make available.

Updating your locally-installed DB2 Information Center requires that you:

1. Stop the DB2 Information Center on your computer, and restart the Information Center in stand-alone mode. Running the Information Center in stand-alone mode prevents other users on your network from accessing the Information Center, and allows you to download and apply updates.
2. Use the Update feature to see what updates are available. If there are updates that you would like to install, you can use the Update feature to download and install them

**Note:** If your environment requires installing the DB2 Information Center updates on a machine that is not connected to the internet, you have to mirror the update site to a local file system using a machine that is connected to the internet and has the DB2 Information Center installed. If many users on your network will be installing the documentation updates, you can reduce the time required for individuals to perform the updates by also mirroring the update site locally and creating a proxy for the update site.

If update packages are available, use the Update feature to download the packages. However, the Update feature is only available in stand-alone mode.

3. Stop the stand-alone Information Center, and restart the DB2 Information Center on your computer.

**Note:** On Windows Vista, the commands listed below must be run as an administrator. To launch a command prompt or graphical tool with full administrator privileges, right-click on the shortcut and then select **Run as administrator**.

To update the DB2 Information Center installed on your computer or intranet server:

1. Stop the DB2 Information Center.
  - On Windows, click **Start** → **Control Panel** → **Administrative Tools** → **Services**. Then right-click on **DB2 Information Center** service and select **Stop**.
  - On Linux, enter the following command:  

```
/etc/init.d/db2icdv95 stop
```
2. Start the Information Center in stand-alone mode.
  - On Windows:
    - a. Open a command window.
    - b. Navigate to the path where the Information Center is installed. By default, the DB2 Information Center is installed in the <Program Files>\IBM\DB2 Information Center\Version 9.5 directory, where <Program Files> represents the location of the Program Files directory.
    - c. Navigate from the installation directory to the doc\bin directory.
    - d. Run the help\_start.bat file:  

```
help_start.bat
```
  - On Linux:

- a. Navigate to the path where the Information Center is installed. By default, the DB2 Information Center is installed in the /opt/ibm/db2ic/V9.5 directory.
- b. Navigate from the installation directory to the doc/bin directory.
- c. Run the help\_start script:

```
help_start
```

The systems default Web browser launches to display the stand-alone Information Center.

3. Click the Update button (🔄). On the right hand panel of the Information Center, click Find Updates. A list of updates for existing documentation displays.
4. To initiate the download process, check the selections you want to download, then click Install Updates.
5. After the download and installation process has completed, click Finish.
6. Stop the stand-alone Information Center.
  - On Windows, navigate to the installation directory's doc\bin directory, and run the help\_end.bat file:

```
help_end.bat
```

**Note:** The help\_end batch file contains the commands required to safely terminate the processes that were started with the help\_start batch file. Do not use Ctrl-C or any other method to terminate help\_start.bat.

- On Linux, navigate to the installation directory's doc/bin directory, and run the help\_end script:

```
help_end
```

**Note:** The help\_end script contains the commands required to safely terminate the processes that were started with the help\_start script. Do not use any other method to terminate the help\_start script.

7. Restart the DB2 Information Center.
  - On Windows, click **Start** → **Control Panel** → **Administrative Tools** → **Services**. Then right-click on **DB2 Information Center** service and select **Start**.
  - On Linux, enter the following command:

```
/etc/init.d/db2icdv95 start
```

The updated DB2 Information Center displays the new and updated topics.



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## **Part 5. DB2 Web applications**



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## Chapter 20. DB2 WebServices application

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### DB2WebServices application overview and setup

*DB2WebServices* is the name of an application supplied with the DB2 Embedded Application Server. This application helps automate the deployment of web services from the Microsoft Visual Studio .Net development environment to the DB2 Embedded Application Server. These web services can include SQL statements that access databases located on the same server as the web service or on an other server. After the DB2WebServices application is used to deploy a web service to the DB2 Embedded Application Server, any web service consumer can call the web service. The DB2WebServices application consists of stored procedures that reside in a DB2 database located on the same server as the DB2 Embedded Application Server.

Several machines participate in the development and deployment of a web service using the DB2WebServices application. These are:

- One or more developer workstations where web services are developed. This workstation is setup with Microsoft Visual Studio and the IBM Database Developer Add-ins for Visual Studio .NET. This add-in deploys the web service by invoking the DB2WebServices application.
- One application server where web services are deployed. These web services can connect to any local or remote DB2 database that is cataloged on this server. This server is setup with the following components:
  - DB2 Embedded Application Server. This software provides the runtime environment for the web services.
  - the DB2WebServices application. This application handles deploying the web service from the Microsoft Visual Studio environment on the developer's workstation to the DB2 Embedded Application Server.
  - DB2 server and database. This database is used to store and run the stored procedures which comprise the DB2WebServices application. As well, the DB2 server is equipped with a DB2 JDBC driver to support web services that connect to remote databases.
  - Optional: Application databases. The database(s) the web services connect to can reside on this server or on other servers.
- Zero or more remote DB2 servers containing application databases. These are the databases that are accessed by the web services.
- One or more web service consumers. This refers to end users or applications that use the web service by sending an HTTP request to the application server where the web service is deployed.

Setup and usage of web services deployed to the DB2 Embedded Application Server involves the following steps:

- Setup the environment described above, especially the application server where web services are deployed.
- On a developer workstation, write a web service using the IBM Database Developer Add-ins for Visual Studio .NET.
- On a developer workstation, deploy the web service to the application server using functionality included with the IBM Database Developer Add-ins for Visual Studio .NET.

- Use the web service. Any web service consumer can now call the web service.

**Additional Notes:**

- The DB2WebServices application:
  - contains the web service application that groups the DADX Web services.
  - supports deployment of web services only using the IBM Database Developer Add-ins for Visual Studio .NET
  - should only be deployed on DB2 Embedded Application Server.
- Migration considerations: The setup procedure for the DB2WebServices application is the same for the initial setup and migrating from a prior version

## Deploying the DB2WebServices application

This topic describes how to deploy the DB2WebServices application on the DB2 Embedded Application Server. The instructions also apply to migrations from a prior version.

The points below pertain to the application server on which you want to deploy the DB2WebServices application.

- You have chosen a database to store the DB2WebServices application stored procedures. You have the choice of creating a new database or selecting an existing database for this purpose. This implies:
  - A DB2 server is installed.  
During a custom installation, to ensure the server portion of the DB2WebServices files is installed, you need to explicitly select the **Base application development tools** feature from the **Application development tools group**.
  - A DB2 instance is created. For UNIX systems only, you will need to know the fenced user ID that was specified when this DB2 instance was created.
- The DB2 Embedded Application Server is installed.
- The DB2 Embedded Application Server is started. This occurs automatically after DB2 Embedded Application Server is installed.

To deploy the DB2WebServices application, perform the following:

1. Log on to the server as **root** on UNIX systems, or as a user with **Administrator** privileges on Windows operating systems.
2. For UNIX systems run the following command:

```
. /INSTHOME/sql1lib/db2profile
```

where *INSTHOME* is the home directory of the instance that contains the database that you want to use to store the DB2WebServices application stored procedures.

3. Run one the following commands:

- For UNIX systems:

```
AppServer_install_path/bin/enable.sh
  -db db_alias
  -user db_user
  -password db_password
  -db2path path_to_sql1lib
  -instance instance_name
  -easpath path_to_eas
  -fencedid fenced_userid
```

- For Windows, run the command from DB2 CLP:



```
AppServer_install_path\bin\enable
  -db db_alias
  -user db_user
  -password db_password
  -db2path path_to_sqllib
  -instance instance_name
  -easpath path_to_eas
```

where:

- *db\_alias* is the alias of the database where the DB2WebServices application stored procedures will be located.
- *db\_user* is the user ID to use when connecting to the database.
- *db\_password* is the password to use with the user ID connecting to the database.
- *path\_to\_sqllib* is the path to the DB2 instance SQLLIB directory. This path is used to update DB2 Embedded Application Server with the required JAR files.
- *instance\_name* is the name of the DB2 instance that contains the database.
- *path\_to\_eas* is the path to the DB2 Embedded Application Server.
- *fenced\_userid* is the user ID for the fenced user which will invoke the DB2WebServices application stored procedures. This applies only to UNIX and Linux operating systems.

After you complete this procedure, the DB2WebServices application is deployed and started.

#### **Additional notes on the deployment script**

The deployment script performs the following actions:

- connects to a specified database.
- creates Java stored procedures.
- creates and populates metadata tables.
- updates the DBM CFG parameters, JDK\_PATH, and JAVA\_HEAP\_SZ.
- deploys the DB2WebServices application in the DB2 Embedded Application Server.

#### **Additional notes on starting and stopping the DB2WebServices application**

To view DB2WebServices, go to <http://hostname:20000/DADXWebServices/listApps/LIST>.

For UNIX:

- `cd AppServer_install_path/DB2WebServices/bin`
- To start DB2WebServices, issue the command `db2ws_start.sh`.
- To stop DB2WebServices, issue the command `db2ws_stop.sh`.

For Windows:

- `cd AppServer_install_path\DB2WebServices\bin`
- To start DB2WebServices, issue the command `db2ws_start`.
- To stop DB2WebServices, issue the command `db2ws_stop`.



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## Chapter 21. DB2 Embedded Application Server

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### DB2 Embedded Application Server overview and setup

The DB2 Embedded Application Server is an application server packaged with the DB2 product. This component is included to provide a means to run the web applications that are supplied with the DB2 server product without the need to purchase a separate application server. These applications are:

- DB2WebServices application: An application that helps automate the deployment of web services from the Microsoft Visual Studio .NET development environment to the DB2 Embedded Application Server.

The following points provide an overview of the steps to set up the DB2 Embedded Application Server. For details, see the related links.

- Determine which of the two DB2 applications you want to use with the DB2 Embedded Application Server.
- Review and address the prerequisites specific to the application(s) you want to use. These prerequisites will specify whether you need to install a DB2 server or an IBM data server client before installing the DB2 Embedded Application Server.
- Install the DB2 Embedded Application Server. If migration is required, the installation program handles migration automatically.
- Set up the desired application. Refer to the setup instructions for the desired application.

Once the DB2 Embedded Application Server is deployed, the main actions that can be performed are starting and stopping the server.

#### Additional Notes

- The DB2 Embedded Application Server is a fully functional application server. It is provided as an optional, and separately installable, component.
- This component is licensed only to run the applications supplied with the DB2 product, including your web service code deployed with the DB2WebServices application.
- In a prior release, DB2 Embedded Application Server also supported the XML Metadata Registry (XMR) that was part of the IBM Information Integrator offering. However, XMR is being discontinued and replaced with another offering. Customers affected by this change need to uninstall XMR. To uninstall XMR, follow the instructions in the DB2 Version 8 Information Center topic Removing the XML Metadata Registry.
- The latest versions of DB2 Embedded Application Server packages are available through electronic download at: [https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?lang=en\\_US&source=swg-dm-db2eas](https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?lang=en_US&source=swg-dm-db2eas)

---

### Installing the DB2 Embedded Application Server

Installing the DB2 Embedded Application Server is part of the larger task of setting up one or more of the web applications supplied with the DB2 product.

