

DB2

IBM

DB2 Version 9
for Linux, UNIX, and Windows

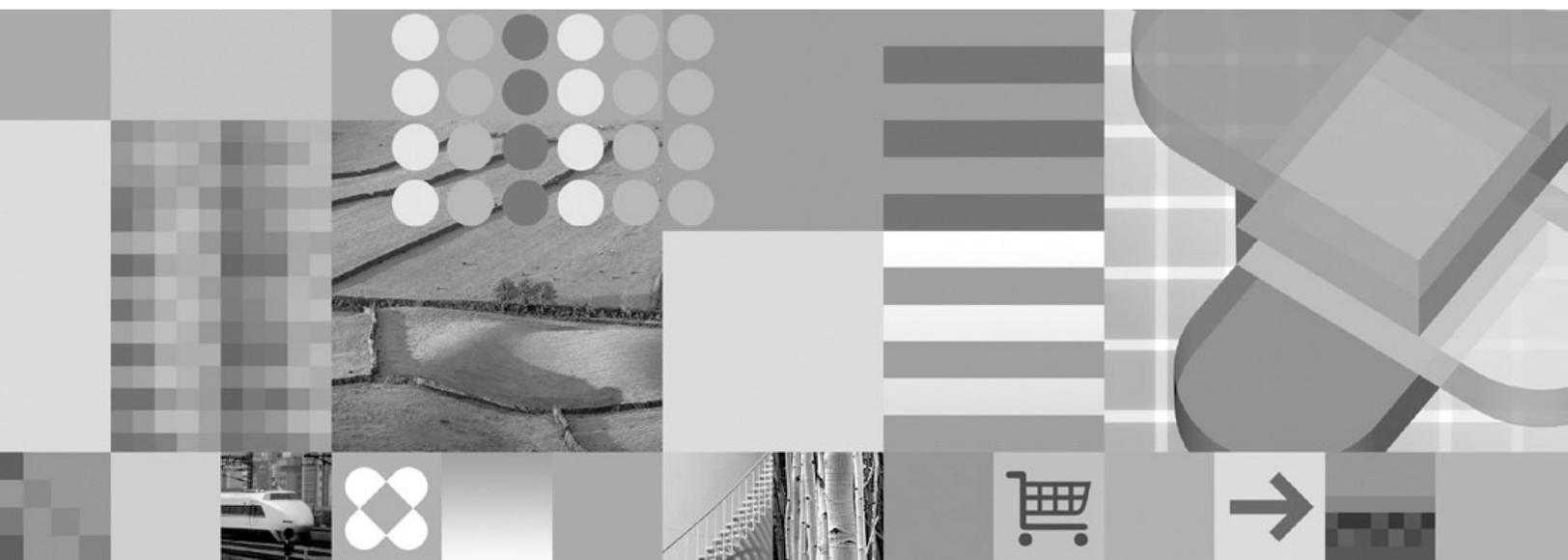


Quick Beginnings for DB2 Servers

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DB2 Version 9
for Linux, UNIX, and Windows



Quick Beginnings for DB2 Servers

Before using this information and the product it supports, be sure to read the general information under *Notices*.

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Contents

Who should read this book v

Part 1. Installing DB2 servers 1

Chapter 1. Installation overview 3

DB2 Version 9 product and packaging information 3
DB2 installation methods 3
Supported combinations of client and server versions 5
An overview of installing your DB2 product
(Windows) 6
An overview of installing your DB2 product (Linux
and UNIX) 7

Chapter 2. Installation prerequisites. 9

Disk and memory requirements 9
DB2 server installation (Windows). 10
 Installation requirements for DB2 clients and
 servers (Windows) 10
 DB2 services running on your system (Windows) 11
 Required user accounts for installation of DB2
 server products (Windows) 12
 Preparing the environment for a partitioned DB2
 server (Windows) 15
 Granting user rights (Windows) 17
 Setting up Windows elevated privileges prior to
 installing a DB2 product (Windows) 18
 DB2 system administrator group considerations
 (Windows). 20
 Fast communications manager (Windows) 21
DB2 server installation (Linux and UNIX) 21
 Installation requirements for DB2 clients and
 servers (AIX) 21
 Installation requirements for DB2 clients and
 servers (HP-UX) 23
 Installation requirements for DB2 clients and
 servers (Linux) 24
 Installation requirements for DB2 clients and
 servers (Solaris Operating System). 27
 Listing DB2 products installed on your system
 (Linux and UNIX) 29
 Fast communications manager (Linux and UNIX) 30
 DB2 users and groups (Linux and UNIX) 31
 Centralized user-management considerations
 (Linux and UNIX) 32
 Preparing to install DB2 for Linux on zSeries 33

Chapter 3. Before you install 35

Extending the directory schema (Windows). 35
IBM Software Development Kit for Java levels for
DB2 products. 35
Creating group and user IDs for a DB2 database
installation 37
Multiple CD installation (Linux and UNIX). 38

Verifying port range availability on participating
computers (Windows) 39
Kernel parameters (Linux and UNIX). 40
 Modifying kernel parameters (HP-UX) 40
 Recommended kernel configuration parameters
 (HP-UX) 41
 Modifying kernel parameters (Linux). 41
 Modifying kernel parameters (Solaris Operating
 Environment). 43
Additional partitioned database environment
preinstallation tasks (Linux and UNIX) 43
 Updating environment settings for a partitioned
 DB2 installation (AIX) 43
 Setting up a working collective to distribute
 commands to ESE workstations (AIX) 45
 Copying the contents of the DB2 product CD to
 your computer (Linux and UNIX) 46
 Verifying that NFS is running (Linux and UNIX) 47
 Verifying port range availability on participating
 computers (Linux and UNIX) 48
 Creating file system for a partitioned database
 environment (Linux and UNIX) 49
 Creating required users (Linux and UNIX) 57

Chapter 4. Installing your DB2 server product 63

Installing DB2 servers (Windows) 63
Installing DB2 servers (Linux and UNIX) 65
Setting up a partitioned database environment 68
Installing database partition servers on participating
computers using a response file (Linux and UNIX) 70
Upgrading your 32-bit DB2 instances to 64-bit
instances (Windows) 71
DB2 Version 9 co-existence and migration with DB2
UDB Version 8 (Windows) 71
Using the Default DB2 Selection wizard (Windows) 72
Applying DB2 product licenses. 73
Working with existing DB2 copies. 73

Part 2. After DB2 server installation 75

Chapter 5. After you install 77

Verifying the installation 77
 Verifying the installation using the command line
 processor (CLP) 77
 Verifying access to the registry on the
 instance-owning computer (Windows) 77
 Verifying the installation of DB2 servers using
 First Steps (Linux and Windows) 78
 Verifying a partitioned database server
 installation (Linux and UNIX) 79
 Verifying a partitioned database environment
 installation (Windows). 80
DB2 product licensing 81

DB2 product license files	81
Registering a DB2 product or feature license key using the db2licm command.	81
Registering a DB2 product or feature license key using the License Center	82
Checking DB2 license compliance	83
Upgrading a Try and Buy license	84
Changing DB2 product editions	84
Changing DB2 product editions (Linux and UNIX)	84
Changing DB2 product editions (Windows).	86
Applying fix packs	87
Setting up notification and contact lists	88
Password rules	89
Adding your user ID to the DB2ADMNS and DB2USERS user groups (Windows)	89
DB2 node configuration file - db2nodes.cfg.	90
Updating the node configuration file (Linux and UNIX)	95
Enabling communications between database partition servers (Linux and UNIX)	97
Enabling the execution of remote commands (Linux and UNIX)	98
Enabling Control Center administration (Linux)	99

Part 3. Appendixes 101

Appendix A. Language support. 103

Changing the DB2 interface language (Windows)	103
Changing the DB2 interface language (Linux and UNIX).	104
Supported DB2 interface languages	105
Language identifiers for running the DB2 Setup wizard in another language	105
Displaying the db2setup command in your national language	106

Appendix B. Uninstalling DB2 products 109

Uninstalling DB2 products (Windows)	109
Uninstalling your DB2 product (Windows)	109
Uninstalling DB2 products (Linux and UNIX)	110
Uninstalling your DB2 product (Linux and UNIX).	110
Stopping the DB2 administration server (Linux and UNIX)	111
Removing the DB2 administration server (Linux and UNIX)	111
Stopping DB2 instances (Linux and UNIX)	112
Removing DB2 instances (Linux and UNIX)	112
Removing DB2 products using the db2_deinstall or doce_deinstall command (Linux and UNIX)	113

Appendix C. Mounting the DB2 product CD-ROM (Linux and UNIX) . . . 115

Mounting the CD-ROM (AIX)	115
Mounting the CD-ROM (HP-UX)	116
Mounting the CD-ROM (Linux)	116
Mounting the CD-ROM (Solaris Operating Environment)	117

Appendix D. Installing the DB2 Information Center 119

DB2 Information Center installation options	119
Features of the DB2 Information Center	120
Installing the DB2 Information Center using the DB2 Setup wizard (Linux)	122
DB2 Information Center daemon (Linux)	123
Installing the DB2 Information Center using the DB2 Setup wizard (Windows)	124

Appendix E. DB2 Database technical information 127

Overview of the DB2 technical information	127
Documentation feedback	127
DB2 technical library in hardcopy or PDF format	128
Ordering printed DB2 books	130
Displaying SQL state help from the command line processor.	131
Accessing different versions of the DB2 Information Center	132
Displaying topics in your preferred language in the DB2 Information Center	132
Updating the DB2 Information Center installed on your computer or intranet server.	133
DB2 tutorials	135
DB2 troubleshooting information.	135
Terms and Conditions	136

Appendix F. Notices 137

Trademarks	139
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Appendix G. First Steps 141

First Steps interface	141
Deleting a Firefox browser profile	142

Index 145

Contacting IBM 149

Who should read this book

This Quick Beginnings book is intended for users responsible for the following tasks:

- Installing DB2 server products
- Migrating DB2 server products
- Setting up a DB2 server environment

For information on installing and configuring DB2 clients, see the *Quick Beginnings for DB2 clients* book.

For information on migrating a previous DB2 version, see the *Migration Guide*.

Part 1. Installing DB2 servers

Chapter 1. Installation overview

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>.

Related tasks:

- “An overview of installing your DB2 product (Linux and UNIX)” on page 7
- “An overview of installing your DB2 product (Windows)” on page 6

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 [®]	Linux [™] or UNIX [®]
DB2 Setup wizard	Yes	Yes
db2_install script	No	Yes
Response file installation	Yes	Yes
Manual installation	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 be used to create instances and response files. The DB2 Setup wizard on Linux and UNIX requires an X server to display the GUI.

db2_install script

DB2 product installations are no longer operating system packages, and 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.

The db2_install script 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.

The db2_install script allows more control over the setup process, in exchange for less control over the installation process, as it installs everything in the language(s) you specify. The DB2 Setup wizard allows you more control over the installation process by choosing exactly what gets installed using the custom installation option.

The `db2_install` script does not perform user and group creation, instance creation, or configuration. This method of installation might be preferred in cases where greater control over the setup process than the GUI installer provides is required.

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 CD location prompts from the installer in computer-readable form.

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

- Using the response file generator (Windows)
- Using the DB2 Setup wizard
- Customizing the sample response files that are provided for each DB2 product

Using the response file generator, you can create a response file that replicates an existing installation. For example, you might install a DB2 client, fully configure the client, then generate a response file to replicate the installation and configuration of the client to other computers. The response file generator is available only on Windows.

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 silent installation using the `CLIENT_IMPORT_PROFILE` keyword.

For your convenience, you can create a response file without performing an installation. This feature can be useful in an environment where a DBA does not have the authority required to perform an installation. The DBA can create a response file for the installation and provide it to the system administrator who installs the product on the DBA's behalf. On Linux and UNIX, you need root authority to generate a response file.

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 CD. The sample response files provide details about all the valid keywords for each product. They also 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 CD location prompts from the installer in computer-readable form.

Manual installation (Linux and UNIX only)

This method is an advanced installation method that is not recommended

for most users. It requires the user to manually install payload files. A payload file is a compressed tarball that contains all of the files and metadata for an installable component.

Related tasks:

- “Embedding the DB2 installation image (Linux and UNIX)” in *Installation and Configuration Supplement*
- “Installing a DB2 product manually” in *Installation and Configuration Supplement*
- “Manually installing payload files (Linux and UNIX)” in *Installation and Configuration Supplement*
- “Response file installation of DB2 overview (Linux and UNIX)” in *Installation and Configuration Supplement*
- “Response file installation of DB2 overview (Windows)” in *Installation and Configuration Supplement*

Related reference:

- “db2_install - Install DB2 product command” in *Command Reference*
- “db2cfexp - Connectivity configuration export tool command” in *Command Reference*
- “db2cfimp - Connectivity configuration import tool command” in *Command Reference*
- “db2rspgn - Response file generator command (Windows)” in *Command Reference*
- “db2setup - Install DB2 command” in *Command Reference*

Supported combinations of client and server versions

This section describes which versions of a client can connect to which versions of a server. This includes support for earlier versions and support for accessing DB2 databases on midrange and mainframe servers. For the most up-to-date information, see <http://www.ibm.com/software/data/db2/udb/sysreqs.html>

Combinations of DB2 UDB Version 8 and DB2 Version 9:

DB2 UDB Version 8 is compatible with DB2 Version 9. That is, clients from either version can access a remote server of either version. Note the following restrictions:

- There is a restriction when a DB2 client is located on the same system as a DB2 server, and they are different versions. In this case, local client-to-server connections using Interprocess Communication (IPC) are not supported. Instead, a connection can be established by treating the connection as a remote connection (called a loopback connection) using TCP/IP.

Access to DB2 Version 9 servers from DB2 UDB Version 7 clients:

Access from DB2 UDB Version 7 clients is supported but with the same restrictions as for accessing DB2 UDB Version 8 servers. Restrictions that apply to all DB2 UDB Version 7 clients include:

- DB2 UDB Version 7 clients support only SQL requests on a DB2 Version 9 server. There is no support for utility or API requests.

Additional restrictions that apply to 32-bit DB2 UDB Version 7 clients include:

- 32-bit DB2 UDB Version 7 clients support only connections to DB2 on Windows. There is no support for connecting to DB2 on other operating systems. To overcome this restriction, use a 32-bit DB2 Connect gateway.