#### Restrictions

The DB2 Embedded Application Server is only available for English-language systems.

### Prerequisites

- The DB2 Embedded Application Server supports all platforms that the WebSphere Application Server V6.1 base product supports, with the exception of the non-distributed z/OS platform. For details, see supported platforms.
- Prerequisites depend on which web application you intend to use with DB2 Embedded Application Server. If necessary, review the overview topics for the DB2WebServices application.

To install the DB2 Embedded Application Server, perform the following:

1. Locate the DVD with the install image for the DB2 Embedded Application Server. Ensure that you select the install image for your operating system. Note that for Windows, there is a 32-bit and a 64-bit version.
2. If you downloaded the DB2 product image for Linux or UNIX, you must decompress and untar the product file.

- a. Decompress the product file:

```
gzip -d product.tar.gz
```

For example,

```
gzip -d ese.tar.gz
```

- b. Untar the product file:

#### On Linux operating systems

```
tar -xvf product.tar
```

For example,

```
tar -xvf ese.tar
```

#### On AIX, HP-UX, and Solaris operating systems

```
guntar -xvf product.tar
```

For example,

```
guntar -xvf ese.tar
```

- c. Change directory into the product directory:

```
cd product
```

For example,

```
cd ese
```

3. Log on to the server as **root** on UNIX systems, or as a user with **Administrator** privileges on Windows operating systems.

4. For UNIX systems run the following command:

```
. /INSTHOME/sql1lib/db2profile
```

where *INSTHOME* is the home directory of the DB2 instance you want to use. This can be any instance. If a client is installed, then this is the client instance. Note the space between the period (.) and the slash (/).

5. Run the following command:

```
db2appserverinstall  
-asroot absolute_path_for_App_Server_install  
-hostname hostname
```

where

- *absolute\_path\_for\_App\_Server\_install* is where you will install the DB2 Embedded Application Server. This must be a path that does not yet exist.
- *hostname* is the hostname of the machine.

**Note:** On Windows, run this command from the DB2 command line processor (CLP) or the DB2 command window.

6. If the installation succeeds, the following message will be returned:

```
EAS001 installation successful.
```

DB2 Embedded Application Server has been started automatically and is ready for the deployment of one or more of the web applications supplied with DB2. If the installation fails, an error message is returned. All messages are written to a log file as follows:

- On UNIX systems, the log file is located in `/tmp/easInstall.log`.
- On Windows, the log file is located in directory specified by the TEMP environment variable.

### Notes on changing the default port

Users deploying the DB2WebServices application should not change the default port. If other users want to use another port, perform the following steps before starting the procedure for installing the DB2 Embedded Application Server:

1. Edit the `portdef.props` file to change the port number.
2. Resume the procedure steps to install the DB2 Embedded Application Server.

---

## Starting or stopping the DB2 Embedded Application Server

The procedure for starting the DB2 Embedded Application Server differs slightly between the following two platforms:

- Linux and UNIX operating systems
- Windows operating systems

The procedure for *stopping* the server is the same as for *starting* the server, except the command is `stopServer` instead of `startServer`

- To start the DB2 Embedded Application Server on Linux or UNIX operating systems:
  1. Log on to the server with the appropriate user ID. In most cases, the appropriate user is as **root**. An exception is when the DB2 Embedded Application Server is used with the DB2WebServices application. In this case, the appropriate user ID is the **fenced user** that was specified when you ran the command to deploy the DB2WebServices application.

2. Go to the following directory:

```
App_Server_Install_Path/profiles/profile1/bin/
```

where *App\_Server\_Install\_Path* is the directory where you installed the DB2 Embedded Application Server.

3. Run the command: `startServer.bat server1`
4. Once the server has started successfully, the following message is displayed:  
Server *serverName* open for e-business; process id is *xxxx*.

If this message is not displayed, see the log located in *AppServer\_install\_path/profiles/profile1/logs/startServer.log*

- To start the DB2 Embedded Application Server on Windows:
  1. Log on to the DB2 server as a user with **Administrator** privileges on Windows.
  2. Go to the following directory:  
`App_Server_Install_Path\profiles\profile1\bin\`  
  
where *App\_Server\_Install\_Path* is the directory where you installed the DB2 Embedded Application Server.
  3. Run the command: `startServer.bat`
  4. After the server has started successfully, the following message will be displayed:  
`Server serverName open for e-business; process id is xxxx.`  
  
If this message is not displayed, see the log located in *AppServer\_install\_path\profiles\profile1\logs\startServer.log*

### **Procedure for stopping DB2 Embedded Application Server**

To stop the server, follow the same procedure as for starting the server. However, type `stopServer` instead of `startServer` .

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## Part 6. Configuring





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## Chapter 22. Configuring DB2 server communications using the Control Center

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### Configuring communication protocols for a local DB2 instance

This task describes how to configure communication protocols for a local DB2 instance using the Control Center.

Communication protocols on the DB2 server must be configured in order for your DB2 server to accept inbound requests from remote DB2 clients.

Most protocols are automatically detected and configured when you set up DB2 using the DB2 Setup wizard. Perform this task if:

- You deselected a detected communication protocol when you set up a DB2 product using the DB2 Setup wizard.
- You added a communication protocol to your network since you set up a DB2 product using the DB2 Setup wizard.
- You are using a communication protocol that could not be detected by the by the DB2 Setup wizard.
- You installed a DB2 product manually.

Communication protocols can also be configured using the Command Line Processor (CLP).

The following restrictions apply:

- You cannot use the Control Center to configure communication protocols for a partitioned DB2 server.
- Modifying an instance's communication protocol settings might require you to update the database connection catalogs on the client (reconfigure client-to-server communications).

To configure communication protocols for local instances, perform the following steps:

1. Launch the Control Center.
2. Click on the [+] beside a system's name to get the instances folder.
3. Select either the Databases or Gateway Connections folder and click on the [+] beside the **Instances** folder to get a list of instances on a particular system.
4. Select the instance that you want to configure and click on the right mouse button.
5. Select the **Setup communications** option from the pop-up menu. The Setup communications window opens.
6. Use the Setup communications window to configure communication protocols for the instance that you selected. Invoke the online help by clicking **Help** or by pressing **F1**.
7. You must stop and restart the instance for these changes to take effect.
  - a. To stop the database manager instance, select the instance, click with the right mouse button and select the **Stop** option from the pop-up menu.
  - b. To start the database manager instance, select the instance, click with the right mouse button and select the **Start** option from the pop-up menu.

---

## Configuring communication protocols for a remote DB2 instance

This task describes how to configure communication protocols for a remote instance on your DB2 server using the Control Center.

Communication protocols on the DB2 server must be configured for your DB2 server to accept inbound requests from remote clients.

Most protocols are automatically detected and configured when you set up DB2 using the DB2 Setup wizard. Perform this task if:

- You deselected a detected communication protocol when you set up DB2 using the DB2 Setup wizard.
- You added a communication protocol to your network since you set up DB2 using the DB2 Setup wizard.
- You are using a communication protocol that could not be detected by the DB2 Setup wizard.
- You installed a DB2 product using the `db2_install` command or the payload file method.

The following restrictions apply:

- You cannot use the Control Center to configure communication protocols for a partitioned DB2 server.
- Modifying an instance's communication protocol settings might require you to update the database connection catalogs on the client (reconfigure client-to-server communications).

To configure DB2 communication protocols for remote instances, perform the following steps:

1. Launch the Control Center.
2. If the system containing the remote instance you want is listed, click on the [+] sign beside the system name to get the Instances folder. Click on the [+] beside the Instances folder to get a list of the system's instances, then go to step 13 on page 211. If the system containing the remote instance you want is listed, but the instance you want does not appear under that system, go to step 8 on page 211.
3. If the system containing the remote instance that you want to configure is not listed, select the **Systems** folder, click on the right mouse button and select the **Add** option. The Add System window opens.
4. To add a system to the Control Center, you can do one of the following:
  - If the system name is empty, click on Discover to display a list of TCP/IP systems on the network. Select a system and press OK. The system information is populated on the Add System window.
  - If the system name is filled, click on Discover to invoke a known discovery. If successful, the system information is populated on the Add System window.

**Note:** Discovery will only work on remote TCP/IP systems.
5. Click **Apply** to add the system to the Control Center window.
6. Click **Close**.
7. Click on the [+] sign beside the system name you just added to get the Instances folder.

8. Select the **Instances** folder for the new system and click on the right mouse button.
9. Select the **Add** option. The Add Instance window opens.
10. Click **Discover** to obtain a list of available instances to display a list of remote instances on the system.
11. Select the instance that you want to add and click **OK**. The Add Instance window will be populated with the remote instance info.
12. Click **Close**.
13. Select the instance you want to configure and click on the right mouse button.
14. Select the **Setup communications** option from the pop-up menu. The Setup Communications window opens.
15. Use the Setup Communications window to configure communication protocols for the instance. Click on the **Help** push button for more information.
16. You must stop and restart the instance for these changes to take effect:
  - a. To stop an instance, select the instance, click on the right mouse button, and select the **Stop** option.
  - b. To start an instance, select the instance, click on the right mouse button, and select the **Start** option.

---

## DB2 server communications configuration using the Control Center

The Control Center is a graphical tool used to administer DB2 databases. The Control Center's setup communications function allows you to display the protocols and configuration parameters that a server instance is configured to use. It also allows you to modify the parameter values of a configured protocol, as well as add or delete protocols.

When you add support for a new protocol to the server system, the setup communications function detects and generates server instance parameter values for the new protocol. You can accept or modify these values before use. When you remove support for an existing protocol from the server system, the setup communications function detects the protocol that has been removed and disables its use by the server instance.

You can add a protocol that has not been detected, however, you must supply all of the parameter values required before you proceed.

The setup communications function can be used to maintain communications for both local and remote server instances, provided that the DB2 Administration Server (DAS) is running on the server system.

Modifying instance communication settings that have been previously configured might require you to update the database connection catalogs on the client. You can do this by:

- Using the Configuration Assistant on the client. Select the database connection that you want to change. Under the **Selected** menu, select **Change database**. This will launch a Wizard that will help you with the changes.
- Using the command line processor on the client to uncatalog and re-catalog the node, depending on the values changed on the server.



---

## Chapter 23. Setting communication protocols for a DB2 instance

To perform this task you require sysadm authority.

Setting communication protocols for a DB2 instance is part of the main task of configuring TCP/IP or SSL communications for a DB2 instance.

The DB2COMM registry variable allows you to set communication protocols for the current DB2 instance. If the DB2COMM registry variable is undefined or set to null, no protocol connection managers are started when the database manager is started.

The DB2COMM registry variable can be set with one of the following keywords:

**tcPIP** starts TCP/IP support

**ssl** starts SSL support

To set the communication protocol for the instance:

Enter the db2set DB2COMM command from the DB2 command window:

```
db2set DB2COMM=tcPIP
```

For example, to set the database manager to start connection managers for the TCP/IP communication protocols, enter the following command:

```
db2set DB2COMM=tcPIP  
db2stop  
db2start
```



---

## Chapter 24. Configuring DB2 server communications (TCP/IP)

---

### Configuring TCP/IP communications for a DB2 instance

This task describes how to configure TCP/IP communications on your DB2 server using the DB2 Command Line Processor (CLP). Communication protocols on the DB2 server must be configured in order for your DB2 server to accept inbound requests from remote DB2 clients.

Before you configure TCP/IP communications for a DB2 instance:

- Ensure that TCP/IP is functional on the DB2 server. TCP/IP must also be functional on the DB2 client to establish a connection.
- Identify either a Connection Service name *and* Connection Port, or just a Connection Port.

#### Connection Service Name and Connection Port

The service name is used to update the Service name (*svcename*) parameter in the database manager configuration file at the server. When a Connection Service name is specified, the services file must be updated with the same Service name, a port number, and the protocol. The Service name is arbitrary but must be unique within the services file. A sample value for the service name could be `server1`. If you are using DB2 Enterprise Server Edition in a partitioned format, ensure that the port number does not conflict with the port numbers used by the Fast Communications Manager (FCM).

The Connection port must be unique within the services file. A sample value for the port number and protocol could be `3700/tcp`.

#### Connection Port

The Service name (*svcename*) parameter in the database manager configuration file at the server can be updated with a port number. If this is the case, it is not necessary to update the services file. If you are using DB2 Enterprise Server Edition in a partitioned format, ensure that the port number does not conflict with the port numbers used by the Fast Communications Manager (FCM) or any other applications on the system. A sample value for the port number could be `3700`.

Most protocols are automatically detected and configured when you set up DB2 using the DB2 Setup wizard. Perform the current task if:

- You deselected the TCP/IP communication protocol when you set up DB2 using the DB2 Setup wizard.
- You added the TCP/IP communication protocol to your network after you set up DB2 using the DB2 Setup wizard.
- The TCP/IP communication protocol was not detected by the DB2 Setup wizard.
- You installed a DB2 product using the `db2_install` command or the payload file method.

To configure TCP/IP communications for a DB2 instance:

1. Update the services file on the server.
2. Update the database manager configuration file on the server.
3. Set communication protocols using one of the following methods:

- CLP
- Control Center

---

## Updating the database manager configuration file on the server for TCP/IP communications

This task is part of the main task of *Configuring TCP/IP communications for a DB2 instance*.

You must update the database manager configuration file with the service name (*svcename*) parameter.

To update the database manager configuration file:

1. Log on to the system as a user with System Administrative (SYSADM) authority.
2. If you are using a UNIX server, set up the instance environment:
 

```
. INSTHOME/sql1lib/db2profile    (for Bash, Bourne or Korn shell)
source INSTHOME/sql1lib/db2cshrc (for C shell)
```
3. Start the DB2 command line processor (CLP).
4. Update the database manager configuration file with the Service name (*svcename*) parameter by entering the following commands:

```
update database manager configuration using svcename
   [service_name | port_number]
db2stop
db2start
```

where:

- *service\_name* is the service name reserved in the services file
- *port\_number* is the corresponding port number for the *service\_name*, or a free port number if the *service\_name* is not reserved

If a service name is being specified, the *svcename* used must match the Connection Service name specified in the services file.

After the database manager is stopped and started again, view the database manager configuration file to ensure that these changes have taken effect. View the database manager configuration file by entering the following command:

```
get database manager configuration
```

---

## Updating the services file on the server for TCP/IP communications

This task is part of the main task of *Configuring TCP/IP communications for a DB2 instance*.

The TCP/IP services file specifies the ports that server applications can listen on for client requests. If you specified a service name in the *svcename* field of the DBM configuration file, the services file must be updated with the service name to port number/protocol mapping. If you specified a port number in the *svcename* field of the DBM configuration file, the services file does *not* need to be updated.

Update the services file and specify the ports that you want the server to listen on for incoming client requests. The default location of the services file depends on the operating system:

**Linux and UNIX operating systems**  
/etc/services



### Windows operating systems

`%SystemRoot%\system32\drivers\etc\services`

Using a text editor, add the Connection entry to the services file. For example:

```
db2c_db2inst1 3700/tcp # DB2 connection service port
```

where:

**db2c\_db2inst1**

represents the connection service name

**3700**

represents the connection port number

**tcp**

represents the communication protocol that you are using



---

## Chapter 25. DB2 license files

Your DB2 product will run without registering the license key. However, registering the license key is recommended as a mechanism for you to keep track of, and differentiate, the DB2 products and features you have installed on your system. You can find the DB2 product license terms at Software license agreements.

Installing a DB2 data server does not include registering a license key. You should register the license key before using the DB2 product or feature.

Registering the license key (also referred to as a license entitlement certificate) lets the DB2 license manager know which license keys you plan to use on each machine. This is also referred to as applying the license key.

Each DB2 product and DB2 feature comes with a license key. If you downloaded the DB2 product or feature image from Passport Advantage, the license key is included in the Activation CD image. When using Passport Advantage®, you must download the Activation CD image for *each* product and feature separately. If you receive your DB2 product or feature on a physical media pack from IBM, the license key is on the Activation CD.

If you purchased a base DB2 product, as well as, separately priced features, you will need to apply more than one license key. Each DB2 product and DB2 feature has its own license key. You should ensure that you have the correct license entitlements for the DB2 products and features you installed. For more information, see DB2 packaging or DB2 features and benefits.

DB2 Personal Edition and DB2 Connect Personal Edition are exceptions. If you installed DB2 Personal Edition or DB2 Connect Personal Edition, the license key is applied automatically as part of the base installation.

The management of licenses for DB2 products or features is done through either:

- the License Center within the Control Center, or,
- the db2licm license management tool command.

To assist you in managing your licenses, a compliance report lists the compliance or noncompliance of DB2 features with your current product entitlement. To be in compliance with your license agreement, you should apply the license key. However, even without applying a license key, your DB2 product will continue to operate without interruption or restriction, unless you installed a DB2 product try and buy image, or, installed a DB2 fix pack installation image. A try and buy DB2 product will stop working after a 90 day trial period. If you installed a DB2 fix pack installation image over an existing DB2 product acquired from Passport Advantage, the fix pack installation image will continue to operate uninterrupted.

DB2 product try and buy images include access to all features available in the edition you are using. You can download a DB2 try and buy image from Trials and demos.

If you installed a DB2 product with a try and buy license and now want to upgrade to a full license, you do not need to reinstall the DB2 product. You simply upgrade your license. For details see Upgrading your DB2 license.

**Note:** Under the processor Value Unit (PVU) licensing structure, each processor core will be assigned a specific number of Value Units. You must acquire the total number of processor Value Units for each processor core on which the software programs are deployed. IBM continues to define a processor to be each processor core on a chip. For example, a dual-core chip contains two processor cores. Each software program has a unique price per Value Unit. To determine the total cost of deploying an individual software program, you multiply the program price per Value Unit by the total number of processor Value Units required. The PVU calculator calculates the total number of PVU in your environment.

---

## Applying DB2 licenses

The base installation of a DB2 product or feature, does not include applying a license entitlement certificate. You should apply the license entitlement certificate (also referred to as registering a license key) before using the DB2 product or feature.

If you want the product or feature license key added automatically during the installation, you need to copy the license key to the `/db2/license` directory of the installation image before launching the DB2 Setup wizard.

The license key is available from either the DB2 product or feature Activation CD image you downloaded from Passport Advantage, or from the Activation CD you received in the physical media pack from IBM.

To enable DB2 features or to be in compliance with your current product entitlement, you might be required to:

- Install a new DB2 product license key
- Install the DB2 code that will install the appropriate license keys

---

## Upgrading a Try and Buy license

If you installed a DB2 product with a try and buy license and now want to upgrade to a full license you need to upgrade the product license key.

You cannot use this method to upgrade from one DB2 product to another.

If a previously licensed copy of a DB2 server product does not already exist on the machine, a single server fix pack image can be used to install any of the DB2 database server products. In this case, the DB2 product installed is treated as a try and buy license.

To upgrade your DB2 license:

1. Get the license key. The license key is available from either:
  - the DB2 product or feature image you downloaded from Passport Advantage, or
  - the Activation CD you received in the physical media pack from IBM.
2. Register the license key using the License Center or the `db2licm` command.

---

## Registering a DB2 product or feature license key using the License Center

The license key is available from either the DB2 product or feature image you downloaded from Passport Advantage, or from the Activation CD you received in the physical media pack from IBM.

On Linux or Windows operating systems, you can register license key using the Licence Center. On UNIX operating systems, use the **db2licm** command to register a license key.

On Linux operating systems, the instance owner must have read and write privileges on the directory where the license files are located.

To register a DB2 license key:

1. Start the DB2 Control Center and select **License Center** from the **Tools** menu.
2. Select the system for which you are installing a license. Select an instance on the system you selected. Select the product from installed products. The **Installed Products** field will display the name of the product that you have installed.
3. Select **Add** from the **License** menu.
4. In the Add License window, select the license file:
  - On Windows servers: `x:\db2\license\license_filename.lic`
  - On Linux servers: `/cd/db2/license/license_filename.lic`

where `x:` or `/cd` represents the drive or mount point containing the Activation CD for the DB2 product or feature.

5. Click Apply to add the license key.

---

## Registering a DB2 product or feature license key using the db2licm command

The license key is available from either the DB2 product or feature image you downloaded from Passport Advantage, or from the Activation CD you received in the physical media pack from IBM.

- On Windows operating systems, if you are a member of the local administrator, register a DB2 license key by entering the following command:

```
db2instance_path\bin\db2licm -a filename
```

where `db2instance_path` is where the DB2 instance was created and `filename` is the full pathname and filename for the license file that corresponds to the product you have purchased.

- On Linux or UNIX operating systems, if you are the owner of the installation, register a DB2 license key by entering the following command:

```
DB2DIR/adm/db2licm -a filename
```

where

- `DB2DIR` specifies the path where the DB2 product was installed. The default installation directory is:
  - For AIX, HP-UX or Solaris `/opt/IBM/db2/V9.5`
  - For Linux `/opt/ibm/db2/V9.5`

- *filename* is the full pathname and filename for the license file that corresponds to the product or feature.
- On Linux or UNIX operating systems, if you are the instance owner or a member of sysadm group, register a DB2 license key by entering the following command:

```
INSTHOME/sql1lib/adm/db2licm -a filename
```

where *INSTHOME* is the home directory of the instance owner and *filename* is the full pathname and filename for the license file that corresponds to the product you have purchased.

---

## Setting the DB2 license policy using the db2licm command

For DB2 Connect Enterprise Server Edition the license policy controls and monitors the number of users that can connect simultaneously to a DB2 Connect server.