Additional restrictions that apply to 64-bit DB2 UDB Version 7 clients include:

- 64-bit DB2 UDB Version 7 clients support only connections to DB2 on operating systems other than Windows.

Combinations of DB2 Version 9 and DB2 products on midrange and mainframe platforms:

DB2 Version 9 for Linux, UNIX, and Windows *servers* support access from the following DB2 *clients* on midrange and mainframe platforms:

- DB2 for z/OS Version 7 and Version 8.
- DB2 for iSeries Version 5.
- DB2 for VM and VSE Version 7.

DB2 Version 9 for Linux, UNIX, and Windows clients can access the following earlier versions of DB2 Connect:

- DB2 Connect Version 8.

DB2 Connect Personal Edition Version 9 can connect to the same DB2 server versions as can DB2 Version 9 clients or servers.

Related concepts:

- “About the Release Notes” in *Release notes*
- “Client-to-server communications configuration overview” in *Quick Beginnings for DB2 Clients*
- “DB2 client setup overview” in *Quick Beginnings for DB2 Clients*
- “Types of clients - DB2 Runtime Client and DB2 Client” in *Quick Beginnings for DB2 Clients*
- “Version 9 incompatibilities with previous releases and changed behaviors” in *Administration Guide: Planning*

An overview of installing your DB2 product (Windows)

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

Procedure:

To install your DB2 server product on Windows:

1. Review your DB2 product prerequisites accessible from the DB2 Setup wizard Launchpad.
2. Review DB2 migration information if applicable.
3. Install your DB2 product using the DB2 Setup wizard. DB2 Setup wizard features include:
 - A launchpad from which you can view installation notes, product prerequisites, and release notes, and learn about DB2 Version 9 features.
 - Selecting DB2 installation type (typical, compact, or custom).
 - Selecting DB2 product installation location.
 - Setting up database partitioning options.

- Setting the DB2 copy name.
- Enabling Extended Security.
- Setting the user interface and product messages. The user interface and product messages are available in several languages and are installed in the languages that you choose. By installing multiple languages, you can view the interface and messages in your preferred languages.
- Setting up the DB2 Administration Server (including DAS user setup).
- 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.
- Creating response files; you can save your installation choices in a response file for later installation, or to duplicate the installation on another computer, or to add another participating computer in a partitioned database environment.

Related concepts:

- “Migration to DB2 Version 9” in *Migration Guide*

Related tasks:

- “Notification and contact list setup and configuration” in *Administration Guide: Implementation*
- “Tools catalog database and DB2 administration server (DAS) scheduler setup and configuration” in *Administration Guide: Implementation*
- “Installing DB2 servers (Windows)” on page 63

Related reference:

- “setup - Install DB2 command” in *Command Reference*
- “UPDATE ADMIN CONFIGURATION command” in *Command Reference*
- “Disk and memory requirements” on page 9
- “Installation requirements for DB2 clients and servers (Windows)” on page 10
- “Required user accounts for installation of DB2 server products (Windows)” on page 12

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

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

Procedure:

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 Operating Environment. On all platforms, except for Linux on x86_32, the user must install a 64-bit kernel before proceeding with the installation, otherwise the installation will fail.
4. If the DB2 product CD does not automount, mount your DB2 product CD.

5. Install your DB2 product using the DB2 Setup wizard. DB2 Setup wizard features include:
 - A launchpad from which you can view installation notes and release notes, and learn about DB2 Version 9 features.
 - Selecting DB2 installation type (typical, compact, or custom).
 - Selecting DB2 product installation location.
 - Setting up database partitioning options for the DB2 instance.
 - Setting the user interface and product messages. The user interface and product messages are available in several languages and are installed in the languages that you choose. By installing multiple languages, you can view the interface and messages in your preferred languages.
 - Setting up the DB2 Administration Server (including DAS user setup).
 - 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.
 - Creating response files.

Related concepts:

- “Migration to DB2 Version 9” in *Migration Guide*

Related reference:

- “Installation requirements for DB2 clients and servers (AIX)” on page 21
- “Installation requirements for DB2 clients and servers (HP-UX)” on page 23
- “Installation requirements for DB2 clients and servers (Linux)” on page 24
- “Installation requirements for DB2 clients and servers (Solaris Operating System)” on page 27
- “db2setup - Install DB2 command” in *Command Reference*

Chapter 2. Installation prerequisites

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.

On Windows, you might require significantly more space on FAT (File Allocation Table) drives with large cluster sizes than with NTFS (New Technology File System) drives.

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

Memory requirements:

At a minimum, a DB2 database system requires 256 MB of RAM. For a system running just DB2 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 v2 (B.11.23) for Itanium-based systems require 512 MB of RAM at a minimum.
- For DB2 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.

In DB2 Version 9, the new 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, SWAP space at least twice as large as RAM is recommended.

Related concepts:

- “Self tuning memory” in *Performance Guide*

DB2 server installation (Windows)

Installation requirements for DB2 clients and servers (Windows)

For the most up-to-date prerequisite information, see

- www.ibm.com/software/data/db2/udb/sysreqs.html.

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

Table 2. Windows installation prerequisites

Operating System	Service Pack	Hardware
Windows XP Professional (32-bit)	Service Pack 2 or later	All Intel® and AMD processors capable of running the supported Windows operating systems (32-bit and 64-bit)
Windows XP Professional x64		
Windows 2003 Standard Edition (32-bit and 64-bit)	Service Pack 1 or later	
Windows 2003 Advanced Edition (32-bit and 64-bit)		
Windows 2003 Datacenter Edition (32-bit and 64-bit)		

Additional client considerations

DB2 products continue to be supported on Windows 98, Windows ME, Windows NT®, and Windows 2000 until DB2 Universal Database Version 8.1 goes out of service. For existing installations and new installations of DB2 products, upgrading to a more current operating system version of Windows (such as Windows 2003) is recommended. Version 9 clients cannot be installed on Windows 98, Windows ME, or Windows NT Server 4 operating systems. If you wish to continue running DB2 products on back level releases of Windows, you require the following maintenance levels:

- Windows NT Version 4 with Service Pack 6a or later
- Windows 2000 with Service Pack 4 or later
- Internet Explorer 4.01 Service Pack 2

Windows XP Service Pack 1 is required for running DB2 applications in either of the following environments:

- Applications that have COM+ objects using ODBC; or
- Applications that use OLE DB Provider for ODBC with OLE DB resource pooling disabled

If you are unsure about whether your application environment qualifies, then it is recommended that you install the appropriate Windows service level.

For more information about this COM+ issue, see the following Microsoft® Knowledge Base article:

- <http://support.microsoft.com/default.aspx?scid=KB;EN-US;306414>

Additional software considerations

- 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 compact install, MDAC 2.8 is not 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). 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.

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

- If you plan to use the Tivoli Storage Manager facilities for the backup and restoration of your databases, you need the Tivoli Storage Manager Client Version 4.2.0 or later.
 - For Windows 64-bit operating systems, you require the TSM client API Version 5.1.
- If you have the IBM Antivirus program installed on your operating system, it must be disabled or uninstalled to complete a DB2 installation.
- 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 5.5 and up
 - Mozilla 1.4 and up
 - Firefox 1.0 and up
 - Netscape 7.0 and up

Related concepts:

- “Support changes for 32-bit and 64-bit DB2 servers” in *Migration Guide*

Related tasks:

- “An overview of installing your DB2 product (Windows)” on page 6

Related reference:

- “IBM Software Development Kit for Java levels for DB2 products” on page 35
- “Communication protocols supported” in *Quick Beginnings for DB2 Clients*

DB2 services running on your system (Windows)

The following table lists the DB2 services that run on your system when DB2 9.1 is installed:

Table 3. DB2 Services

Service Display Name	Service Name	Description
DB2 - (db2copyname) - <instance name>	<instance name>	Allows applications to create, update, control, and manage relational databases.
DB2 Governor (db2copyname)	DB2GOVERNOR_db2copyname	Collects statistics for applications connected to DB2 databases.
DB2 Information Center Server V9.1	DB2ICSERVER_V91	Provides documentation for DB2 Universal Database™ and related DB2 products.
DB2 License Server (db2copyname)	DB2LICD_db2copyname	Monitors DB2 license compliance.
DB2 Management Service (db2copyname)	DB2MGMTSVC_db2copyname	Manages DB2 registry entries for backward compatibility purposes for the DB2 copy.
DB2 Query Patroller (db2copyname)	DB2QP_db2copyname	DB2 Query Patroller
DB2 Remote Command Server (db2copyname)	DB2REMOTECMD_db2copyname	Supports remote DB2 command execution.
DB2 Security Server (db2copyname)	DB2NTSECSEVER_db2copyname	Authenticates DB2 database users when the authentication is performed at the client computer.
DB2DAS - DB2DASXX	DB2DASXX (where XX is 00-99)	Supports local and remote database administrative requests.

Related tasks:

- “An overview of installing your DB2 product (Windows)” on page 6

Related reference:

- “Installation requirements for DB2 clients and servers (Windows)” on page 10

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 Local System 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. You can install DB2 with a user ID, but unless that user ID belongs to either the DB2ADMNS or DB2USERS group, that user ID won't be able to run any DB2 commands.

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

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 machine 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.

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

For domain accounts, to verify user IDs on the DB2 server, the installation user ID must belong to the Domain Administrators group on the domain where the accounts are going to be created.

You may also use the built-in Local System account to run the installation for all products.

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

The DB2 Administration Server (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 machine 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 Lock pages in memory privilege is required for AWE (Advanced Windowing Extensions) support. 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 machine 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.

You may also use the built-in Local System 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 Lock pages in memory privilege is required for AWE (Advanced Windowing Extensions) support. 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.

Related concepts:

- "User, user ID and group naming rules" in *Administration Guide: Implementation*

Related tasks:

- "An overview of installing your DB2 product (Windows)" on page 6
- "Setting up Windows elevated privileges prior to installing a DB2 product (Windows)" on page 18

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.

Restrictions:

Each participating computer must have the same operating system. For example, you cannot have a partitioned database system that includes both Windows 2000 and Windows Server 2003 operating systems.

Procedure:

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.
3. Ensure that each computer object that participates in the partitioned database environment has the "Trust computer for delegation" privilege flagged.
4. Ensure that all participating computers can communicate with each other using TCP/IP:

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.

- 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 `db2nchg` 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.
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

The installation program grants all of these privileges except for the Debug programs privilege.

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.

Related reference:

- “db2nchg - Change database partition server configuration command” in *Command Reference*
- “Required user accounts for installation of DB2 server products (Windows)” on page 12

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.

Prerequisites:

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

Procedure:

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

If your computer belongs to a Windows 2000 or Windows Server 2003 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.

Related concepts:

- “User, user ID and group naming rules” in *Administration Guide: Implementation*

Related reference:

- “Required user accounts for installation of DB2 server products (Windows)” on page 12

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.

Procedure for setting up a computer with elevated privileges:

This procedure uses the Windows Group Policy Editor. Instructions for using *regedit* instead are provided in additional notes.

1. Enter **gpedit.msc** at the command line.
2. Enable elevated privileges for the computer.
 - a. Click on Computer Configuration -> Administrative Templates -> Windows Components -> Windows Installer.
 - b. Enter the following Group Policy settings:
 - Enable: Always install with elevated privileges (mandatory)
 - Enable: Enable user control over installs (mandatory)
 - Enable: Disable Windows Installer. Then set **Disable Windows Installer** to *Never*. (for Windows 2003 and XP).
 - Enable: Enable user to patch elevated products (optional)
 - Enable: Enable user to use media source while elevated (optional)
 - Enable: Enable user to browse for source while elevated (optional)
3. Enable elevated privileges for the user account that will be performing the installation.

- a. Click on User Configuration → Administrative Templates → Windows Components → Windows Installer.
- b. Enter the following Group Policy settings:
 - Enable: Always install with elevated privileges (mandatory)
4. Perform setup related to the user account that will install DB2.
 - Identify the user account that will install DB2. If necessary, create that account.
 - Give that account *write* permission for the drive on which an installation is planned.
5. Optional: Complete additional steps applicable to installing fix packs:
 - Provide *read* access to the `sql\lib\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.
6. Refresh the computer's security policy in any one of the following ways:
 - Reboot the PC.
 - For Windows XP and Windows 2000: at the command line, enter `gpupdate.exe`.
 - For Windows 2000: At the command line, enter `secedit.exe / refreshpolicy {machine_policy |user_policy}`.

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.

Related concepts:

- “Authorization, privileges, and object ownership” in *Administration Guide: Implementation*

Related reference:

- “Required user accounts for installation of DB2 server products (Windows)” on page 12

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.

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). 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 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.