For WebSphere Replication Server or WebSphere Federation Server, the license policy controls and monitors the number of connectors to a non-DB2 data source.

1. Before you set your license policy using the db2licm command, you need the product identifier. To list the product identifier information, enter the following command:

```
db2licm -l
```

The product identifier is listed in the Product Identifier field.

2. To set your license policy, perform *one* of the following depending on the type of licenses that you purchased. For example:
  - If you purchased a WebSphere Replication Server or WebSphere Federation Server Concurrent Connector policy, enter the following command:

```
db2licm -c wsfs concurrent
```

or

```
db2licm -c wsrs concurrent
```

- If you purchased a DB2 Connect Server Concurrent User policy, enter the following command:

```
db2licm -p db2consv concurrent
```

---

## Setting the DB2 license policy using the License Center

For DB2 Connect Enterprise Server Edition the license policy controls and monitors the number of users that can connect simultaneously to a DB2 Connect server. For WebSphere Replication Server or WebSphere Federation Server, the license policy controls and monitors the number of connectors to a non-DB2 data source.

To set your license policy using the License Center, perform the following depending on the type of licenses that you purchased:

1. In the License Center, select **Change** from the **License** menu.
2. In the Change License window, select the type of license that you have purchased. For example:
  - If you purchased a WebSphere Replication Server or WebSphere Federation Server Concurrent Connector policy, select **Connector** and enter the number of connector licenses that you purchased.

- If you purchased a DB2 Connect Server Concurrent User license, select **Concurrent users** or **Concurrent connect users** and enter the number of user licenses that you have purchased.

---

## Checking DB2 license compliance

Each DB2 product and feature has a license key associated with it. The license key should be registered before using the DB2 product or feature. The License Center lists product information on the main panel. DB2 products that do not have the license registered show the License Type as not registered.

To verify license compliance of DB2 features, you can generate a compliance report. The compliance report lists DB2 features out of compliance with your current product entitlement. Each DB2 feature status is listed as either:

- In compliance: indicating the feature has been used and is properly licensed
- Violation: indicating the feature is not licensed and has been used.

**Note:** Some DB2 functionality is only available under license when purchased as part of a DB2 feature.

If you installed a DB2 product try and buy image, the try and buy image includes access to all features available in the edition you are using.

You can generate a compliance report using the License Center or the `db2licm` command.

- To generate the compliance report from the License Center, select License→Generate Compliance Report.
  - To generate compliance report using the `db2licm` command, enter the following command from the command line:
    - For Linux and UNIX operating systems:  
`db2instance_path/adm/db2licm -g filename`
    - For Windows operating systems:  
`db2instance_path\bin\db2licm -g filename`
- where
- `db2instance_path` is where the DB2 instance was created.
  - `filename` specifies the file name where output is to be stored.

DB2 features showing a violation should have the license key registered using either the License Center or the `db2licm` command. The License Center or the `db2licm` command can also be used to reset the license usage information. See the related links for details.





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## Part 7. Uninstalling



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## Chapter 26. Uninstalling your DB2 product (Windows)

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### Uninstalling your DB2 product (Windows)

This task provides steps for completely removing your DB2 product from your Windows operating system. You should only perform this task if you no longer require existing your DB2 instances and databases.

If you are uninstalling the DB2 default copy, and you have other DB2 copies on your system, you should use the `db2swtch` command to choose a new default copy before you proceed with the uninstallation. Also, if your database administration server (DAS) is running under the copy being removed, you should move your DAS to a copy that is not being removed. Otherwise, you will have to recreate the DAS using `db2admin create` command after the uninstall and you might have to reconfigure the DAS for some functionality to work.

To remove your DB2 product from Windows:

1. (Optional) Drop all databases using the Control Center or drop database command. Be sure that you no longer need these databases. If you drop your databases, all of your data will be gone.
2. Stop all DB2 processes and services. This can be done through the Windows Services panel or by issuing the `db2stop` command. If DB2 services and processes are not stopped before attempting to remove your DB2 product, you will receive a warning containing a list of processes and services that are holding DB2 DLLs in memory.
3. You have two options for removing your DB2 product:

#### **Add/Remove Programs**

Accessible through the Windows Control Panel, use the Add/Remove Programs window to remove your DB2 product. Refer to your operating system's help for more information about removing software products from your Windows operating system.

#### **db2unins command**

You can run the `db2unins` command to remove your DB2 product. Using this command, you can uninstall multiple DB2 products at the same time using the `/p` parameter. You can also silently uninstall DB2 products by using `/u` parameter which will remove the DB2 products specified in the response file. For more information, see the `db2unins` command topic.

Unfortunately, your DB2 product cannot always be removed by using the Control Panel - Add/Remove Programs facility or using the `db2unins /p` command or the `db2unins /u` command. The following uninstallation option should ONLY be attempted if the above method fails.

To forcefully remove all DB2 copies from your Windows system, run the `db2unins /f` command. This command will perform a brute force uninstallation of ALL DB2 copies on the system. Everything except user data, such as DB2 databases, will be forcefully deleted.

---

## Uninstalling a DB2 product using a response file (Windows)

Before you begin the uninstallation, ensure that:

- You have all of the required user accounts to perform the uninstallation.
- Ensure all DB2 processes are stopped.

To silently uninstall all or selected DB2 products in a DB2 copy, use the `db2unins` command with the `-u` option.

If you have DB2 products installed in various installation paths, you must run this command separately from each installation path. Sample response file, `db2un.rsp`, is provided on the DB2 product DVD in `db2/windows/samples`.

To perform an uninstallation:

1. Customize the `db2un.rsp` response file. To activate an item in the response file, remove the asterisk (\*) to the left of the keyword. Then, replace the current setting to the right of the value with the new setting. The possible settings are listed to the right of the equal sign.
2. Run the `db2unins` command. For example, `db2unins -u c:\db2un.rsp`. The `db2unins` command is found under the `SQLLIB/BIN` directory.
3. Check the messages in the log file when the uninstallation finishes.

---

## Chapter 27. Uninstalling your DB2 product (Linux and UNIX)

This task provides steps for removing a DB2 product from your Linux or UNIX operating system.

This task is not required to install a new version of a DB2 product. Each version of a DB2 product on Linux or UNIX has a different installation path and can therefore coexist on the same computer.

**Note:** This task applies to DB2 products that were installed with root authority. A separate topic explains how to uninstall DB2 products that were installed as a non-root user.

To remove your DB2 product:

1. Optional: Drop all databases. You can drop databases using the Control Center or the drop database command. Database files remain intact on your file systems when you drop an instance without dropping databases first.
2. Stop the DB2 Administration Server. Refer to the *Quick Beginnings for DB2 Servers* manual.
3. Remove the DB2 Administration Server, or run the `dasupdt` command to update the DB2 Administration Server to another installation path. To remove the DB2 Administration Server, refer to the *Quick Beginnings for DB2 Servers* manual.
4. Stop all DB2 instances. Refer to the *Quick Beginnings for DB2 Servers* manual.
5. Remove the DB2 instances, or run the `db2iupdt` command to update the instances another installation path. To remove the DB2 instances, refer to the *Quick Beginnings for DB2 Servers* manual.
6. Remove the DB2 products. Refer to the *Quick Beginnings for DB2 Servers* manual.

---

### Stopping the DB2 administration server (Linux and UNIX)

You must stop the DB2 administration server (DAS) before you remove your DB2 product.

When uninstalling a DB2 product, you must drop the DAS if you are removing your last DB2 Version 9.5 copy. If you have other DB2 Version 9.5 copies, it is recommended that you run the `dasupdt` command to associate the DAS with another DB2 copy. If you decide to drop the DAS, you must stop the DAS first.

**Note:** This task does not apply to non-root installations of DB2 products.

To stop the DB2 administration server:

1. Log in as the DB2 administration server owner.
2. Stop the DB2 administration server by entering the `db2admin stop` command.

---

### Removing the DB2 administration server (Linux and UNIX)

If you are removing your last DB2 Version 9 copy, you must remove the DB2 administration server (DAS) before you remove your DB2 product.

If you removing a DB2 Version 9 copy, but have other DB2 Version 9 copies, you should run the `dasupdt` command from the DB2 copy that you would like to have the DB2 DAS associated with.

**Note:** This task applies only to DB2 products that were installed with root authority.

To remove the DAS:

1. Log in as a user with root authority.
2. Stop the DAS:  
`db2admin stop`
3. Remove the DAS by entering the following command:  
`DB2DIR/instance/dasdrop`

where *DB2DIR* is the location you specified during the DB2 installation. The default installation path for UNIX is `/opt/IBM/db2/V9.5`. The default installation path for Linux is `/opt/ibm/db2/V9.5`.

---

## Stopping root instances (Linux and UNIX)

You must stop all DB2 instances associated with the DB2 copy you are uninstalling. Instances associated with other DB2 copies should not be affected by uninstalling the current copy.

**Note:** This task applies to DB2 products that were installed with root authority. To stop DB2 instances that were installed as a non-root user, see “Stopping non-root instances (Linux and UNIX)” on page 233

To stop a DB2 instance:

1. Log in as a user with root authority.
2. Obtain a list of the names of all DB2 instances associated with your current DB2 copy by entering the following command:  
`DB2DIR/bin/db2ilist`

where *DB2DIR* is the location you specified during the DB2 Version 9 installation. The default installation path for UNIX is `/opt/IBM/db2/V9.5`. The default installation path for Linux is `/opt/ibm/db2/V9.5`.

3. Run the start up script if it is not included in `.profile`.  
`. $INSTHOME/sqllib/db2profile` (bash, Bourne, or Korn shells)  
`source $INSTHOME/sqllib/db2cshrc` (C shell)

where *INSTHOME* is the home directory of the instance.

4. It is recommended that you save the following files:
  - The database manager configuration file, `$HOME/sqllib/db2system`
  - The node configuration file, `$HOME/sqllib/db2nodes.cfg`
  - User defined functions or fenced stored procedure applications in `$HOME/sqllib/function`
5. Stop the DB2 database manager by entering the `db2stop force` command.
6. Confirm that the instance is stopped by entering the `db2 terminate` command.
7. Repeat these steps for each instance.

---

## Removing DB2 instances (Linux and UNIX)

This task explains how to remove some or all of the root instances on your system.

**Note:** This task does not apply to non-root installations. To remove a non-root instance, you must uninstall your DB2 product.

If you are removing your last DB2 Version 9 copy, you can remove the DB2 instances before you remove your DB2 product. If you removing a DB2 Version 9 copy, but have other DB2 Version 9 copies, you can run the `db2iupdt` command from the DB2 copy that you would like to have the DB2 instances associated with.

Once an instance is removed, you can use the DB2 databases owned by the instance if you catalog them under another instance of the same release. Even though you remove the instance, the databases are still intact and can be reused unless the database files are expressly deleted.

Remove DB2 instances only if you are not planning to use your DB2 products, or if you do not want to migrate existing instances to a later version of the DB2 product. Migration requires that both the new and old DB2 versions are still installed. You cannot migrate an instance if the DB2 copy it is associated with has been removed.

To remove an instance:

1. Log in as a user with root authority.
2. Optional: If you are certain you no longer need the data in the associated databases, you can remove the database files from the systems or drop the databases before dropping the instance.
3. Remove the instance by entering the following command:

```
DB2DIR/instance/db2idrop InstName
```

where *DB2DIR* is the location you specified during the DB2 installation. The default installation path for UNIX is `/opt/IBM/db2/V9.5`. The default installation path for Linux is `/opt/ibm/db2/V9.5`.

The `db2idrop` command removes the instance entry from the list of instances and removes the *INSTHOME*/sqllib directory, where *INSTHOME* is the home directory of the instance and where *InstName* is the login name of the instance. If you are storing any files in `/sqllib` directory, these files will be removed by this action. If you still need these files, you must make a copy of them before dropping the instance.

4. Optional: As a user with root authority, remove the instance owner's user ID and group (if used only for that instance). Do not remove these if you are planning to re-create the instance.

**Note:** This step is optional since the instance owner and the instance owner group might be used for other purposes.

---

## Removing DB2 products using the `db2_deinstall` or `doce_deinstall` command (Linux and UNIX)

This task provides steps for removing DB2 products or DB2 components using the `db2_deinstall` command. The `db2_deinstall` command removes all DB2 products from your system. The `doce_deinstall` command removes the DB2 Information Center that is in the same install path as the `doce_deinstall` tool. This command is only available on the Linux operating systems.

Before you remove DB2 products from your system, ensure that you have performed all steps outlined in Chapter 27, “Uninstalling your DB2 product (Linux and UNIX),” on page 229

### Note:

- This task applies to DB2 products that were installed with root authority. To uninstall DB2 products that were installed without root authority, see Chapter 28, “Uninstalling non-root DB2 products (Linux and UNIX),” on page 233
- You cannot remove DB2 products using a native operating system utility, such as `rpm` or `SMIT`.
- The `doce_deinstall` command is available only on Linux x32 and x64.

To remove **ALL** DB2 products from a specific path:

1. Log in as the root user.
2. Access the path where the DB2 products are located. To locate the path of the DB2 product to remove, see “Listing DB2 products installed on your system (Linux and UNIX)” on page 151.
3. Run one of the following commands:
  - To remove a feature from an installed DB2 product in the current location, run the `db2_deinstall -F` command from the `DB2DIR/install` directory
  - To remove all installed DB2 products in the current location, run the `db2_deinstall -a` command from the `DB2DIR/install` directory
  - To remove the DB2 Information Center in the current location, run the `doce_deinstall -a` from the `DB2DIR/doc/install` directory

where `DB2DIR` is the location that you specified when you installed your DB2 product.



---

## Chapter 28. Uninstalling non-root DB2 products (Linux and UNIX)

This task provides steps for removing non-root DB2 products from your Linux or UNIX operating system.

**Note:** This task applies to DB2 products that were installed without root authority. To uninstall DB2 products that were installed with root authority, see Chapter 27, “Uninstalling your DB2 product (Linux and UNIX),” on page 229

Non-root installations of DB2 products are uninstalled in the same manner as root installations. However, there are important differences which are detailed in the substeps below.

To remove your DB2 product:

1. Stop your non-root instance
2. Remove your DB2 product

---

### Stopping non-root instances (Linux and UNIX)

You must stop your non-root instance before uninstalling your DB2 product.

**Note:** This task applies to DB2 products that were installed with non-root authority. To stop DB2 instances that were installed as a non-root user, see “Stopping root instances (Linux and UNIX)” on page 230

To stop a DB2 instance:

1. Log in as the non-root instance owner.
2. Run the start up script if it is not included in `.profile`.  

```
. $HOME/sqllib/db2profile      (bash, Bourne, or Korn shells)
source $HOME/sqllib/db2cshrc  (C shell)
```

where `$HOME` is your home directory.

3. You might want to save any of the following files:
  - The database manager configuration file, `db2system`
  - The configuration file used to enable root features before running `db2rfe`.
  - User defined functions or fenced stored procedure applications in `$HOME/sqllib/function`.
4. Stop the DB2 database manager by entering the `db2stop force` command.
5. Confirm that the instance is stopped by entering the `db2 terminate` command.

---

### Removing non-root DB2 products using `db2_deinstall` (Linux and UNIX)

This task provides steps for removing non-root DB2 products or components using the `db2_deinstall` command.

You must stop the non-root instance before running the `db2_deinstall` command.

**Note:**

- This task applies to DB2 products that were installed without root authority. A separate task exists for uninstalling DB2 products that were installed with root authority.
- As with root users, non-root users can use the `db2_deinstall` command to uninstall DB2 products. The `db2_deinstall` command for non-root installations has the same options as root installations, and has an extra option: **-f sqllib**.
- It is important to note that running `db2_deinstall` as a non-root user uninstalls the DB2 product *and* drops the non-root instance. This is different than root installations, where running `db2_deinstall` only uninstalls the DB2 program files.
- You cannot remove DB2 products using a native operating system utility, such as `rpm` or `SMIT`.

To uninstall a DB2 product that was installed by a non-root user:

1. Log in with the user ID that was used to install the DB2 product.
2. Navigate to the `$HOME/sqllib/install` directory, where `$HOME` is your home directory.
3. Run the `db2_deinstall` command.

**Note:**

- If you run the `db2_deinstall` command with the **-a** option, the DB2 program files are removed, but any configuration files are left behind in a backup directory called `sqllib_bk`.
- If you run the `db2_deinstall` command with the **-a -f sqllib** option, the entire `sqllib` subdirectory in your home directory will be removed. If you have any files in `sqllib` you want to keep, be sure to copy them elsewhere before running `db2_deinstall -a -f sqllib`.
- As with root installations, running the `db2_deinstall` command with the **-F** option against a non-root installation allows the non-root user to remove specific DB2 features. In non-root installations, however, you can also remove specific DB2 features by running the `db2nrupdt` command.

---

## Chapter 29. Uninstalling DB2 copies and IBM database client interface copies

### On Linux and UNIX operating systems

Use the `db2_deinstall` command from the DB2 copy that you are using. The `db2_deinstall` command uninstalls installed DB2 products or features that are in the same install path as the `db2_deinstall` tool.

The `db2_deinstall` command is also available on the DB2 product DVD. The product version you are uninstalling must match the product version on the DB2 DVD. If you do not provide the `-b` parameter when you run the `db2_deinstall` command from the DB2 DVD, you will be prompted for the installation path.

Use the `db2ls` command to see the list of installed DB2 products and features. If one or more instances are currently associated with a DB2 copy, that DB2 copy cannot be uninstalled.

### On Windows operating systems

To uninstall DB2 copies on Windows operating systems, use one of the following methods:

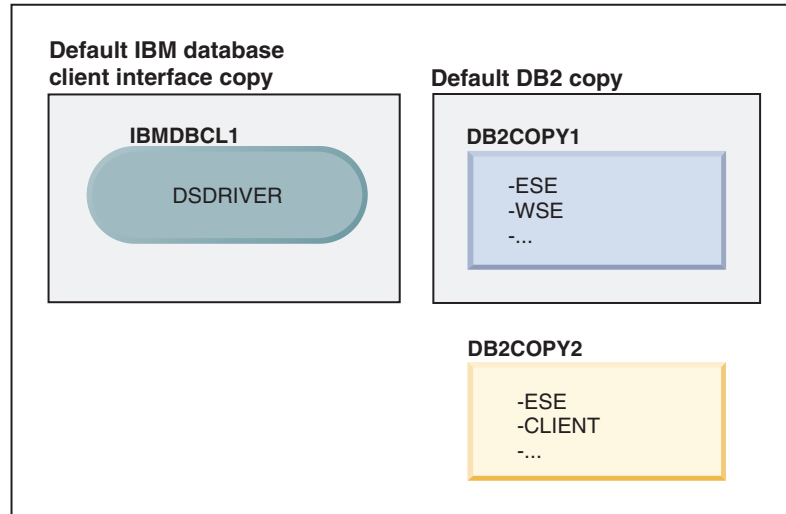
- Use the Windows Add/Remove Control Panel Applet.
- Run the `db2unins` command from the installed DB2 copy directory

#### Note:

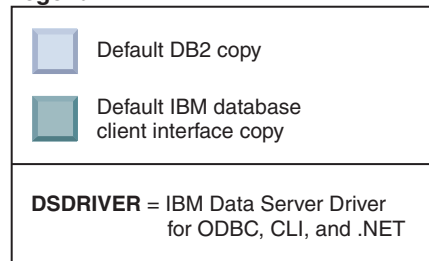
- You can uninstall DB2 even when there are instances associated with DB2 copies. If you do this, the instance information will be removed with the DB2 uninstall. Therefore, take extra care when managing, recovering, and uninstalling instances.
- If multiple Version 9 copies are installed, you cannot remove the default DB2 copy. If you want to remove the default DB2 copy, you will need to switch the default DB2 copy to one of the other DB2 copies prior to uninstalling. For more information on switching the default DB2 copy, see the `db2swtch` command.

## Uninstalling DB2 copies when both those copies and IBM Data Server Driver copies are on your machine

### DB2 Version 9.5

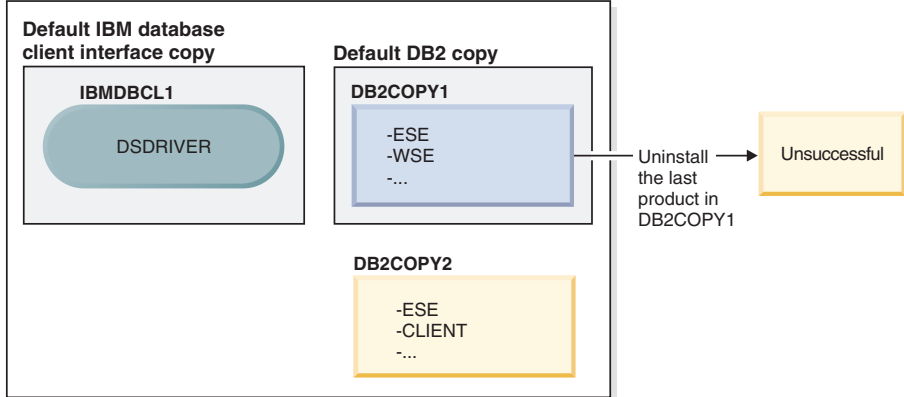


### Legend

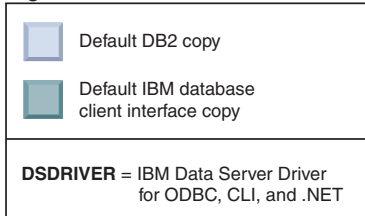


In the scenario presented here, IBMDBCL1 is the default IBM database client interface copy, DB2COPY1 is the default DB2 copy, and there is another DB2 copy (DB2COPY2).