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
```

Related concepts:

- “System administration authority (SYSADM)” in *Administration Guide: Implementation*

Related reference:

- “sysadm_group - System administration authority group name configuration parameter” in *Performance Guide*

Fast communications manager (Windows)

The fast communications manager (FCM) provides communications support for DB2 server products. 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.

Related tasks:

- “Setting up a partitioned database environment” on page 68
- “Verifying port range availability on participating computers (Windows)” on page 39

DB2 server installation (Linux and UNIX)

Installation requirements for DB2 clients and servers (AIX)

For the most up-to-date prerequisite information, see <http://www.ibm.com/software/data/db2/udb/sysreqs.html>.

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

Table 4. AIX installation prerequisites

AIX Version	Operating System	Hardware
AIX Version 5.2.0	DB2 client is available using the 64-bit AIX kernel. DB2 Enterprise Server Edition, for either single-partition or partitioned database environment, is available with the required 64-bit AIX kernel.	One of: <ul style="list-style-type: none">• IBM RISC/6000• eServer™ pSeries®
AIX Version 5.3.0	DB2 client is available using the 64-bit AIX kernel. DB2 Enterprise Server Edition, for either single-partition or partitioned database environment, is available with the required 64-bit AIX kernel.	One of: <ul style="list-style-type: none">• IBM RISC/6000• eServer pSeries

Software considerations:

- (Clients only:) If you plan to use Kerberos Authentication, you require IBM Network Authentication Service client v1.3 or later. The NAS client is provided with the AIX Bonus CD.
- 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 requires the “IBM C++ Runtime Environment Components for AIX” which includes x1C.rte 8.0.0.4. 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/V9.1 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 list installed DB2 products and features command (db2ls) 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, look for the “Setting Up DB2 on NFS Mounted File System” white paper which will be available soon after DB2 Version 9 is made available.

Related tasks:

- “An overview of installing your DB2 product (Linux and UNIX)” on page 7

Related reference:

- “IBM Software Development Kit for Java levels for DB2 products” on page 35
- “Communication protocols supported” in *Quick Beginnings for DB2 Clients*

Installation requirements for DB2 clients and servers (HP-UX)

For the most up-to-date prerequisite information, see <http://www.ibm.com/software/data/db2/udb/sysreqs.html>.

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

Table 5. HP-UX installation prerequisites for HP-UX 11iv2

Operating System	Hardware
DB2 products can run on HP-UX 11iv2 (11.23.0505) for PA-RISC 2.x-based (PA-8x00) and Itanium-based systems with: <ul style="list-style-type: none"> • May 2005 Base Quality (QPKBASE) bundle • May 2005 Applications Quality (QPAPPS) bundle and the PHNE_32606 patch. (64-bit HP-UX kernel is required; server only)	One of: <ul style="list-style-type: none"> • HP 9000 Series 700 or 800 system • HP Integrity Series server

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 DB2 Version 9 client or server products. If the kernel configuration parameters are modified, a reboot is necessary to make the changes to `/etc/system` effective.

Software considerations:

- If you are installing the Application Development 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/V9.1` 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 list installed DB2 products and features command (db2ls) 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, look for the “Setting Up DB2 on NFS Mounted File System” white paper which will be available soon after DB2 Version 9 is made available.

Related tasks:

- “Modifying kernel parameters (HP-UX)” on page 40

Related reference:

- “Communication protocols supported” in *Quick Beginnings for DB2 Clients*
- “IBM Software Development Kit for Java levels for DB2 products” on page 35

Installation requirements for DB2 clients and servers (Linux)

For the most up-to-date prerequisite information, see <http://www.ibm.com/software/data/db2/udb/sysreqs.html>.

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

The supported operating systems for Linux include:

- Red Hat Enterprise Linux 4 (RHEL4) Update 2
- SUSE Linux Enterprise Server 9 (SLES9) Service Pack 2

To install a DB2 client or server product, the following distribution requirements, hardware, and communications prerequisites must be met:

Table 6. Linux prerequisites

Distribution Requirements	Hardware
<p>You should update your kernel configuration parameters in preparation for your Linux distribution. The default values for particular kernel parameters are not sufficient when running a DB2 database system.</p> <p>You may also have other products or applications that require Linux system resources. You should set the kernel configuration parameters based on the needs of your Linux system working environment.</p> <p>The kernel configuration parameters are set in <code>/etc/sysctl.conf</code>. See the Modifying kernel parameters (Linux) section of the DB2 Information Center.</p> <p>Refer to your operating system manual for information on setting and activating these parameters using the <code>sysctl</code> command.</p>	<p>DB2 server products are supported on:</p> <ul style="list-style-type: none"> • x86 (Intel Pentium®, Intel Xeon®, and AMD Athlon) • x86-64 (Intel EM64T and AMD64) • IA64 (Intel Itanium® 2 or higher) • POWER™ (any iSeries™ or pSeries that support Linux) • (Server only)eServer zSeries®. <ul style="list-style-type: none"> – The Database Partitioning Feature (DPF) is not supported. • (Client only)64-bit zSeries or System z9™ boxes.

Package requirements (server only):

The following tables list the package requirements for SUSE Linux and Red Hat distributions for DB2 Version 9 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). For a comparison between rsh and ssh, see the “Security issues when installing DB2” section of the *Administration Guide: Implementation*.

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. For more information on the DB2RSHCMD registry variable, see the *Performance Guide* book.

- 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.

Package requirements for Red Hat

Directory	Package name	Description
/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:

- 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 DB2 or if you want to use any DB2 graphical tools. (Available only 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/V9.1 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 list installed DB2 products and features command (db2ls) 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, look for the “Setting Up DB2 on NFS Mounted File System” white paper which will be available soon after DB2 Version 9 is made available.

Related concepts:

- “Security issues when installing the DB2 database manager” in *Administration Guide: Implementation*

Related tasks:

- “Modifying kernel parameters (Linux)” on page 41
- “Preparing to install DB2 for Linux on zSeries” on page 33

Related reference:

- “Communication protocols supported” in *Quick Beginnings for DB2 Clients*
- “IBM Software Development Kit for Java levels for DB2 products” on page 35
- “Communications variables” in *Performance Guide*

Installation requirements for DB2 clients and servers (Solaris Operating System)

For the most up-to-date prerequisite information, see <http://www.ibm.com/software/data/db2/udb/sysreqs.html>.

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

Table 7. Solaris Operating System installation prerequisites

Operating System	Hardware
DB2 client and server products are supported on the following Solaris Operating System versions: <ul style="list-style-type: none"> • Solaris 9 The following patches are also required: <ul style="list-style-type: none"> – 111711-12 – 111712-12 • Solaris 10 	Solaris UltraSPARC-based computer

Kernel configuration considerations:

A system restart is required if you update the kernel configuration parameters. The kernel configuration parameters are set in /etc/system and if these parameters require modification to accommodate the DB2 client, a reboot is necessary to make the changes to /etc/system effective. These parameters must be set before you install a DB2 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 Application Development 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

"Recommended & 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 Java™2 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/v9.1` 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 list installed DB2 products and features command (`db2ls`) 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, look for the “Setting Up DB2 on NFS Mounted File System” white paper which will be available soon after DB2 Version 9 is made available.

Related tasks:

- “Modifying kernel parameters (Solaris Operating Environment)” on page 43

Related reference:

- “Communication protocols supported” in *Quick Beginnings for DB2 Clients*
- “IBM Software Development Kit for Java levels for DB2 products” on page 35

Listing DB2 products installed on your system (Linux and UNIX)

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

Prerequisites:

At least one DB2 Version 9 product must already be installed for a symbolic link to the **db2ls** command to be available in /usr/local/bin directory.

Restrictions:

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. Any existing scripts containing a native installation utility that you use to interface and query with DB2 installations will need to change.

You *cannot* use the **db2ls** command on Windows operating systems.

Procedure:

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
- Installation date listing when the DB2 product was last modified.

To list information about DB2 products or features in a particular installation path the *q* parameter must be specified:

```
db2ls -q -b baseInstallDirectory
```

where

- *q* specifies you are querying a product or feature. This parameter is mandatory. If a DB2 Version 8 product is queried, a blank value is returned.
- *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, 9.1.0.0
 - 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.

Related concepts:

- "Multiple DB2 copies on the same computer (Linux and UNIX)" in *Installation and Configuration Supplement*

Related tasks:

- "Installing a DB2 product using the db2_install or doce_install command (Linux and UNIX)" in *Installation and Configuration Supplement*
- "Removing DB2 products using the db2_deinstall or doce_deinstall command (Linux and UNIX)" on page 113
- "Using the Default DB2 Selection wizard (Windows)" on page 72

Related reference:

- "db2ls - List installed DB2 products and features command" in *Command Reference*
- "Multiple DB2 copies roadmap" in *Administration Guide: Implementation*

Fast communications manager (Linux and UNIX)

The fast communications manager (FCM) provides communications support for DB2 server products. 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 daemons updates information (that you can query with

the database system monitor) and cause 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 *fcnum_buffers* database manager configuration parameter and the number of FCM channels with the *fcnum_channels* database manager configuration parameter. The *fcnum_buffers* and *fcnum_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.

Related tasks:

- “Enabling communications between database partition servers (Linux and UNIX)” on page 97
- “Setting up a partitioned database environment” on page 68

DB2 users and groups (Linux and UNIX)

The DB2 Setup wizard creates the following users and groups automatically (if needed) during the installation of your DB2 product. If you are using the DB2 Setup wizard, you do not need to manually create these users and groups. Three users and three groups are used to operate DB2 on Linux and UNIX.

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, DB2 will try to create another user name, `db2inst2`. If that user name also exists, DB2 will keep searching through user names `db2inst3`, `db2inst4`, and so on until it identifies the first user name that is not already an existing user on the system as the default instance owner ID. If you choose to proceed this user would be created by DB2. 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 on your system. Default user is `dasusr1` and 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.

This user does not contain any databases and there is only one administration server per machine. For example, one administration server can service multiple database instances.

Related tasks:

- “Creating required users for a DB2 server installation in a partitioned database environment (AIX)” on page 57
- “Creating required users for a DB2 server installation in a partitioned database environment (HP-UX)” on page 58
- “Creating required users for a DB2 server installation in a partitioned database environment (Linux)” on page 60
- “Creating required users for a DB2 server installation in a partitioned database environment (Solaris Operating Environment)” on page 61

Centralized user-management considerations (Linux and UNIX)

In environments that include security software, such as NIS (Network Information Services) or NIS+, there are some installation considerations. The DB2 installation scripts attempt to update objects that are under the control of the security packages, such as users and groups, and will not be able to do so if NIS or NIS+ is being used for user management.

At instance creation, without a security component present, 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 will not if NIS/NIS+ is controlling the group), 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.

If the DB2 Setup wizard detects NIS on your computer, you are not given the option of creating new users during the installation. Instead, you must choose existing users.

Consider the following restrictions if you are using NIS or NIS+:

- Groups and users must be created on the NIS server before running the DB2 Setup wizard.
- Secondary groups must be created for the DB2 instance owner and the DB2 Administration Server on the NIS server. You must then add the primary group of the instance owner to the secondary DB2 Administration Server group. Likewise, you must add the primary DB2 Administration Server group to the secondary group for the instance owner.
- On a partitioned DB2 database system, before you create an instance, there must be an entry for the instance in the `etc/services` file. For example, if you want to create an instance for the user `db2inst1`, you require an entry similar to the following:

```
DB2_db2inst1    50000/tcp
```

Related tasks:

- “Installing DB2 servers (Linux and UNIX)” on page 65

Related reference:

- “Installation requirements for DB2 clients and servers (AIX)” on page 21
- “Installation requirements for DB2 clients and servers (HP-UX)” on page 23
- “Installation requirements for DB2 clients and servers (Linux)” on page 24
- “Installation requirements for DB2 clients and servers (Solaris Operating System)” on page 27

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 CD 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 CD over NFS to access the installation image:

To use the product CD on a Linux operating system:

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

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

where *nfsservername* represents the hostname of the NFS server, *cdrom* 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 CD 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 CD.

Related tasks:

- “Installing a DB2 Connect server product (Linux)” in *Quick Beginnings for DB2 Connect Servers*
- “Mounting the CD-ROM (Linux)” on page 116

Chapter 3. Before you install

Extending the directory schema (Windows)

If you plan to use the Lightweight Directory Access Protocol (LDAP) directory server feature with Windows 2000 or 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.

Prerequisites:

Your Windows user account must have Schema Administration authority.

Procedure:

To extend the directory schema:

1. Log onto the domain controller.
2. Run the **db2schex.exe** program from the installation CD 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 CD drive letter.

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

Related reference:

- “Installation requirements for DB2 clients and servers (Windows)” on page 10
- “CATALOG LDAP DATABASE command” in *Command Reference*
- “REGISTER command” in *Command Reference*

IBM Software Development Kit for Java levels 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 DB2 Runtime client.

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

Operating System Platform	SDK for Java level
Windows x86	SDK 5 Service Release 1
Windows x64	SDK 5 Service Release 1
Windows IA64	SDK 1.4.2 Service Release 3
AIX 5	SDK 5 Service Release 1
Solaris Operating Environment	SDK 1.4.2_07
HP-UX for PA-RISC 2	HP SDK for J2SE HP-UX 11i platform, adapted by IBM for IBM Software, Version 1.4.2
HP-UX for Itanium(R)-based systems	HP SDK for J2SE HP-UX 11i platform, adapted by IBM for IBM Software, Version 1.4.2
Linux on x86	SDK 5 Service Release 1
Linux on IPF	SDK 1.4.2 Service Release 3
Linux on AMD64/EM64T	SDK 5 Service Release 1
Linux on zSeries	SDK 5 Service Release 1
Linux on POWER	SDK 5 Service Release 1

Notes:

1. With the exception of HP-UX, Linux on IPF, Solaris Operating Environment, and Windows IA64, 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>

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 Linux on IPF:
 - only 64-bit applications and Java external routines are supported
5. On all supported platforms (except Windows x86, Linux on x86, and Linux on IPF):
 - 32-bit applications are supported
 - 32-bit Java external routines are not supported
 - 64-bit applications and Java external routines are supported

Related tasks:

- “Installing DB2 servers (Linux and UNIX)” on page 65

- “Installing DB2 servers (Windows)” on page 63

Creating group and user IDs for a DB2 database installation

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 8. 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.

Prerequisites:

You must have root authority to create users and groups.

Procedure:

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* parameter from the command line to set the password.

AIX 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

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 To create groups on Linux, 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

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
```

Related concepts:

- “General naming rules” in *Administration Guide: Implementation*

Related tasks:

- “Installing a DB2 product manually” in *Installation and Configuration Supplement*

Multiple CD installation (Linux and UNIX)

Most DB2 product installation images are contained on a single CD. However, on supported Linux or UNIX platforms, some DB2 product installation image sizes could span more than a single CD, requiring multiple CDs to install the product.

If you are installing a non-English version of a DB2 product, you will need an additional CD that contains national language support files. DB2 product files specific to a language are now grouped on one or more CDs called a National Language Package. There is a National Language Package for each supported Linux and UNIX operating system. Each CD contains all supported languages for all products except the DB2 Information Center (DOCE). An installation using a National Language Package is only supported using the DB2 Setup wizard or by using a response file, and only after a product has been installed. You *cannot* manually install a National Language Package using the **db2_install** command.

When installing a DB2 product, or a National Language Package, the installation image can be accessed either interactively or from a filesystem:

- To access the installation image interactively, you must insert the CDs when prompted.
- To access the installation image from a filesystem, prior to installing a DB2 product you must copy the installation image from the CDs to a filesystem. Then, during installation, specify the location of the filesystem.

Multiple CD installation support is not required for DB2 Version 9 on Windows.

If you are copying the installation images from physical CDs, the CD label contains a label name. For example, if you are installing the Enterprise Server Edition, the label name is ese1. When the installation image from the CD is copied to a filesystem, the installation image is placed in a directory structure such as ese/disk1. Similarly, when an additional CD is required, for example a National Language Package with a label name such as nlpack2, the installation image is copied to a directory structure such as nlpack/disk2. When the subdirectories are in the same directory, the installer is able to automatically find the installation images without prompting. This is referred to as automatic discovery.

If you are downloading installation images from the DB2 service site <http://www.ibm.com/software/data/db2/udb/support.html>, untar the downloaded images into the same directory. This will create the subdirectories in the same directory, and allows the installer to automatically find the installation images without prompting. As in the previous example of copying the installation images from physical CDs, if you downloaded installation images for Enterprise Server Edition and a National Language Package, subdirectories such as ese and nlpack allow the installer to find the installation images automatically without prompting.

Related tasks:

- “An overview of installing your DB2 product (Linux and UNIX)” on page 7
- “Installing DB2 servers (Linux and UNIX)” on page 65

Related reference:

- “National language versions” in *Administration Guide: Planning*
- “Response file keywords (Windows and UNIX)” in *Installation and Configuration Supplement*

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.

Procedure:

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.

Related concepts:

- “Fast communications manager (Windows)” on page 21

Related reference:

- “DB2 node configuration file - db2nodes.cfg” on page 90

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.

Prerequisites:

You must have root authority to modify kernel parameters.

Procedure:

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.

Related reference:

- “db2osconf - Utility for kernel parameter values command” in *Command Reference*

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.

Related tasks:

- “Modifying kernel parameters (HP-UX)” on page 40

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. DB2 automatically raises the IPC limits where necessary based on the needs of the DB2 database system. However, it may be more practical to set the limits permanently on your Linux system if you have products or applications other than a DB2 database system.

Prerequisites:

You must have root authority to modify kernel parameters.

Procedure:

To update kernel parameters:

Red Hat and SUSE Linux

The following information can be used to determine if there are any necessary changes required for your system.

The following is the output from the **ipcs -l** command. Comments have been added following the `//` to show what the parameter names are.

```
# ipcs -l

----- Shared Memory Limits -----
max number of segments = 4096           // SHMMNI
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.

For SHMMAX, the minimum required on x86 systems would be 268435456 (256 MB) and for 64-bit systems, it would be 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 the physical memory as specified for your computer. For instance, if you have a computer system with 16 GB of memory to be used primarily for DB2, then 90% of 16 GB is 14.4 GB divided by 4 KB (the base page size) is 3774873. 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 connections allowed (MAXAGENTS) 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 on Server systems.

To modify these kernel parameters, we need to edit the `/etc/sysctl.conf` file. If this file does not exist, it should be created. The following lines are examples of what should be placed into the file:

```

kernel.sem=250 256000 32 1024
#Example shmax 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

```

Run `sysctl` with `-p` parameter to load in `sysctl` settings from the default file `/etc/sysctl.conf`.

```
sysctl -p
```

To make the changes effective after every reboot, `boot.sysctl` needs to be active on SUSE Linux. On Red Hat, the `rc.sysinit` initialization script will read the `/etc/sysctl.conf` file automatically.

Related tasks:

- “Installing DB2 servers (Linux and UNIX)” on page 65

Related reference:

- “Installation requirements for DB2 clients and servers (Linux)” on page 24

Modifying kernel parameters (Solaris Operating Environment)

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.

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.

Prerequisites:

You must have root authority to modify kernel parameters.

Procedure:

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.

Related reference:

- “`db2osconf` - Utility for kernel parameter values command” in *Command Reference*

Additional partitioned database environment preinstallation 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.

Procedure:

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:


```
lspgs -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

We recommend that the paging space available 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 X # of computers in the instance

We recommended that you 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.

Related tasks:

- “Setting up a partitioned database environment” on page 68

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 administrating a partitioned database system on AIX, to enable you quickly execute the same commands on all the computers in your environment with less opportunity for error.

Prerequisites:

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.

Procedure:

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 this file 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/6000 SP 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
```

Related tasks:

- “Verifying that NFS is running (Linux and UNIX)” on page 47

Copying the contents of the DB2 product CD to your computer (Linux and UNIX)

This task describes the steps for copying the contents of your DB2 product CD to the shared DB2 home file system.

Copying the contents of the DB2 product CD is a step unique to partitioned database installations. If you are installing DB2 to multiple computers simultaneously, installing from hard disk is significantly faster than installing from the product CD.

This method is recommended for any system that includes more than four computers.

The alternative is to NFS mount the product CD file system from each computer. You may want to mount the product CD from each computer if you do not have enough disk space on the DB2 home file system or if you are installing on fewer than four computers.

Procedure:

To mount the DB2 product CD and copy its contents:

1. Create a directory on your /db2home file system for the DB2 product CD:
`mkdir /db2home/db2cdrom`
2. Copy the contents of the product CD to directory that you created:
`cp -R /cdrom /db2home/db2cdrom`

Related tasks:

- “Installing DB2 servers (Linux and UNIX)” on page 65

Related reference:

- “Installation requirements for DB2 clients and servers (AIX)” on page 21
- “Installation requirements for DB2 clients and servers (HP-UX)” on page 23
- “Installation requirements for DB2 clients and servers (Linux)” on page 24
- “Installation requirements for DB2 clients and servers (Solaris Operating System)” on page 27

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.

Prerequisites:

NFS must be running on each computer.

Procedure:

To verify that NFS is running on each computer:

AIX 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 Environment

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 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.

Related tasks:

- “Setting up a partitioned database environment” on page 68

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.

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.

Prerequisites:

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

Procedure:

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.

Related concepts:

- “Fast communications manager (Linux and UNIX)” on page 30

Related reference:

- “DB2 node configuration file - db2nodes.cfg” on page 90

Creating file system for a partitioned database environment (Linux and UNIX)

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 1 GB in size or greater. Later installation instruction will ask that you copy the contents of the DB2 product CD to a directory on your DB2 home file system. The DB2 product CD will temporarily occupy approximately 700 MB of space. A DB2 instance will require at least 50 MB of space. If you do not have 1 GB of free space, you can mount the DB2 product CD from each participating computer as an alternative to copying the contents to disk.

Prerequisites:

You must have:

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

Procedure:

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 CD 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, we recommend 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 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. We recommend 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.

Related tasks:

- “Copying the contents of the DB2 product CD to your computer (Linux and UNIX)” on page 46
- “Setting up a partitioned database environment” on page 68

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 1 GB in size or greater. Later installation instruction will ask that you copy the contents of the DB2 product CD to a directory on your DB2 home file system. The DB2 product CD

will temporarily occupy approximately 700 MB of space. A DB2 instance will require at least 50 MB of space. If you do not have 1 GB of free space, you can mount the DB2 product CD from each participating computer as an alternative to copying the contents to disk.

Prerequisites:

You must have root authority to create a file system.

Procedure:

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. We recommend that you set this field to **soft**.

The remaining fields can be left to the default settings.
11. Click **OK**.
12. Log out.

Related tasks:

- “Copying the contents of the DB2 product CD to your computer (Linux and UNIX)” on page 46
- “Setting up a partitioned database environment” on page 68

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.

Procedure:

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/exportfs` 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/exportfs -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
```

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.

Related tasks:

- “Copying the contents of the DB2 product CD to your computer (Linux and UNIX)” on page 46
- “Setting up a partitioned database environment” on page 68

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

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 1 GB in size or greater. Later installation instructions will ask that you copy the contents of the DB2 product CD to a directory on your DB2 home file system. The DB2 product CD will temporarily occupy approximately 700 MB of space. A DB2 instance will require at least 50 MB of space. If you do not have 1 GB of free space, you can mount the DB2 product CD 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 a Solaris Operating Environment system. If you want to use a product, such as Veritas, to create the file system, refer to the product’s documentation.

Prerequisites:

You must have root authority to create a file system.

Procedure:

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.

Related tasks:

- “Copying the contents of the DB2 product CD to your computer (Linux and UNIX)” on page 46
- “Setting up a partitioned database environment” on page 68

Creating required users (Linux and UNIX)

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 9. Required users and groups (AIX)

Required user	User name	Group name
Instance owner	db2inst1	db2iadm1
Fenced user	db2fenc1	db2fadm1
Administration server user	dasusr1	dasadm1

If the 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 Administration server on the instance-owning computer, then this 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 NIS/NIS+ or similar security software, see *NIS/NIS+ considerations* before creating users and groups. Additional steps may be required to when defining DB2 users and groups.

Restrictions:

The user names you create must conform to both your operating system’s naming rules, and those of DB2.

Procedure:

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 user that will execute UDFs or stored procedures (for example, db2fadm1), and the 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. For our example, perform this task on ComputerB, ComputerC, and ComputerD.

Related tasks:

- "Setting up a partitioned database environment" on page 68

Related reference:

- "Centralized user-management considerations (Linux and UNIX)" on page 32

Creating required users for a DB2 server installation in a partitioned database environment (HP-UX)

Three users and groups are required to operate DB2. 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 10. Required users and groups

Required user	User name	Group name
Instance owner	db2inst1	db2iadm1
Fenced user	db2fenc1	db2fadm1
Administration server user	dasusr1	dasadm1

If an existing user is used as the Administration server user, this user must also exist on all the participating computers before installation. If you use the DB2 Setup wizard to create a new user for the Administration server on the instance owning computer, then this user will also be created (if necessary) during the response file installations on the participating computers. If the user already exists on the participating computers, it must have the same primary group.

Prerequisites:

- You must root authority to create users and groups.
- If you manage users and groups with NIS/NIS+ or similar security software, see *NIS/NIS+ considerations* before creating users and groups. Additional steps may be required to when defining DB2 users and groups.

Restrictions:

The user names you create must conform to both your operating system’s naming rules, and those of DB2.

Procedure:

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 user that will execute UDFs or stored procedures (for example, db2fadm1), and the 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. For our example, perform this task on ComputerB, ComputerC, and ComputerD.

Related tasks:

- “Setting up a partitioned database environment” on page 68

Related reference:

- “Centralized user-management considerations (Linux and UNIX)” on page 32

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 11. Required users and groups

Required user	user name	group name
Instance owner	db2inst1	db2iadm1
Fenced user	db2fenc1	db2fadm1
Administration server user	dasusr1	dasadm1

If an existing user is used as the Administration server user, this user must also exist on all the participating computers before installation. If you use the DB2 Setup wizard to create a new user for the Administration server on the instance owning computer, then this user will also be created (if necessary) during the response file installations on the participating computers. If the user already exists on the participating computers, it must have the same primary group.

Prerequisites:

- You must have root authority to create users and groups.
- If you manage users and groups with NIS/NIS+ or similar security software, see *NIS/NIS+ considerations* before creating users and groups. Additional steps may be required when defining DB2 users and groups.

Restrictions:

The user names you create must conform to both your operating system’s naming rules, and those of DB2.

Procedure:

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 user that will execute UDFs or stored procedures (for example, db2fadm1), and the 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. For our example, perform this task on ComputerB, ComputerC, and ComputerD.

Related tasks:

- "Setting up a partitioned database environment" on page 68

Related reference:

- "Centralized user-management considerations (Linux and UNIX)" on page 32

Creating required users for a DB2 server installation in a partitioned database environment (Solaris Operating Environment)

Three users and groups are required to operate DB2. 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 12. Required users and groups

Required user	user name	group name
Instance owner	db2inst1	db2iadm1
Fenced user	db2fenc1	db2fadm1
Administration server user	dasusr1	dasadm1

If an existing user is used as the Administration server user, this user must also exist on all the participating computers before installation. If you use the DB2 Setup wizard to create a new user for the Administration server on the instance owning computer, then this user will also be created (if necessary) during the response file installations on the participating computers. If the user already exists on the participating computers, it must have the same primary group.

Prerequisites:

- You must have root authority to create users and groups.

- If you manage users and groups with NIS/NIS+ or similar security software, see *NIS/NIS+ considerations* before creating users and groups.

Restrictions:

The user names you create must conform to both your operating system's naming rules, and those of DB2.

Procedure:

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 user that will execute UDFs or stored procedures (for example, db2fadm1), and the 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 -g db2iadm1 -d /db2home/db2inst1 -m db2inst1 passwd mypasswd
useradd -g db2fadm1 -d /db2home/db2fenc1 -m db2fenc1 passwd mypasswd
useradd -g dbasgrp -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. For our example, perform this task on ComputerB, ComputerC, and ComputerD.

Related tasks:

- "Setting up a partitioned database environment" on page 68

Related reference:

- "Centralized user-management considerations (Linux and UNIX)" on page 32

Chapter 4. Installing your DB2 server product

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 2000 or Windows Server 2003 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.
- 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 is defined with the code set UTF-8 and that has only one database partition.

Procedure:

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. Insert your DB2 product CD 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 CD 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 may want to review the installation prerequisites and release notes for late-breaking information.
4. 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, or to install an add-on product.
 - Click **Migrate** to migrate an existing DB2 Version 8 copy.
5. 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 `x:\Program Files\IBM\sql1lib` directory, where `x`: represent the drive letter of the drive where you have installed your DB2 product.

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-ProductAbbr-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 memory limits and the DATABASE_MEMORY configuration parameter:

If you are installing DB2 Express Edition or DB2 Express-C Edition on a system that has more memory than the maximum memory limit of 4GB, as outlined in the terms and conditions of the product, you need to explicitly set the `DATABASE_MEMORY` configuration parameter to 4GB or less, so that the Self Tuning Memory Manager will work within your licensed memory limits.

Note: If you have more than one database on that server, the sum of all database memory usage cannot exceed 4GB.

You can use the Control Center or the **UPDATE DATABASE CONFIGURATION** command to make this change. For example, to set the `DATABASE_MEMORY` limit to 4GB, enter the following command:

```
DB2 UPDATE DATABASE CONFIGURATION using DATABASE_MEMORY 1000000 IMMEDIATE;  
CONNECT RESET;
```

Also, when using the Configuration Advisor to assist you in configuring the performance of your database, you need to set the **Target Memory** on the **Server** page to a percentage of your total system memory that will ensure you stay under the 4GB memory limit.