## DB2 Version 9.5



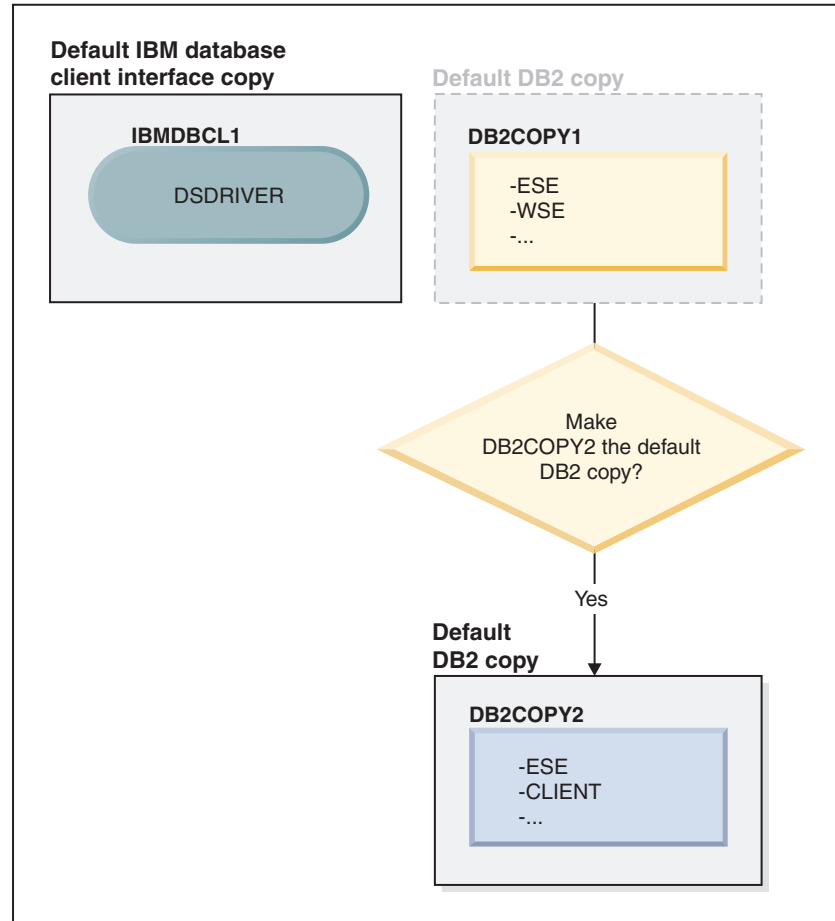
### Legend





You decide to uninstall all of the DB2 products that are part of DB2COPY1. When you attempt to uninstall the last DB2 product within DB2COPY1, because it is the default DB2 copy, the uninstall request will be unsuccessful.

Before uninstalling the last of the remaining DB2 products within the default DB2 copy, and if there is another DB2 copy on your system, you must switch the default from one DB2 copy to the other.

## DB2 Version 9.5



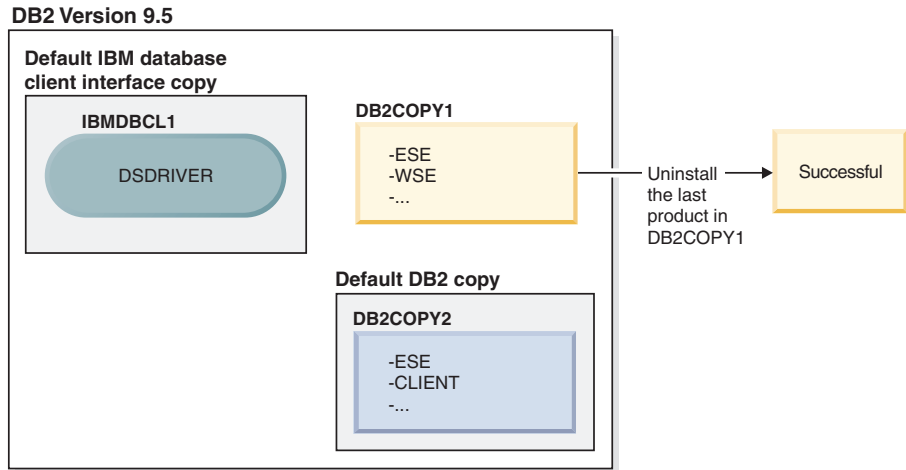
### Legend

|                                                                                     |                                            |
|-------------------------------------------------------------------------------------|--------------------------------------------|
|  | Default DB2 copy                           |
|  | Default IBM database client interface copy |
| <b>DSDRIVER</b> = IBM Data Server Driver for ODBC, CLI, and .NET                    |                                            |



To change the default, use the db2swtch command with no arguments (Windows only) to launch the Default DB2 and IBM Database Client Interface Selection wizard. The wizard will show all possible candidates when choosing a new default.

In this case, you can choose DB2COPY2 as the new default DB2 copy.

After you have made DB2COPY2 the default DB2 copy, you can request the uninstall of the last product in DB2COPY1.



**Legend**

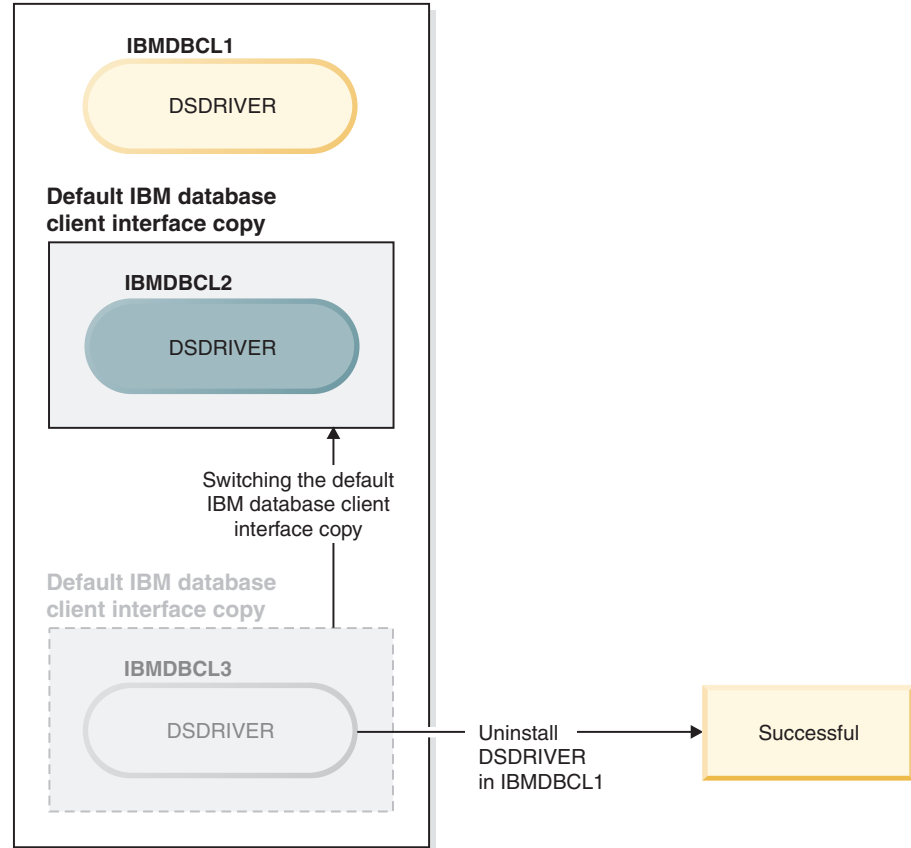
|                                                                                   |                                            |
|-----------------------------------------------------------------------------------|--------------------------------------------|
|  | Default DB2 copy                           |
|  | Default IBM database client interface copy |
| <b>DSDRIVER</b> = IBM Data Server Driver for ODBC, CLI, and .NET                  |                                            |

Since DB2COPY1 is no longer the default DB2 copy, the uninstall request is successful.


### Uninstalling IBM Data Server Driver copies when only those copies are on your machine

Over time you can have several DSDRIVERS installed. Only one IBM database client interface copy is the default. At some point you may decide to uninstall the DSDRIVER that is the default IBM database client interface copy.

## DB2 Version 9.5



### Legend

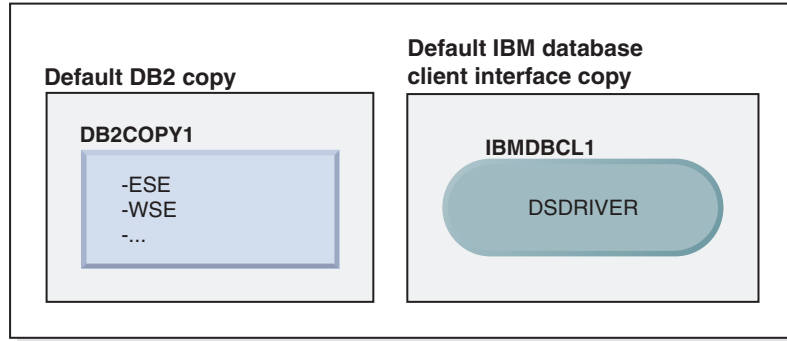
|                                                                                     |                                            |
|-------------------------------------------------------------------------------------|--------------------------------------------|
|  | Default IBM database client interface copy |
| <b>DSDRIVER</b> = IBM Data Server Driver for ODBC, CLI, and .NET                    |                                            |

When you uninstall the default IBM database client interface copy, the database manager will choose between any of the remaining DSDRIVERS and pick one of them to be the new default IBM database client interface copy. Unless you switch the default before requesting the uninstall, you will not control which DSDRIVER will become the new default. (If there is only one other DSDRIVER besides the original default, then you will know which DSDRIVER the database manager will choose. If there are several DSDRIVERS installed besides the original default, then you will not know which DSDRIVER the database manager will choose.)

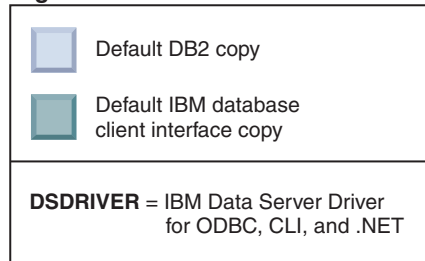
### Uninstalling IBM Data Server Driver copies when both those copies and DB2 copies are on your machine



### DB2 Version 9.5



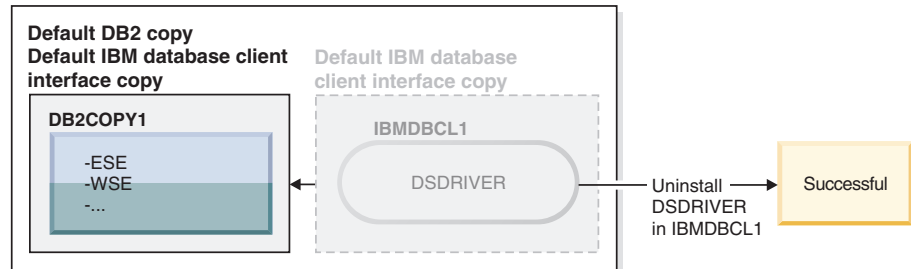
### Legend



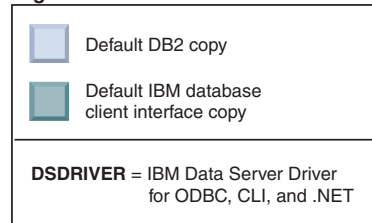
In the scenario presented here, DB2COPY1 is the default DB2 copy and IBMDBCL1 is the default IBM database client interface copy.

You decide to uninstall the DSDRIVER in IBMDBCL1.

### DB2 Version 9.5



### Legend



As part of the uninstall request, the default IBM database client interface copy is switched by the database manager automatically so that DB2COPY1 becomes both the default DB2 copy and the default IBM database client interface copy. (This would also be true if there were more than one DB2 copy on the machine.)



---

## Chapter 30. Removing DB2 fix packs

Removing a fix pack completely removes the installed DB2 product.

On Windows operating systems, after a fix pack is applied, you cannot go back to a previous fix pack unless you uninstall the current fix pack, then install the previous fix pack.

On Linux or UNIX operating systems, after a fix pack is applied, you can go back to a previous fix pack without having to uninstall the current fix pack.

To remove fix packs, you must log on with the ID that installed the fix pack.

For information on removing your DB2 fix pack, consult the appropriate DB2 fix pack readme. You can access and download the latest DB2 fix pack from the DB2 Support Web site at <http://www.ibm.com/software/data/db2/udb/support.html>.

---

### Uninstalling fix packs

For Linux and UNIX operating systems, you can go back to an earlier fix pack level by reinstalling an earlier fix pack. On Windows operating systems, after a fix pack is applied, you cannot go back to a previous fix pack unless you uninstall the current fix pack, then install the previous fix pack.

1. On Linux or UNIX operating systems, to uninstall a fix pack, use the `installFixPack` command with the force option (-f) to bypass the level check. The command must be run from the lower level fix pack image. For example:

```
./installFixPack -f level -b DB2DIR
```

where

- *level* is the lower level fix pack
  - *DB2DIR* is the location of the DB2 product that you want to force to a lower level fix pack image.
2. On Windows operating system, to uninstall a fix pack, use the Add/Remove Programs window, accessible through the Windows Control Panel. Refer to your operating system's help for more information about removing software products from your Windows operating system.



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## Chapter 31. Uninstalling DB2 Web applications

---

### Undeploying the DB2WebServices application

To uninstall the DB2WebServices application, enter the following command:

- On Linux and UNIX operating systems:  
`db2ws_undeploy.sh -user db_user -password db_password`
- On Windows operating systems:  
`db2ws_undeploy.bat -user db_user -password db_password`

where:

- *db\_user* is the user ID to use when connecting to the database.
- *db\_password* is the password to use with the user ID connecting to the database.

#### Notes on re-installing the DB2WebServices application

If the DB2WebServices application has been uninstalled and you need to re-install it, perform the following steps:

1. Go to the appropriate directory:
  - Linux and UNIX: `AppServer_install_path/DB2WebServices/bin`
  - Windows: `AppServer_install_path\DB2WebServices\bin`
2. Issue the command:
  - Linux and UNIX: `db2ws_deploy.sh -db dbname -dbuser dbuser -dbpassword dbpassword`
  - Windows: `db2ws_deploy -db dbname -dbuser dbuser -dbpassword dbpassword`

---

### Uninstalling the DB2 Embedded Application Server

If the application server is no longer required, it can be removed from your system.

The application server's uninstall program references DB2 products, therefore the DB2 server or client should not be uninstalled prior to uninstalling the application server.

- To uninstall the DB2 Embedded Application Server on Linux or UNIX operating systems:
  1. Log on to the DB2 server as **root**.
  2. Run the following command:  
`. /INSTHOME/sql1lib/db2profile`  
where *INSTHOME* is the home directory of the instance specified when you installed the DB2 Embedded Application Server.
  3. Go to the following directory:  
`APPSERVER_INSTALL_PATH/uninstall/db2appserveruninstall`  
where *APPSERVER\_INSTALL\_PATH* is the directory where you installed the DB2 Embedded Application Server.
  4. Run the following command: `db2appserveruninstall`.

5. To remove the registry entry and file system directory:
  - Change to the `db2_install_path/bin` directory.
  - To display the content of the registries, run
 

```
./db2greg -dump
```

The entry for EAS is shown below:

```
S,DB2EAS,6.1.0.7,AppServer_install_path,,,,,
```

where *AppServer\_install\_path* is the path where EAS is installed.

- Run the command:
 

```
db2greg -delservrec service=DB2EAS,version=6.1.0.7,
        installpath=AppServer_install_path
```

where *AppServer\_install\_path* is the path where EAS is installed.

- Remove the file system directory where EAS is installed.

If the installation fails, an error message is returned. All messages are written to the log file `db2appserveruninstall.log` located in directory specified by the `TEMP` environment variable.

- To uninstall the DB2 Embedded Application Server on Windows:
  1. Log on to the DB2 server as a user with **Administrator** privileges on the Windows operating system.

2. Run the following command:

```
APPSERVER_INSTALL_PATH\db2appserveruninstall.exe
```

where *APPSERVER\_INSTALL\_PATH* is the directory where you installed the DB2 Embedded Application Server.

3. Go to the following directory:

```
APPSERVER_INSTALL_PATH\uninstall\db2appserveruninstall
```

where *APPSERVER\_INSTALL\_PATH* is the directory where you installed the DB2 Embedded Application Server.

4. Run the following command: `db2appserveruninstall.exe`.
5. To remove the registry entry and file system directory:
  - Run `regedit` to remove the DB2EAS key located at **HKEY\_LOCAL\_MACHINE → SOFTWARE → IBM → DB2EAS**.
  - Remove the Windows system directory where EAS was installed.

---

## Part 8. Appendixes





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## **Appendix A. DB2 Version 9 product and packaging information**

For information about DB2 Version 9 product and packaging information, see <http://www-1.ibm.com/support/docview.wss?rs=73&uid=swg21219983>.



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## Appendix B. Overview of the DB2 technical information

DB2 technical information is available through the following tools and methods:

- DB2 Information Center
  - Topics (Task, concept and reference topics)
  - Help for DB2 tools
  - Sample programs
  - Tutorials
- DB2 books
  - PDF files (downloadable)
  - PDF files (from the DB2 PDF DVD)
  - printed books
- Command line help
  - Command help
  - Message help

**Note:** The DB2 Information Center topics are updated more frequently than either the PDF or the hard-copy books. To get the most current information, install the documentation updates as they become available, or refer to the DB2 Information Center at [ibm.com](http://ibm.com)<sup>®</sup>.

You can access additional DB2 technical information such as technotes, white papers, and IBM Redbooks<sup>®</sup> publications online at [ibm.com](http://www.ibm.com). Access the DB2 Information Management software library site at <http://www.ibm.com/software/data/sw-library/>.

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Do not use this email address to contact DB2 Customer Support. If you have a DB2 technical issue that the documentation does not resolve, contact your local IBM service center for assistance.

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## DB2 technical library in hardcopy or PDF format

The following tables describe the DB2 library available from the IBM Publications Center at [www.ibm.com/shop/publications/order](http://www.ibm.com/shop/publications/order). English DB2 Version 9.5 manuals in PDF format and translated versions can be downloaded from [www.ibm.com/support/docview.wss?rs=71&uid=swg2700947](http://www.ibm.com/support/docview.wss?rs=71&uid=swg2700947).

Although the tables identify books available in print, the books might not be available in your country or region.

Table 25. DB2 technical information

| Name                                                                                    | Form Number  | Available in print |
|-----------------------------------------------------------------------------------------|--------------|--------------------|
| <i>Administrative API Reference</i>                                                     | SC23-5842-00 | Yes                |
| <i>Administrative Routines and Views</i>                                                | SC23-5843-00 | No                 |
| <i>Call Level Interface Guide and Reference, Volume 1</i>                               | SC23-5844-00 | Yes                |
| <i>Call Level Interface Guide and Reference, Volume 2</i>                               | SC23-5845-00 | Yes                |
| <i>Command Reference</i>                                                                | SC23-5846-00 | Yes                |
| <i>Data Movement Utilities Guide and Reference</i>                                      | SC23-5847-00 | Yes                |
| <i>Data Recovery and High Availability Guide and Reference</i>                          | SC23-5848-00 | Yes                |
| <i>Data Servers, Databases, and Database Objects Guide</i>                              | SC23-5849-00 | Yes                |
| <i>Database Security Guide</i>                                                          | SC23-5850-00 | Yes                |
| <i>Developing ADO.NET and OLE DB Applications</i>                                       | SC23-5851-00 | Yes                |
| <i>Developing Embedded SQL Applications</i>                                             | SC23-5852-00 | Yes                |
| <i>Developing Java Applications</i>                                                     | SC23-5853-00 | Yes                |
| <i>Developing Perl and PHP Applications</i>                                             | SC23-5854-00 | No                 |
| <i>Developing User-defined Routines (SQL and External)</i>                              | SC23-5855-00 | Yes                |
| <i>Getting Started with Database Application Development</i>                            | GC23-5856-00 | Yes                |
| <i>Getting Started with DB2 installation and administration on Linux and Windows</i>    | GC23-5857-00 | Yes                |
| <i>Internationalization Guide</i>                                                       | SC23-5858-00 | Yes                |
| <i>Message Reference, Volume 1</i>                                                      | GI11-7855-00 | No                 |
| <i>Message Reference, Volume 2</i>                                                      | GI11-7856-00 | No                 |
| <i>Migration Guide</i>                                                                  | GC23-5859-00 | Yes                |
| <i>Net Search Extender Administration and User's Guide</i>                              | SC23-8509-00 | Yes                |
| <b>Note:</b> The content of this document is not included in the DB2 Information Center |              |                    |
| <i>Partitioning and Clustering Guide</i>                                                | SC23-5860-00 | Yes                |
| <i>Query Patroller Administration and User's Guide</i>                                  | SC23-8507-00 | Yes                |
| <i>Quick Beginnings for IBM Data Server Clients</i>                                     | GC23-5863-00 | No                 |
| <i>Quick Beginnings for DB2 Servers</i>                                                 | GC23-5864-00 | Yes                |