Related concepts:

- “About the Release Notes” in *Release notes*
- “DB2 database object naming rules” in *Administration Guide: Implementation*
- “DB2 Information Center installation options” on page 119

Related tasks:

- “Notification and contact list setup and configuration” in *Administration Guide: Implementation*
- “Tools catalog database and DB2 administration server (DAS) scheduler setup and configuration” in *Administration Guide: Implementation*
- “Migrating a DB2 server (Windows)” in *Migration Guide*
- “Setting up a partitioned database environment” on page 68
- “Using the Default DB2 Selection wizard (Windows)” on page 72

Related reference:

- “UPDATE ADMIN CONFIGURATION command” in *Command Reference*
- “Multiple DB2 copies roadmap” in *Administration Guide: Implementation*
- “Disk and memory requirements” on page 9
- “Installation requirements for DB2 clients and servers (Windows)” on page 10
- “Language identifiers for running the DB2 Setup wizard in another language” on page 105

Installing DB2 servers (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.

Prerequisites:

Before you start the DB2 Setup wizard:

- Ensure that your system meets installation, memory, and disk requirements.
- You must have root authority to perform the installation.
- The DB2 product image must be available.
- 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 NIS/NIS+ or similar security software is used in your environment, you must manually create required DB2 users before you start the DB2 Setup wizard. Refer to the referenced Centralized user-management considerations topic before you begin.

Restrictions:

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.

Procedure:

To start the DB2 Setup wizard:

1. Log on to the system as a user with root authority.
2. Change to the directory where the DB2 product CD is mounted by entering the following command:

```
cd /cdrom
```

where */cdrom* represents mount point of the DB2 product CD.

3. 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:

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

- c. Change directory:

```
cd ./product/disk1
```

4. Enter the **./db2setup** command from the directory where the product image resides to start the DB2 Setup wizard.
5. 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.
6. 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.

Your DB2 product will be installed, by default, in one of the following directories:

AIX, HP-UX, Solaris Operating Environment

```
/opt/IBM/db2/V9.1
```

Linux /opt/ibm/db2/V9.1

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.

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 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 32-bit, 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 memory limits and the DATABASE_MEMORY configuration parameter:

If you are installing DB2 Express Edition or DB2 Express-C Edition on a system that has more memory than the maximum memory limit of 4GB, as outlined in the terms and conditions of the product, you need to explicitly set the DATABASE_MEMORY configuration parameter to 4GB or less, so that the Self Tuning Memory Manager will work within your licensed memory limits.

Note: If you have more than one database on that server, the sum of all database memory usage cannot exceed 4GB.

You can use the Control Center or the **UPDATE DATABASE CONFIGURATION** command to make this change. For example, to set the DATABASE_MEMORY limit to 4GB, enter the following command:

```
DB2 UPDATE DATABASE CONFIGURATION using DATABASE_MEMORY 1000000 IMMEDIATE;  
CONNECT RESET;
```

Also, when using the Configuration Advisor to assist you in configuring the performance of your database, you need to set the **Target Memory** on the **Server** page to a percentage of your total system memory that will ensure you stay under the 4GB memory limit.

Related concepts:

- “DB2 Information Center installation options” on page 119
- “DB2 database object naming rules” in *Administration Guide: Implementation*

Related tasks:

- “Notification and contact list setup and configuration” in *Administration Guide: Implementation*
- “Tools catalog database and DB2 administration server (DAS) scheduler setup and configuration” in *Administration Guide: Implementation*
- “Migrating a DB2 server (Linux and UNIX)” in *Migration Guide*

Related reference:

- “Centralized user-management considerations (Linux and UNIX)” on page 32
- “UPDATE ADMIN CONFIGURATION command” in *Command Reference*
- “Multiple DB2 copies roadmap” in *Administration Guide: Implementation*

Setting up a partitioned database environment

This topic describes how to set up a partitioned database environment. 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 Database Partitioning Feature. 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 Database Partitioning Feature (DPF) of ESE, you must have a DPF license key in addition to the ESE license key.

Prerequisites:

- During instance creation, a number of ports equal to the number of participating DB2 database servers that the instance is capable of supporting 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 (see table below). For a comparison between rsh and ssh, see the "Security issues when installing DB2" section of the *Administration Guide: Implementation*.

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. For more information on the `DB2RSHCMD` registry variable, see the *Performance Guide* book.

Restrictions:

The use of XML features prohibits later use of the Data Partitioning Feature (DPF).

Procedure:

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.
 - 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 product source code 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 -r 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 -r c:\resp_files\PROD_ESE_addpart.rsp
```

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

Related tasks:

- “Creating a DB2 home file system for a partitioned database system (HP-UX)” on page 51
- “Creating a file system for a partitioned DB2 server (Linux)” on page 53
- “Creating a file system for a partitioned DB2 server (Solaris Operating Environment)” on page 55
- “Creating a DB2 home file system for a partitioned database system (AIX)” on page 49
- “Creating required users for a DB2 server installation in a partitioned database environment (AIX)” on page 57

- “Creating required users for a DB2 server installation in a partitioned database environment (HP-UX)” on page 58
- “Creating required users for a DB2 server installation in a partitioned database environment (Linux)” on page 60
- “Creating required users for a DB2 server installation in a partitioned database environment (Solaris Operating Environment)” on page 61
- “Installing database partition servers on participating computers using a response file (Linux and UNIX)” on page 70
- “Installing DB2 servers (Linux and UNIX)” on page 65
- “Installing DB2 servers (Windows)” on page 63
- “Updating environment settings for a partitioned DB2 installation (AIX)” on page 43

Related reference:

- “DB2 node configuration file - db2nodes.cfg” on page 90

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.

Procedure:

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 CD-ROM:

```
cd /db2home/db2cdrom
```

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.

Related tasks:

- “Installing the DB2 Information Center using the DB2 Setup wizard (Linux)” on page 122
- “Setting up a partitioned database environment” on page 68

Upgrading your 32-bit DB2 instances to 64-bit instances (Windows)

DB2 32-bit and 64-bit instances cannot exist on the same system. Any 32-bit instances will be removed when you install any DB2 Version 9 64-bit database product.

You cannot install a 64-bit DB2 Version 9 copy on a system with multiple 32-bit DB2 Version 9 copies.

Procedure:

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.

Related tasks:

- “Listing instances” in *Administration Guide: Implementation*

Related reference:

- “db2iupdt - Update instances command” in *Command Reference*

DB2 Version 9 co-existence and migration with DB2 UDB Version 8 (Windows)

DB2 Version 9 on Windows introduces the ability to install multiple copies of DB2 servers on the same system. Each DB2 installation copy can either be at the same level or at a different level of DB2.

When installing a DB2 product on a machine that already has a DB2 Version 9 copy installed, the “Work with Existing” window appears, which provides a list of DB2 installations to work with. Through this interface, you can install a new DB2 copy or work with and update an existing DB2 copy.

Installing DB2 Version 9 on a machine with an existing DB2 UDB Version 8 copy:

Co-existence with a DB2 UDB Version 8 copy does have some restrictions:

- The DB2 UDB Version 8 DAS cannot administer DB2 Version 9 installations. A DB2 Version 9 DAS can administer both DB2 Version 9 and DB2 UDB Version 8 instances.
- The DB2 UDB Version 8 must always be the default DB2 copy on the physical machine.

- Multiple DB2 32-bit and 64-bit versions cannot co-exist on Windows x64. If you install a DB2 64-bit version of the product, then the DB2 32-bit version will be removed from the system.

Testing DB2 Version 9 before migrating an existing DB2 UDB Version 8 copy:

You can install a copy of DB2 Version 9 on a machine that has DB2 UDB Version 8 already installed on it. You can create DB2 Version 9 instances and use them to test your environment at a DB2 Version 9 level. When you have completed your testing and are satisfied with DB2 Version 9, you can migrate your instances using the **db2imigr** command and migrate the DB2 Administration Server using the **dasmigr** command. You can optionally remove DB2 UDB Version 8 and then set the DB2 Version 9 copy to be the default DB2 copy.

For more information about migration, see the migration related links.

Related concepts:

- “Multiple DB2 copies on the same computer (Windows)” in *Administration Guide: Implementation*

Related tasks:

- “Migrating a DB2 server (Windows)” in *Migration Guide*
- “Migrating DB2 servers in Microsoft Cluster Server environments” in *Migration Guide*
- “Migrating instances” in *Migration Guide*
- “Migrating the DB2 Administration Server (DAS)” in *Migration Guide*

Related reference:

- “dasmigr - Migrate the DB2 administration server command” in *Command Reference*
- “db2imigr - Migrate instance command” in *Command Reference*

Using the Default DB2 Selection wizard (Windows)

You can use the Default DB2 Selection wizard to select the default DB2 copy on your computer. Applications will use this default DB2 copy by default. Applications which are not enabled to use multiple DB2 copies will only be able to use the default DB2 copy. The other DB2 copies on your computer can still be accessed and used.

You can launch the Default DB2 Selection wizard by running the **db2swtch.exe** command located in the `sql1lib\bin` directory of your DB2 copy.

Procedure:

- Read the introductory text on the Introduction panel and then click **Next**.
- On the **Select your default DB2 copy**, the wizard will display the DB2 copies that have been detected on your computer.
- Select the DB2 copy that you want to set as your new default DB2 copy.
- Click **Next** to set the selected DB2 copy as the default DB2 copy on this computer.

- The Summary panel displays which DB2 copy has been set as your default DB2 copy on this computer.
- Click **Finish** to close the Default DB2 Selection wizard.

Related tasks:

- “DB2 Version 9 co-existence and migration with DB2 UDB Version 8 (Windows)” on page 71

Applying DB2 product licenses

The DB2 product installation can apply an unlicensed version of the DB2 product. To correctly license your product, you must register the proper license key with your DB2 product. The license key and fully detailed license registration procedures are available on the product Activation CD.

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.

Prerequisites:

You must have installed your DB2 product.

Procedure:

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

Related tasks:

- “Registering a DB2 product or feature license key using the `db2licm` command” on page 81
- “Registering a DB2 product or feature license key using the License Center” on page 82

Related reference:

- “DB2 product license files” on page 81

Working with existing DB2 copies

If you have an existing DB2 Version 9 copy installed on your system, 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. For example on Windows, the actions shown are add new function, install and upgrade. Add-on products are always installed using the Work with Existing option.

Related tasks:

- “Installing DB2 servers (Windows)” on page 63

Part 2. After DB2 server installation

Chapter 5. After you install

Verifying the installation

Verifying the installation using the command line processor (CLP)

You can verify the installation by creating a 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.

Procedure:

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
```

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.

Related tasks:

- “Verifying the installation of DB2 servers using First Steps (Linux and Windows)” on page 78

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.

Prerequisites:

You must have DB2 installed.

Procedure:

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.

Related tasks:

- “Setting up a partitioned database environment” on page 68

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.

Prerequisites:

- 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.

Procedure:

1. On Linux, log on to the system as the instance owner.
2. On Windows, click **Start** and, select **Programs -> IBM DB2 -> [DB2 Copy Name] -> Set-up Tools > First Steps**. On Linux and Windows, 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 Databases 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 on 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.

Related tasks:

- “Verifying the installation using the command line processor (CLP)” on page 77

Related reference:

- “db2fs - First steps command” in *Command Reference*

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.

Prerequisites:

You have completed all of the installation steps.

Procedure:

To create the SAMPLE database:

1. Log on to the primary computer (ServerA) as the instance-owning user. In our installation 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 and the number of database partitions in the database partition group that is used by the tablespace 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.

Related reference:

- “db2sampl - Create sample database command” in *Command Reference*

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.

Prerequisites:

You have completed all of the installation steps.

Procedure:

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. 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:

```
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 tablespace 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.

Related tasks:

- “Setting up a partitioned database environment” on page 68

DB2 product licensing

DB2 product license files

Each DB2 product and feature has a license file associated with it. The license file is found on the associated activation CD supplied as a part of the product media. You should register the license file before using the DB2 product.

The management of licenses for DB2 products or features is done through the License Center within the Control Center, or, through 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.

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. This is also true for upgrading from one license type to another, for example upgrading from a User license to a CPU license. For details see *Upgrading your DB2 license*.

Related concepts:

- “License Center overview” in *Administration Guide: Implementation*
- “DB2 installation methods” on page 3

Related tasks:

- “Checking DB2 license compliance” on page 83
- “Registering a DB2 product or feature license key using the db2licm command” on page 81
- “Registering a DB2 product or feature license key using the License Center” on page 82
- “Upgrading a Try and Buy license” on page 84

Related reference:

- “db2licm - License management tool command” in *Command Reference*

Registering a DB2 product or feature license key using the db2licm command

You should register a DB2 product or feature license key on each computer where the DB2 product or feature is installed. For more information on these product options, see the DB2 Version 9 packaging information on the web.

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.

Procedure:

To register a DB2 license key, enter:

```
db2licm -a filename
```

where *filename* is the full pathname and filename for the license file that corresponds to the product or feature. The license file is located in the `/db2/license` directory located on the Activation CD associated with your DB2 product or feature.

To register a DB2 product or feature license key as the instance owner:

1. Create the instance environment and become the instance owner.
2. Register the DB2 license with the appropriate command:

- For Linux and UNIX operating systems:

```
db2instance_path/adm/db2licm -a filename.lic
```

- For Windows operating systems:

```
db2instance_path\adm\db2licm -a filename.lic
```

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. The license file is in the `/db2/license` directory located in the root directory of your Activation CD for the product or feature.

Related concepts:

- “License management” in *Administration Guide: Implementation*

Related tasks:

- “Checking DB2 license compliance” on page 83
- “Registering a DB2 product or feature license key using the License Center” on page 82

Related reference:

- “DB2 product license files” on page 81

Registering a DB2 product or feature license key using the License Center

You should register a DB2 product or feature license key where the DB2 product or feature is installed. For more information on these product options, see the DB2 Version 9 packaging information on the web.

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.

Procedure:

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 the instance on your systems. 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 or UNIX servers: `/cd/db2/license/license_filename.lic`

where `x:` or `/cd` represents the CD drive or mount point containing the DB2 Activation CD for the DB2 product or feature.

5. Click **Apply** to add the license key.

Related concepts:

- “License management” in *Administration Guide: Implementation*

Related tasks:

- “Checking DB2 license compliance” on page 83
- “Registering a DB2 product or feature license key using the `db2licm` command” on page 81

Related reference:

- “DB2 product license files” on page 81

Checking DB2 license compliance

Each DB2 product and feature has a license file associated with it. The license file 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 no violations are detected
- 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.

You can generate a compliance report using the License Center or the **db2licm** command.

Procedure:

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\adm\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 must have the license key registered using either the License Center or the **db2licm** command. See the related links for details.

Related concepts:

- “License Center overview” in *Administration Guide: Implementation*

Related tasks:

- “Registering a DB2 product or feature license key using the License Center” on page 82
- “Registering a DB2 product or feature license key using the db2licm command” on page 81

Related reference:

- “DB2 product license files” on page 81
- “db2licm - License management tool command” in *Command Reference*

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 can also use this method to upgrade from one license type to another. For example, to upgrade from a User license to a CPU license.

Restrictions:

You cannot use this method to upgrade from one DB2 product to another.

Procedure:

To upgrade your DB2 license:

1. Download the activation CD from Passport Advantage.
2. Register the license key using the License Center.

Related concepts:

- “License Center overview” in *Administration Guide: Implementation*
- “DB2 installation methods” on page 3

Related tasks:

- “Checking DB2 license compliance” on page 83
- “Registering a DB2 product or feature license key using the License Center” on page 82

Related reference:

- “DB2 product license files” on page 81

Changing DB2 product editions

Changing DB2 product editions (Linux and UNIX)

When changing 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 the **db2iupdt** command when the installation is complete.

Prerequisites:

Your system must comply with the system prerequisites for the DB2 product edition that you are installing.

Restrictions:

These instructions apply only when switching among the same version of a DB2 product.

Procedure:

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. Log in as a user with root authority.
4. 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/V9.1` on Linux and `/opt/IBM/db2/V9.1` on UNIX-based operating systems.

5. To reconfigure the instances, run the **db2iupdt** command on all instances: `DB2DIR/bin/db2iupdt InstanceName` where `InstanceName` represents the name of the instance.
6. 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.

Related tasks:

- “Changing DB2 product editions (Windows)” on page 86

Related reference:

- “DB2 Version 9 product and packaging information” on page 3

Changing DB2 product editions (Windows)

When changing 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.

Prerequisites:

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.

Restrictions:

These instructions apply only when switching among the same version of a DB2 product on Windows.

Procedure:

To change DB2 product editions:

1. Log on as a user with administrator access.
2. Stop all DB2 processes and services.
3. Insert the DB2 product CD 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 CD 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. 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.

Related tasks:

- “Changing DB2 product editions (Linux and UNIX)” on page 84

Related reference:

- “DB2 Version 9 product and packaging information” on page 3

Applying fix packs

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. Every fix pack is accompanied by a document, called APARLIST.TXT, that describes the fixes it contains.

Each fix pack contains a Readme and a set of Release Notes:

- The fix pack Readme provides instructions for installing and uninstalling the fix pack.
- The Release Notes contain information about changes to the product.

You can access and read both the fix pack Readme and the Release Notes by selecting the link for fix pack downloads at the DB2 Support Web site before installing a DB2 product. The DB2 Support Web site is found at <http://www.ibm.com/software/data/db2/udb/support.html>.

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. It is recommended that you keep your DB2 environment running at the latest fix pack level to ensure problem-free operation.

There are two types of fix pack images:

- A fix pack for each individual DB2 product. This fix pack can be applied on an existing installation of the product, or can be used to perform a full product installation where there is no existing DB2 installation.
- Universal fix pack (Linux or UNIX only). A universal fix pack services installations where more than one DB2 product has been installed.

If national languages have been installed, you also require a separate national language fix pack. The national language fix pack can only be applied if it is at the same fix pack level as the installed DB2 product. If you are applying a universal fix pack, you must apply both the universal fix pack and the national language fix pack to update the DB2 products.

When installing a fix pack on a multi-partition database system, the system must be offline and all computers participating in the instance must be upgraded to the same fix pack level.

Prerequisites:

Each fix pack has specific prerequisites. See the Readme that accompanies the fix pack for details.

Procedure:

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>.

Related reference:

- “db2setup - Install DB2 command” in *Command Reference*
- “installFixPack - Update installed DB2 products command” in *Command Reference*
- “setup - Install DB2 command” in *Command Reference*

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.

Procedure:

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.

Related reference:

- “db2admin - DB2 administration server command” in *Command Reference*

Password rules

When choosing a password, be aware that:

- On UNIX, your password can be a maximum of eight (8) characters.
- On Windows, 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.

Related concepts:

- “General naming rules” in *Administration Guide: Implementation*

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 to give them access to your DB2 product. 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.

Procedure:

To add users to the appropriate group:

1. Launch the **Computer Management** tool. Click **Start** and **Select -> Settings -> Control Panel -> Administrative Tools -> Computer Management**.
2. Select **Local Users and Groups**.
3. Select **Users**.
4. Select the user you want to add.
5. Click **Properties**.
6. Click the **Member Of** tab.
7. Click **Add**.
8. Select the appropriate group.
9. 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.

Once you enable this security feature using the **db2extsec.exe** command, you have two options for backing out:

1. Run the **db2extsec.exe** command again immediately WITHOUT making any additional changes to the system. If there have been any changes at all made to the system you must use option 2.
2. Add the Everyone group to the DB2ADMNS and DB2USERS groups.

Related concepts:

- “Extended Windows security using DB2ADMNS and DB2USERS groups” in *Administration Guide: Implementation*

Related reference:

- “Required user accounts for installation of DB2 server products (Windows)” on page 12
- “db2extsec - Set permissions for DB2 objects command” in *Command Reference*

DB2 node configuration file - db2nodes.cfg

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 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 is different than the same file on UNIX. On Windows, the column format is:

```
nodenumber hostname computername logicalport netname resourcesetname
```

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 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 MLNs, provided with a string type field formerly known as *quadname*.

This parameter is only supported on AIX, HP-UX, and Solaris Operating Environment.

On AIX 5.2, this concept is known as "resource sets" and on Solaris Operating Environment it is called "projects". Refer to your operating systems documentation for more information on resource management.

On HP-UX, the *resourcesetname* 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 `db2processor` registry variable. See the related links section for more information on system environment variables.

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 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 5.2.

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:

The sample shows how to use PRM groups for CPU shares on machine with 4 CPUs and 4 MLNs and we want to set 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 Multiple Logical Node (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 Operating Environment example:

Here is an example of how to set up the project for Solaris Version 9.

In this example, we have 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
```

Related tasks:

- "Updating the node configuration file (Linux and UNIX)" on page 95
- "Verifying port range availability on participating computers (Linux and UNIX)" on page 48

Related reference:

- "System environment variables" in *Performance Guide*

Updating the node configuration file (Linux and UNIX)

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
```

This task provides steps for updating the `db2nodes.cfg` file to include entries for participating computers.

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.
- If you plan to use a high speed switch for communication between database partition servers or if your partitioned configuration will have multiple logical partitions, review the *DB2 node configuration file* topic for configuration examples and information about file format of `db2nodes.cfg`.

Restrictions:

The hostnames used in the steps of the Procedure section must be fully qualified hostnames.

Procedure:

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/sql1lib/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/sql1lib/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.

If you are installing the partitioned configuration described in the installation overview, 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.

Related reference:

- “DB2 node configuration file - `db2nodes.cfg`” on page 90

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.

Prerequisites:

You must have a user ID with root authority.

Restrictions:

You must perform this task on participating computers only. When you create an instance using the DB2 Setup wizard, a port range is automatically reserved on the primary (instance-owning) computer.

Procedure:

To enable communications between servers in a partitioned database environment:

1. Log on to the primary computer (instance owning computer) as a user with root authority.
2. 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:

```
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 available four ports above 60000 are reserved. 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.

DB2 port entries use the following format:

```
DB2_instance_name    port_number
```

where:

- *instance_name* is the name of the partitioned instance.
- *port_number* is the port number that you reserve for database partition server communications.

3. In turn, log onto each participating computer as a root user and add identical entries to the `/etc/services` file.

You can add a comment to describe each entry using the `#` comment identifier. For example:

```
DB2_db2inst1        60000/tcp    # instance-owning partition port
DB2_db2inst1_1      60001/tcp    # logical partition port
DB2_db2inst1_2      60002/tcp    # logical partition port
DB2_db2inst1_END    60003/tcp    # logical partition port
```

Related concepts:

- “Fast communications manager (Linux and UNIX)” on page 30

Related reference:

- “DB2 node configuration file - `db2nodes.cfg`” on page 90

Enabling the execution of remote commands (Linux and UNIX)

You must update your `.rhosts` file in both a single-partition and partitioned database environment to execute remote commands.

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.

Procedure:

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.

Related tasks:

- “Creating a DB2 home file system for a partitioned database system (AIX)” on page 49
- “Creating a DB2 home file system for a partitioned database system (HP-UX)” on page 51
- “Creating a file system for a partitioned DB2 server (Linux)” on page 53
- “Creating a file system for a partitioned DB2 server (Solaris Operating Environment)” on page 55

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 on all computers.

Procedure: To enable Control Center administration for a partitioned database system:

Start the DB2 Administration Server on each computer

1. In turn, log on to each computer (ServerA, ServerB, ServerC, ServerD) as the DB2 Administration Server user. In our example, *dasusr1* is the DAS user.
2. Enter the following command to start the DB2 Administration Server:

```
/DASHOME/das/bin/db2admin start
```

where *DASHOME* is the home directory for the DB2 Administration Server. In our example, the *DASHOME* is */db2home/dasusr1*.

Related concepts:

- “DB2 Administration Server” in *Administration Guide: Implementation*

Related tasks:

- “Starting and stopping the DB2 administration server (DAS)” in *Administration Guide: Implementation*

Part 3. Appendixes

Appendix A. Language support

Changing the DB2 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 DB2 with languages supported by the DB2 interface. Languages supported by DB2, that is, languages that *data* can exist in, are a superset of languages supported by the DB2 interface.

Prerequisites:

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

Procedure:

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

To change the DB2 interface language on Windows:

1. Through the Control Panel on your Windows operating system, select **Regional Options**.
2. In the Regional Options dialog window, change the default language setting for the system to the language in which you want to interface with DB2.

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

Related tasks:

- “Displaying topics in your preferred language in the DB2 Information Center” on page 132

Related reference:

- “Supported DB2 interface languages” on page 105
- “Supported territory codes and code pages” in *Administration Guide: Planning*

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.

Prerequisites:

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 first, and if that is not supported, English.

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.

Procedure:

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.

Related tasks:

- “Displaying topics in your preferred language in the DB2 Information Center” on page 132

Related reference:

- “Supported DB2 interface languages” on page 105
- “Supported territory codes and code pages” in *Administration Guide: Planning*

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 DB2 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 DB2 product that is, languages that *data* can exist in, are a superset of languages supported by the DB2 interface.

Related tasks:

- “Changing the DB2 interface language (Linux and UNIX)” on page 104
- “Changing the DB2 interface language (Windows)” on page 103
- “Capturing error and diagnostic information during migration” in *Migration Guide*

Related reference:

- “Conversion table files for euro-enabled code pages” in *Administration Guide: Planning*
- “Conversion tables for code pages 923 and 924” in *Administration Guide: Planning*
- “National language versions” in *Administration Guide: Planning*
- “Supported territory codes and code pages” in *Administration Guide: Planning*

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.

Table 13. Language identifiers

Language	Language identifier
Arabic (available on Windows only)	ar
Brazilian Portuguese	br
Bulgarian	bg
Chinese, Simplified	cn
Chinese, Traditional	tw
Croatian	hr
Czech	cz

Table 13. Language identifiers (continued)

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

Related reference:

- “Displaying the db2setup command in your national language” on page 106

Displaying the db2setup command in your national language

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.

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.

Related reference:

- “Supported DB2 interface languages” on page 105
- “db2setup - Install DB2 command” in *Command Reference*
- “setup - Install DB2 command” in *Command Reference*

Appendix B. Uninstalling DB2 products

Uninstalling DB2 products (Windows)

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.

Procedure:

To remove your DB2 product from Windows:

1. Drop all databases. You can drop databases using the Control Center or **drop database** command. 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.

Related tasks:

- “Uninstalling your DB2 product (Linux and UNIX)” on page 110
- “Uninstalling a DB2 product using a response file (Windows)” in *Installation and Configuration Supplement*
- “Changing the Default DB2 copy after installation (Windows)” in *Administration Guide: Implementation*

Related reference:

- “db2swtch - Switch default DB2 copy command” in *Command Reference*
- “db2unins - Uninstall DB2 database product command” in *Command Reference*
- “DROP DATABASE command” in *Command Reference*

Uninstalling DB2 products (Linux and UNIX)

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.

Procedure:

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.
3. Remove the Administration Server.
4. Stop DB2 instances.
5. Remove DB2 instances.
6. Remove DB2 products.

Related concepts:

- “DB2 Administration Server” in *Administration Guide: Implementation*

Related tasks:

- “Stopping the DB2 administration server (Linux and UNIX)” on page 111
- “Removing the DB2 administration server (Linux and UNIX)” on page 111
- “Stopping DB2 instances (Linux and UNIX)” on page 112
- “Removing DB2 instances (Linux and UNIX)” on page 112
- “Removing DB2 products using the db2_deinstall or doce_deinstall command (Linux and UNIX)” on page 113
- “Uninstalling your DB2 product (Windows)” on page 109

Related reference:

- “DROP DATABASE command” in *Command Reference*

Stopping the DB2 administration server (Linux and UNIX)

You must stop the DB2 administration server (DAS) before you remove your DB2 product. You only need to perform this task if the DAS is associated with the DB2 copy you are uninstalling.

Procedure:

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.

Related concepts:

- “DB2 Administration Server” in *Administration Guide: Implementation*

Related tasks:

- “Removing DB2 products using the db2_deinstall or doce_deinstall command (Linux and UNIX)” on page 113

Related reference:

- “db2admin - DB2 administration server command” in *Command Reference*

Removing the DB2 administration server (Linux and UNIX)

You must remove the DB2 administration server (DAS) before you remove your DB2 product. You only need to remove the DB2 DAS if this is the last DB2 Version 9 copy that you’re removing. Otherwise, you should run the **dasupdt** command from the DB2 copy that you would like to have the DB2 DAS associated with.