Table 25. DB2 technical information (continued)

| <b>Name</b>                                                                             | <b>Form Number</b> | <b>Available in print</b> |
|-----------------------------------------------------------------------------------------|--------------------|---------------------------|
| <i>Spatial Extender and Geodetic Data Management Feature User's Guide and Reference</i> | SC23-8508-00       | Yes                       |
| <i>SQL Reference, Volume 1</i>                                                          | SC23-5861-00       | Yes                       |
| <i>SQL Reference, Volume 2</i>                                                          | SC23-5862-00       | Yes                       |
| <i>System Monitor Guide and Reference</i>                                               | SC23-5865-00       | Yes                       |
| <i>Text Search Guide</i>                                                                | SC23-5866-00       | Yes                       |
| <i>Troubleshooting Guide</i>                                                            | GI11-7857-00       | No                        |
| <i>Tuning Database Performance</i>                                                      | SC23-5867-00       | Yes                       |
| <i>Visual Explain Tutorial</i>                                                          | SC23-5868-00       | No                        |
| <i>What's New</i>                                                                       | SC23-5869-00       | Yes                       |
| <i>Workload Manager Guide and Reference</i>                                             | SC23-5870-00       | Yes                       |
| <i>pureXML Guide</i>                                                                    | SC23-5871-00       | Yes                       |
| <i>XQuery Reference</i>                                                                 | SC23-5872-00       | No                        |

Table 26. DB2 Connect-specific technical information

| <b>Name</b>                                              | <b>Form Number</b> | <b>Available in print</b> |
|----------------------------------------------------------|--------------------|---------------------------|
| <i>Quick Beginnings for DB2 Connect Personal Edition</i> | GC23-5839-00       | Yes                       |
| <i>Quick Beginnings for DB2 Connect Servers</i>          | GC23-5840-00       | Yes                       |
| <i>DB2 Connect User's Guide</i>                          | SC23-5841-00       | Yes                       |

Table 27. Information Integration technical information

| <b>Name</b>                                                                                   | <b>Form Number</b> | <b>Available in print</b> |
|-----------------------------------------------------------------------------------------------|--------------------|---------------------------|
| <i>Information Integration: Administration Guide for Federated Systems</i>                    | SC19-1020-01       | Yes                       |
| <i>Information Integration: ASNCLP Program Reference for Replication and Event Publishing</i> | SC19-1018-02       | Yes                       |
| <i>Information Integration: Configuration Guide for Federated Data Sources</i>                | SC19-1034-01       | No                        |
| <i>Information Integration: SQL Replication Guide and Reference</i>                           | SC19-1030-01       | Yes                       |
| <i>Information Integration: Introduction to Replication and Event Publishing</i>              | SC19-1028-01       | Yes                       |

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## Ordering printed DB2 books

If you require printed DB2 books, you can buy them online in many but not all countries or regions. You can always order printed DB2 books from your local IBM representative. Keep in mind that some softcopy books on the *DB2 PDF Documentation DVD* are unavailable in print. For example, neither volume of the *DB2 Message Reference* is available as a printed book.

Printed versions of many of the DB2 books available on the *DB2 PDF Documentation DVD* can be ordered for a fee from IBM. Depending on where you are placing your order from, you may be able to order books online, from the IBM Publications Center. If online ordering is not available in your country or region, you can always order printed DB2 books from your local IBM representative. Note that not all books on the *DB2 PDF Documentation DVD* are available in print.

**Note:** The most up-to-date and complete DB2 documentation is maintained in the DB2 Information Center at <http://publib.boulder.ibm.com/infocenter/db2luw/v9r5>.

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- To find out whether you can order printed DB2 books online in your country or region, check the IBM Publications Center at <http://www.ibm.com/shop/publications/order>. You must select a country, region, or language to access publication ordering information and then follow the ordering instructions for your location.
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    - The IBM directory of world wide contacts at [www.ibm.com/planetwide](http://www.ibm.com/planetwide)
    - The IBM Publications Web site at <http://www.ibm.com/shop/publications/order>. You will need to select your country, region, or language to the access appropriate publications home page for your location. From this page, follow the "About this site" link.
  2. When you call, specify that you want to order a DB2 publication.
  3. Provide your representative with the titles and form numbers of the books that you want to order. For titles and form numbers, see "DB2 technical library in hardcopy or PDF format" on page 251.

---

## Displaying SQL state help from the command line processor

DB2 returns an `SQLSTATE` value for conditions that could be the result of an SQL statement. `SQLSTATE` help explains the meanings of SQL states and SQL state class codes.

To invoke SQL state help, open the command line processor and enter:

```
? sqlstate or ? class code
```

where *sqlstate* represents a valid five-digit SQL state and *class code* represents the first two digits of the SQL state.

For example, `? 08003` displays help for the 08003 SQL state, and `? 08` displays help for the 08 class code.

---

## Accessing different versions of the DB2 Information Center

For DB2 Version 9.5 topics, the DB2 Information Center URL is <http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/>

For DB2 Version 9 topics, the DB2 Information Center URL is <http://publib.boulder.ibm.com/infocenter/db2luw/v9/>

For DB2 Version 8 topics, go to the Version 8 Information Center URL at: <http://publib.boulder.ibm.com/infocenter/db2luw/v8/>

---

## Displaying topics in your preferred language in the DB2 Information Center

The DB2 Information Center attempts to display topics in the language specified in your browser preferences. If a topic has not been translated into your preferred language, the DB2 Information Center displays the topic in English.

- To display topics in your preferred language in the Internet Explorer browser:
    1. In Internet Explorer, click the **Tools** → **Internet Options** → **Languages...** button. The Language Preferences window opens.
    2. Ensure your preferred language is specified as the first entry in the list of languages.
      - To add a new language to the list, click the **Add...** button.

**Note:** Adding a language does not guarantee that the computer has the fonts required to display the topics in the preferred language.

    - To move a language to the top of the list, select the language and click the **Move Up** button until the language is first in the list of languages.  - 3. Clear the browser cache and then refresh the page to display the DB2 Information Center in your preferred language.
- To display topics in your preferred language in a Firefox or Mozilla browser:
  1. Select the button in the **Languages** section of the **Tools** → **Options** → **Advanced** dialog. The Languages panel is displayed in the Preferences window.
  2. Ensure your preferred language is specified as the first entry in the list of languages.
    - To add a new language to the list, click the **Add...** button to select a language from the Add Languages window.
    - To move a language to the top of the list, select the language and click the **Move Up** button until the language is first in the list of languages.
  3. Clear the browser cache and then refresh the page to display the DB2 Information Center in your preferred language.

On some browser and operating system combinations, you might have to also change the regional settings of your operating system to the locale and language of your choice.

---

## Updating the DB2 Information Center installed on your computer or intranet server

If you have installed the DB2 Information Center locally, you can download and install updates that IBM might make available.

Updating your locally-installed DB2 Information Center requires that you:

1. Stop the DB2 Information Center on your computer, and restart the Information Center in stand-alone mode. Running the Information Center in stand-alone mode prevents other users on your network from accessing the Information Center, and allows you to download and apply updates.
2. Use the Update feature to see what updates are available. If there are updates that you would like to install, you can use the Update feature to download and install them

**Note:** If your environment requires installing the DB2 Information Center updates on a machine that is not connected to the internet, you have to mirror the update site to a local file system using a machine that is connected to the internet and has the DB2 Information Center installed. If many users on your network will be installing the documentation updates, you can reduce the time required for individuals to perform the updates by also mirroring the update site locally and creating a proxy for the update site.

If update packages are available, use the Update feature to download the packages. However, the Update feature is only available in stand-alone mode.

3. Stop the stand-alone Information Center, and restart the DB2 Information Center on your computer.

**Note:** On Windows Vista, the commands listed below must be run as an administrator. To launch a command prompt or graphical tool with full administrator privileges, right-click on the shortcut and then select **Run as administrator**.

To update the DB2 Information Center installed on your computer or intranet server:

1. Stop the DB2 Information Center.
  - On Windows, click **Start** → **Control Panel** → **Administrative Tools** → **Services**. Then right-click on **DB2 Information Center** service and select **Stop**.
  - On Linux, enter the following command:  

```
/etc/init.d/db2icdv95 stop
```
2. Start the Information Center in stand-alone mode.
  - On Windows:
    - a. Open a command window.
    - b. Navigate to the path where the Information Center is installed. By default, the DB2 Information Center is installed in the <Program Files>\IBM\DB2 Information Center\Version 9.5 directory, where <Program Files> represents the location of the Program Files directory.
    - c. Navigate from the installation directory to the doc\bin directory.
    - d. Run the help\_start.bat file:  

```
help_start.bat
```
  - On Linux:



- a. Navigate to the path where the Information Center is installed. By default, the DB2 Information Center is installed in the /opt/ibm/db2ic/V9.5 directory.
- b. Navigate from the installation directory to the doc/bin directory.
- c. Run the help\_start script:

```
help_start
```

The systems default Web browser launches to display the stand-alone Information Center.

3. Click the Update button (🔄). On the right hand panel of the Information Center, click Find Updates. A list of updates for existing documentation displays.
4. To initiate the download process, check the selections you want to download, then click Install Updates.
5. After the download and installation process has completed, click Finish.
6. Stop the stand-alone Information Center.

- On Windows, navigate to the installation directory's doc\bin directory, and run the help\_end.bat file:

```
help_end.bat
```

**Note:** The help\_end batch file contains the commands required to safely terminate the processes that were started with the help\_start batch file. Do not use Ctrl-C or any other method to terminate help\_start.bat.

- On Linux, navigate to the installation directory's doc/bin directory, and run the help\_end script:

```
help_end
```

**Note:** The help\_end script contains the commands required to safely terminate the processes that were started with the help\_start script. Do not use any other method to terminate the help\_start script.

7. Restart the DB2 Information Center.
  - On Windows, click **Start** → **Control Panel** → **Administrative Tools** → **Services**. Then right-click on **DB2 Information Center** service and select **Start**.
  - On Linux, enter the following command:

```
/etc/init.d/db2icdv95 start
```

The updated DB2 Information Center displays the new and updated topics.

---

## DB2 tutorials

The DB2 tutorials help you learn about various aspects of DB2 products. Lessons provide step-by-step instructions.

### Before you begin

You can view the XHTML version of the tutorial from the Information Center at <http://publib.boulder.ibm.com/infocenter/db2help/>.

Some lessons use sample data or code. See the tutorial for a description of any prerequisites for its specific tasks.

## DB2 tutorials

To view the tutorial, click on the title.

**“pureXML™” in *pureXML Guide***

Set up a DB2 database to store XML data and to perform basic operations with the native XML data store.

**“Visual Explain” in *Visual Explain Tutorial***

Analyze, optimize, and tune SQL statements for better performance using Visual Explain.

---

## DB2 troubleshooting information

A wide variety of troubleshooting and problem determination information is available to assist you in using DB2 products.

### DB2 documentation

Troubleshooting information can be found in the DB2 Troubleshooting Guide or the Support and Troubleshooting section of the DB2 Information Center. There you will find information on how to isolate and identify problems using DB2 diagnostic tools and utilities, solutions to some of the most common problems, and other advice on how to solve problems you might encounter with your DB2 products.

### DB2 Technical Support Web site

Refer to the DB2 Technical Support Web site if you are experiencing problems and want help finding possible causes and solutions. The Technical Support site has links to the latest DB2 publications, TechNotes, Authorized Program Analysis Reports (APARs or bug fixes), fix packs, and other resources. You can search through this knowledge base to find possible solutions to your problems.

Access the DB2 Technical Support Web site at <http://www.ibm.com/software/data/db2/udb/support.html>

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