Procedure:

To remove the DB2 administration server:

1. Log in as a user with root authority.
2. Stop the DB2 administration server.
3. Remove the DB2 administration server by entering the following command:

```
DB2DIR/instance/dasdrop
```

where *DB2DIR* is the location you specified during the DB2 Version 9 installation. The default installation path for UNIX is */opt/IBM/db2/V9.1*. The default installation path for Linux is */opt/ibm/db2/V9.1*.

Related concepts:

- “DB2 Administration Server” in *Administration Guide: Implementation*

Related tasks:

- “Removing DB2 products using the db2_deinstall or doce_deinstall command (Linux and UNIX)” on page 113
- “Stopping the DB2 administration server (Linux and UNIX)” on page 111

Stopping DB2 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.

Procedure:

To stop a DB2 instance:

1. Log in as a user with root authority.
2. To obtain a list of the names of all DB2 instances associated with your current DB2 copy, enter 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/V9.1*. The default installation path for Linux is */opt/ibm/db2/V9.1*.

3. Log out.
4. Log back in as the owner of the instance you want to stop.
5. Run the start up script if it is not included in *.profile*.

```
. INSTHOME/sql1lib/db2profile      (bash, Bourne, or Korn shells)  
source INSTHOME/sql1lib/db2cshrc  (C shell)
```

where *INSTHOME* is the home directory of the instance.

6. You might want to save the database manager configuration file, *db2system*, the *db2nodes.cfg* file, or user defined function or fenced stored procedure applications in *INSTHOME/sql1lib/function*.
7. Stop the DB2 database manager by entering the **db2stop force** command.
8. Confirm that the instance is stopped by entering the **db2 terminate** command.
9. Repeat these steps for each instance.

Related reference:

- “db2ilist - List instances command” in *Command Reference*
- “db2stop - Stop DB2 command” in *Command Reference*
- “FORCE APPLICATION command” in *Command Reference*

Removing DB2 instances (Linux and UNIX)

You can remove some or all of the DB2 instances on your system. 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.

Procedure:

To remove an instance:

1. Log in as a user with root authority.
2. Remove the instance by entering the following command:

```
DB2DIR/instance/db2idrop InstName
```

where *DB2DIR* is the location you specified during the DB2 Version 9 installation. The default installation path for UNIX is */opt/IBM/db2/V9.1*. The default installation path for Linux is */opt/ibm/db2/V9.1*.

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.

3. 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.

Remove the database files from the systems or drop the databases before dropping the instance if you no longer need the databases. After dropping the instance the database files remain intact.

This step is optional since the instance owner and the instance owner group may be used for other purposes.

Related tasks:

- "Removing DB2 products using the `db2_deinstall` or `doce_deinstall` command (Linux and UNIX)" on page 113

Related reference:

- "db2idrop - Remove instance command" in *Command Reference*

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.

You cannot remove DB2 products using a native operating system utility, such as rpm or SMIT.

Prerequisites:

Before you remove DB2 products from your system:

- Ensure that you have performed all steps outlined in *Uninstalling your DB2 product*.
- You must have root authority to remove DB2 products.

Procedure:

To remove ALL DB2 products from a specific path:

1. Log in as user with root authority.

2. Access the path where the DB2 products are located. To locate the path of the DB2 product to remove, see
3. Run the **db2_deinstall -a** command from the DB2DIR/install directory or the **doce_deinstall -a** command from the DB2DIR/doc/install directory, where DB2DIR is the location that you specified when you installed your DB2 product.

Related tasks:

- “Applying fix packs” on page 87
- “Listing DB2 products installed on your system (Linux and UNIX)” on page 29
- “Removing DB2 instances (Linux and UNIX)” on page 112
- “Uninstalling your DB2 product (Linux and UNIX)” on page 110

Related reference:

- “db2_deinstall - Uninstall DB2 products or features command” in *Command Reference*
- “db2_install - Install DB2 product command” in *Command Reference*
- “Multiple DB2 copies roadmap” in *Administration Guide: Implementation*

Appendix C. Mounting the DB2 product CD-ROM (Linux and UNIX)

Mounting the CD-ROM (AIX)

Prerequisites:

Root authority is required to perform this task.

Procedure:

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

1. Log in as a user with root authority.
2. Insert the CD-ROM in the drive.
3. Create a CD-ROM mount point by entering the `mkdir -p /cdrom` command, where `cdrom` represents the CD-ROM mount point directory.
4. Allocate a CD-ROM file system using SMIT by entering the **smit storage** command.
5. After SMIT starts, select **File Systems** → **Add / Change / Show / Delete File Systems** → **CDROM File Systems** → **Add CDROM File System**.
6. In the Add a File System window:
 - Enter a device name for your CD-ROM file system in the **DEVICE Name** field. Device names for CD-ROM file systems must be unique. If there is a duplicate device name, you may need to delete a previously-defined CD-ROM file system or use another name for your directory. In our example, we will use `/dev/cd0` as the device name.
 - Enter the CD-ROM mount point directory in the **MOUNT POINT** window. In our example, the mount point directory is `/cdrom`.
 - 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.
7. Next, mount the CD-ROM file system by entering the **smit mountfs** command.
8. In the Mount a File System window:
 - Enter the device name for this CD-ROM file system in the **FILE SYSTEM name** field. In our example, the device name is `/dev/cd0`.
 - Enter the CD-ROM mount point in the **Directory over which to mount** field. In our example, the mount point is `/cdrom`.
 - 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-ROM file system is now mounted. To view the contents of the CD-ROM, place the disk in the drive and enter the `cd /cdrom` command where `cdrom` is the CD-ROM mount point directory.

Related tasks:

- “Installing DB2 servers (Linux and UNIX)” on page 65

Related reference:

- “Installation requirements for DB2 clients and servers (AIX)” on page 21

Mounting the CD-ROM (HP-UX)

The following steps will enable you to successfully mount your DB2 for HP-UX product CD-ROM.

Prerequisites:

Root authority is required to perform this task.

Procedure:

To mount your DB2 for HP-UX product CD-ROM:

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

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

Your CD-ROM file system is now mounted. To view the contents of the CD-ROM, place the CD in the drive and enter the **cd /cdrom** command where **cdrom** is the CD-ROM mount point directory.

Related reference:

- “Installation requirements for DB2 clients and servers (HP-UX)” on page 23
- “DB2 product license files” on page 81

Mounting the CD-ROM (Linux)

Prerequisites:

Root authority is required to perform this task.

Procedure:

To mount the CD-ROM on Linux:

1. Log in as a user with root authority.
2. Insert the CD-ROM 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-ROM.
3. Log out.

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

Related reference:

- “DB2 product license files” on page 81

Mounting the CD-ROM (Solaris Operating Environment)

Prerequisites:

If you are mounting the CD-ROM drive from a remote system using NFS, the CD-ROM file system on the remote computer must be exported with root access. You must also mount that file system with root access on the local computer.

Procedure:

To mount the CD-ROM on Solaris Operating Environment:

1. Log in as a user with root authority.
2. Insert the CD-ROM into the drive.
3. If the Volume Manager (`vold`) is running on your system, the CD-ROM is automatically mounted as `/cdrom/cd_label` if the CD 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-ROM:

- 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-ROM device. In this example, the command returns the string `/dev/dsk/c0t6d0s2`.

- b. Enter the following commands to mount the CD-ROM:

```
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-ROM mount directory.

Note: If you are mounting the CD-ROM drive from a remote system using NFS, the CD-ROM 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.

4. Log out.

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

Related tasks:

- “Installing DB2 servers (Linux and UNIX)” on page 65

Related reference:

- “Installation requirements for DB2 clients and servers (Solaris Operating System)” on page 27

Appendix D. Installing the DB2 Information Center

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 CD 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/db2help>**. If you configure your local DB2 installation to use this version of the Information Center, you will always be accessing the most up-to-date information about the DB2 product.

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 CD* in the media pack to install the 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 DB2 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 Information Center on the intranet server.

You can also change the settings for already-installed DB2 clients to use the Information Center hosted on your Intranet. Use the **db2set** command or the DB2 GUI tools to change the DB2 Information Center registry variables on each computer. **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.

Related concepts:

- “Features of the DB2 Information Center” on page 120

Related tasks:

- “Installing the DB2 Information Center using the DB2 Setup wizard (Linux)” on page 122
- “Installing the DB2 Information Center using the DB2 Setup wizard (Windows)” on page 124
- “Updating the DB2 Information Center installed on your computer or intranet server” on page 133

Related reference:

- “db2set - DB2 profile registry command” in *Command Reference*

Features of the DB2 Information Center

The DB2 Information Center gives you access to all of the information you need to take full advantage of DB2 products. The DB2 Information Center also contains information for major DB2 features and components including replication, and the DB2 extenders.

The following features help you find and work with the information you need. Note that some features require support for JavaScript™ be enabled.

Flexible options for accessing documentation

You can choose to view the DB2 documentation using the option that best meets your needs:

- To view the most up-to-date information, you can access the DB2 Information Center from the IBM.com Web site at <http://publib.boulder.ibm.com/infocenter/db2luw/v9/>
- To keep network traffic inside your intranet, you can install the DB2 Information Center on a single server on your intranet
- To reduce your dependence on network connections, you can install the documentation on your own computers

Search

You can search all of the topics in the DB2 Information Center by entering a search term in the **Search** text field. You can retrieve exact matches by enclosing terms in quotation marks ("), and you can refine your search with wildcard operators (*, ?) and Boolean operators (AND, NOT, OR).

Table of contents

You can locate topics in the DB2 Information Center from the table of contents. The table of contents is organized primarily by the kind of tasks you can perform, but also includes entries for product overviews, goals, reference information, an index, and a glossary.

- Product overviews describe the relationship between the available products in the DB2 family, the features offered by each of those products, and up to date release information for each of these products.
- Goal categories such as installing, administering, and developing include topics that enable you to quickly complete tasks and develop a deeper understanding of the background information for completing those tasks.
- Reference topics provide detailed information about a subject, including statement and command syntax, message help, and configuration parameters.
- The index provides access to all of the documentation from an alphabetized index.
- The glossary provides definitions of terms used in the DB2 documentation. The glossary is organized in alphabetical order by glossary term.

Integrated multi-language support

The DB2 Information Center displays information in the preferred language set in your browser preferences. If a topic is not available in your preferred language, the DB2 Information Center displays the English version of that topic. For local or intranet installations, only the languages installed can be displayed.

The DB2 Information Center can be viewed in Firefox 1.0 and higher, Mozilla-based browsers 1.7 and higher, or Microsoft Internet Explorer 6.0 and higher.

Related concepts:

- “DB2 Information Center installation options” on page 119

Related tasks:

- “Installing the DB2 Information Center using the DB2 Setup wizard (Linux)” on page 122
- “Installing the DB2 Information Center using the DB2 Setup wizard (Windows)” on page 124
- “Accessing different versions of the DB2 Information Center” on page 132
- “Displaying topics in your preferred language in the DB2 Information Center” on page 132
- “Starting the DB2 Information Center” in *Online DB2 Information Center*
- “Searching the Information Center” in *Online DB2 Information Center*
- “Updating the DB2 Information Center installed on your computer or intranet server” on page 133

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 CD*.

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.

Prerequisites:

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 can only install one copy of the DB2 Version Information Center on your system.

Procedure:

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 CD on your system.
3. Change to the directory where the CD is mounted by entering the following command:

```
cd /cd
```

where */cd* represents the mount point of the CD.

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 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. Select the languages in which the DB2 Information Center will be installed on the **Select the languages to install** page. By default, the DB2 Information Center is installed in the `/opt/ibm/db2ic/V9` 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.
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 `todb2install.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.

DB2 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.

Starting or stopping the Information Center daemon (Linux)

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.

Procedure:

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.

Related concepts:

- “DB2 Information Center installation options” on page 119

Related tasks:

- “Installing the DB2 Information Center using the DB2 Setup wizard (Windows)” on page 124
- “Removing DB2 products using the `db2_deinstall` or `doce_deinstall` command (Linux and UNIX)” on page 113
- “Installing a DB2 product using a response file (Linux and UNIX)” in *Installation and Configuration Supplement*
- “Starting the DB2 Information Center” in *Online DB2 Information Center*

Related reference:

- “Installation requirements for DB2 clients and servers (Linux)” on page 24
- “`doce_deinstall` - Uninstall DB2 Information Center command” in *Command Reference*
- “`doce_install` - Install DB2 Information Center command” in *Command Reference*

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 CD*.

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 2000
- Windows XP
- Windows Server 2003

The Information Center will run on 64-bit systems, but it does not exploit the 64-bit architecture. Only 64-bit versions of Windows that run on Intel processors are supported.

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

Communication requirements

You require TCP/IP.

Restrictions:

- You require an account with administrative privileges to install the DB2 Information Center.
- You can only install one copy of the DB2 Version Information Center on your system.

Procedure:

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 CD 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 CD 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**.
If you already have an existing DB2 Version 9 Information Center installed on your computer, click **Work with Existing** to work with the existing DB2 Information Center.
6. On the **Welcome to the DB2 Setup wizard** window, click **Next**. The DB2 Setup wizard will guide you through the program setup process.
7. To proceed with the installation, you must accept the license agreement. On the **License Agreement** page, select **I accept the terms in the license agreement** and click **Next**.
8. 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**.
9. Select the languages in which the DB2 Information Center will be installed on the **Select the languages to install** page. By default, the DB2 Information Center is installed in the C:\Program Files\IBM\DB2 Information Center\Version 9 directory. However, you can specify your own installation path. Click **Next**.
10. Configure the DB2 Information Center for incoming communication on the **Specify the DB2 Information Center port** page. Click **Next** to continue the installation.
11. Review the installation choices you have made in the **Start copying files** page. To change any settings, click **Back**. Click **Install** to copy the DB2 Information Center files onto your computer.

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-DOCE-DateTime.log, for example, DB2-DOCE-Tue Apr 11 08_38_35 2006.log

Related concepts:

- “Features of the DB2 Information Center” on page 120
- “DB2 Information Center installation options” on page 119

Related tasks:

- “Installing a DB2 product using a response file (Windows)” in *Installation and Configuration Supplement*
- “Displaying topics in your preferred language in the DB2 Information Center” on page 132
- “Installing the DB2 Information Center using the DB2 Setup wizard (Linux)” on page 122
- “Starting the DB2 Information Center” in *Online DB2 Information Center*
- “Updating the DB2 Information Center installed on your computer or intranet server” on page 133

Related reference:

- “db2rspgn - Response file generator command (Windows)” in *Command Reference*

Appendix E. DB2 Database technical information

Overview of the DB2 technical information

DB2 technical information is available through the following tools and methods:

- DB2 Information Center
 - Topics
 - Help for DB2 tools
 - Sample programs
 - Tutorials
- DB2 books
 - PDF files (downloadable)
 - PDF files (from the DB2 PDF CD)
 - printed books
- Command line help
 - Command help
 - Message help
- Sample programs

IBM periodically makes documentation updates available. If you access the online version on the DB2 Information Center at ibm.com[®], you do not need to install documentation updates because this version is kept up-to-date by IBM. If you have installed the DB2 Information Center, it is recommended that you install the documentation updates. Documentation updates allow you to update the information that you installed from the *DB2 Information Center CD* or downloaded from Passport Advantage as new information becomes available.

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.

You can access additional DB2 technical information such as technotes, white papers, and Redbooks™ online at ibm.com. Access the DB2 Information Management software library site at <http://www.ibm.com/software/data/sw-library/>.

Documentation feedback

We value your feedback on the DB2 documentation. If you have suggestions for how we can improve the DB2 documentation, send an e-mail to db2docs@ca.ibm.com. The DB2 documentation team reads all of your feedback, but cannot respond to you directly. Provide specific examples wherever possible so that we can better understand your concerns. If you are providing feedback on a specific topic or help file, include the topic title and URL.

Do not use this e-mail 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.

Related concepts:

- “Features of the DB2 Information Center” on page 120
- “Sample files” in *Samples Topics*

Related tasks:

- “Invoking command help from the command line processor” in *Command Reference*
- “Invoking message help from the command line processor” in *Command Reference*
- “Updating the DB2 Information Center installed on your computer or intranet server” on page 133

Related reference:

- “DB2 technical library in hardcopy or PDF format” on page 128

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. DB2 Version 9 manuals in PDF format can be downloaded from www.ibm.com/software/data/db2/udb/support/manualsv9.html.

Although the tables identify books available in print, the books might not be available in your country or region.

The information in these books is fundamental to all DB2 users; you will find this information useful whether you are a programmer, a database administrator, or someone who works with DB2 Connect™ or other DB2 products.

Table 14. DB2 technical information

Name	Form Number	Available in print
<i>Administration Guide: Implementation</i>	SC10-4221	Yes
<i>Administration Guide: Planning</i>	SC10-4223	Yes
<i>Administrative API Reference</i>	SC10-4231	Yes
<i>Administrative SQL Routines and Views</i>	SC10-4293	No
<i>Call Level Interface Guide and Reference, Volume 1</i>	SC10-4224	Yes
<i>Call Level Interface Guide and Reference, Volume 2</i>	SC10-4225	Yes
<i>Command Reference</i>	SC10-4226	No
<i>Data Movement Utilities Guide and Reference</i>	SC10-4227	Yes
<i>Data Recovery and High Availability Guide and Reference</i>	SC10-4228	Yes
<i>Developing ADO.NET and OLE DB Applications</i>	SC10-4230	Yes
<i>Developing Embedded SQL Applications</i>	SC10-4232	Yes

Table 14. DB2 technical information (continued)

Name	Form Number	Available in print
<i>Developing SQL and External Routines</i>	SC10-4373	No
<i>Developing Java Applications</i>	SC10-4233	Yes
<i>Developing Perl and PHP Applications</i>	SC10-4234	No
<i>Getting Started with Database Application Development</i>	SC10-4252	Yes
<i>Getting started with DB2 installation and administration on Linux and Windows</i>	GC10-4247	Yes
<i>Message Reference Volume 1</i>	SC10-4238	No
<i>Message Reference Volume 2</i>	SC10-4239	No
<i>Migration Guide</i>	GC10-4237	Yes
<i>Net Search Extender Administration and User's Guide</i> Note: HTML for this document is not installed from the HTML documentation CD.	SH12-6842	Yes
<i>Performance Guide</i>	SC10-4222	Yes
<i>Query Patroller Administration and User's Guide</i>	GC10-4241	Yes
<i>Quick Beginnings for DB2 Clients</i>	GC10-4242	No
<i>Quick Beginnings for DB2 Servers</i>	GC10-4246	Yes
<i>Spatial Extender and Geodetic Data Management Feature User's Guide and Reference</i>	SC18-9749	Yes
<i>SQL Guide</i>	SC10-4248	Yes
<i>SQL Reference, Volume 1</i>	SC10-4249	Yes
<i>SQL Reference, Volume 2</i>	SC10-4250	Yes
<i>System Monitor Guide and Reference</i>	SC10-4251	Yes
<i>Troubleshooting Guide</i>	GC10-4240	No
<i>Visual Explain Tutorial</i>	SC10-4319	No
<i>What's New</i>	SC10-4253	Yes
<i>XML Extender Administration and Programming</i>	SC18-9750	Yes
<i>XML Guide</i>	SC10-4254	Yes
<i>XQuery Reference</i>	SC18-9796	Yes

Table 15. DB2 Connect-specific technical information

Name	Form Number	Available in print
<i>DB2 Connect User's Guide</i>	SC10-4229	Yes

Table 15. DB2 Connect-specific technical information (continued)

Name	Form Number	Available in print
Quick Beginnings for DB2 Connect Personal Edition	GC10-4244	Yes
Quick Beginnings for DB2 Connect Servers	GC10-4243	Yes

Table 16. WebSphere® Information Integration technical information

Name	Form Number	Available in print
WebSphere Information Integration: Administration Guide for Federated Systems	SC19-1020	Yes
WebSphere Information Integration: ASNCLP Program Reference for Replication and Event Publishing	SC19-1018	Yes
WebSphere Information Integration: Configuration Guide for Federated Data Sources	SC19-1034	No
WebSphere Information Integration: SQL Replication Guide and Reference	SC19-1030	Yes

Note: The DB2 Release Notes provide additional information specific to your product's release and fix pack level. For more information, see the related links.

Related concepts:

- "Overview of the DB2 technical information" on page 127
- "About the Release Notes" in *Release notes*

Related tasks:

- "Ordering printed DB2 books" on page 130

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 CD* 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 CD 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 CD 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/db2help/>.

Procedure:

To order printed DB2 books:

- 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.
- To order printed DB2 books from your local IBM representative:
 - Locate the contact information for your local representative from one of the following Web sites:
 - The IBM directory of world wide contacts at 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.
 - When you call, specify that you want to order a DB2 publication.
 - Provide your representative with the titles and form numbers of the books that you want to order.

Related concepts:

- "Overview of the DB2 technical information" on page 127

Related reference:

- "DB2 technical library in hardcopy or PDF format" on page 128

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.

Procedure:

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.

Related tasks:

- "Invoking command help from the command line processor" in *Command Reference*
- "Invoking message help from the command line processor" in *Command Reference*

Accessing different versions of the DB2 Information Center

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/>.

Related tasks:

- “Setting up access to DB2 contextual help and documentation” in *Administration Guide: Implementation*

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.

Procedure:

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 **Tools** → **Options** → **Languages** button. 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.

Related concepts:

- “Overview of the DB2 technical information” on page 127

Updating the DB2 Information Center installed on your computer or intranet server

If you have a locally-installed DB2 Information Center, updated topics can be available for download. The 'Last updated' value found at the bottom of most topics indicates the current level for that topic.

To determine if there is an update available for the entire DB2 Information Center, look for the 'Last updated' value on the Information Center home page. Compare the value in your locally installed home page to the date of the most recent downloadable update at <http://www.ibm.com/software/data/db2/udb/support/icupdate.html>. You can then update your locally-installed Information Center if a more recent downloadable update is 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 determine if update packages are available from IBM.

Note: Updates are also available on CD. For details on how to configure your Information Center to install updates from CD, see the related links. If update packages are available, use the Update feature to download the packages. (The Update feature is only available in stand-alone mode.)

3. Stop the stand-alone Information Center, and restart the DB2 Information Center service on your computer.

Procedure:

To update the DB2 Information Center installed on your computer or intranet server:

1. Stop the DB2 Information Center service.
 - 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/db2icdv9 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 `C:\Program Files\IBM\DB2 Information Center\Version 9` directory.
 - c. Run the `help_start.bat` file using the fully qualified path for the DB2 Information Center:
`<DB2 Information Center dir>\doc\bin\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 directory.
- b. Run the help_start script using the fully qualified path for the DB2 Information Center:

```
<DB2 Information Center dir>/doc/bin/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, run the help_end.bat file using the fully qualified path for the DB2 Information Center:

```
<DB2 Information Center dir>\doc\bin\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, run the help_end script using the fully qualified path for the DB2 Information Center:

```
<DB2 Information Center dir>/doc/bin/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 service.
 - 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/db2icdv9 start
```

The updated DB2 Information Center displays the new and updated topics.

Related concepts:

- “DB2 Information Center installation options” on page 119

Related tasks:

- “Installing the DB2 Information Center using the DB2 Setup wizard (Linux)” on page 122
- “Installing the DB2 Information Center using the DB2 Setup wizard (Windows)” on page 124

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.

Native XML data store

Set up a DB2 database to store XML data and to perform basic operations with the native XML data store.

Visual Explain Tutorial

Analyze, optimize, and tune SQL statements for better performance using Visual Explain.

Related concepts:

- “Visual Explain overview” in *Administration Guide: Implementation*

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>

Related concepts:

- “Introduction to problem determination” in *Troubleshooting Guide*
- “Overview of the DB2 technical information” on page 127

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Appendix G. First Steps

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 access configuration, database partitioning, and migration.
- 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 DB2 client. The Control Center is delivered with the DB2 client for 32-bit Linux (x86-32), 64-bit Linux (x86-64), and Windows (except on IPF).

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. It 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. This interface 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/sql1lib/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.

Related concepts:

- “Access to the DB2 Information Center” in *Administration Guide: Planning*
- “Control Center overview” in *Administration Guide: Implementation*
- “Features of the DB2 Information Center” on page 120

Related tasks:

- “Verifying the installation of DB2 servers using First Steps (Linux and Windows)” on page 78

Related reference:

- “Command line processor features” in *Command Reference*
- “db2fs - First steps command” in *Command Reference*

Deleting a Firefox browser profile

If you use Firefox as your Web browser, a browser profile is created in the following scenarios:

DB2 Setup Launchpad

If you install your DB2 product using the setup wizard, the DB2 Setup Launchpad runs in a browser and automatically creates a Firefox 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 Firefox profile named `DB2_FIRSTSTEPS` is created.

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.

Procedure:

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>

Related concepts:

- “First Steps interface” on page 141

Related tasks:

- “Verifying the installation of DB2 servers using First Steps (Linux and Windows)” on page 78

Index

A

- AIX
 - creating
 - DB2 home file systems, for a partitioned database system 49
 - required users, for a partitioned DB2 server installation 57
 - distributing commands to ESE workstations 45
 - hardware prerequisites 21
 - installation prerequisites 21
 - installing
 - DB2 servers 7
 - mounting the CD-ROM 115
 - operating system prerequisites 21
 - updating environment settings 43
 - verifying
 - NFS is running 47

C

- CD-ROM
 - mounting
 - AIX 115
 - HP-UX 116
 - Linux 116
 - Solaris Operating Environment 117
- changing
 - DB2 product editions
 - Linux and UNIX 84
 - Windows 86
 - Windows default language setting 103
- client configurations
 - non-supported 5
 - supported 5
- code pages
 - supported 105
- command line processor (CLP)
 - verifying the installation 77
- commands
 - db2_deinstall 113
 - db2fs 141
 - db2idrop 112
 - db2ilist 112
 - db2nchg 15
 - db2osconf 41
 - db2sampl 77
 - db2secv82 89
 - db2setup 106
 - db2start 20
 - db2stop 112
 - doce_deinstall 113
 - enabling remote execution 98
 - force application 112
- communications
 - addresses 30
 - fast communication manager 30

- configuration parameters
 - fcm_num_buffers 21
- contact lists
 - setting up 88
- contacting IBM 147
- copying
 - DB2 CD contents 46
- creating
 - rhosts file 98
 - sample databases 78

D

- daemon
 - configuration file
 - starting for information center 122
- database partition servers
 - enabling communications (UNIX) 97
 - installing
 - response files 70
- database partitioning feature
 - enabling communications (UNIX) 97
- databases
 - partitioned environment 68
- DB2
 - code pages 105
 - installation methods 3
 - installing
 - applying fix packs 87
 - UNIX 3
 - verifying the installation 77
 - Windows 3
 - interface languages 105
 - locales 105
 - partitioned installation
 - updating AIX environment settings 43
 - removing
 - UNIX 110
 - stopping instances
 - UNIX 112
 - stopping the Administration Server
 - UNIX 111
- DB2 Administration Server (DAS)
 - removing 111
 - stopping 111
- DB2 CD-ROM
 - copying to your computer 46
- DB2 clients
 - installation prerequisites (AIX) 21
 - installation prerequisites (HP-UX) 23
 - installation prerequisites (Linux) 24
 - installation prerequisites (Solaris Operating Environment) 27
 - installation prerequisites (Windows) 10
- DB2 Connect
 - installation methods 3
 - installing
 - UNIX 3
- DB2 Connect (*continued*)
 - installing (*continued*)
 - Windows 3
- DB2 database
 - for Linux on zSeries
 - installing 33
 - removing 109
 - reserved ports 39
 - uninstalling 109
 - user accounts (Windows) 12
- DB2 Enterprise Server Edition
 - installing
 - Windows 15
- DB2 groups
 - UNIX 31
- DB2 home file system
 - partitioned database system
 - AIX 49
 - HP-UX 51
- DB2 Information Center
 - features 120
 - installing 119, 122, 124
 - supported browsers 120
 - updating 133
 - versions 132
 - viewing in different languages 132
- DB2 installation
 - verifying
 - using First Steps 78
- DB2 instances
 - removing 112
 - stopping 112
- DB2 license key
 - registering 81
 - using the License Center 82
- DB2 packaging information 3
- DB2 product editions
 - changing 84, 86
- DB2 product information 3
- DB2 product licenses
 - applying 73
- DB2 products
 - installing manually
 - listing products 29
 - removing
 - listing products 29
 - UNIX 113
- DB2 servers
 - creating
 - group IDs 37
 - user IDs 37
 - hardware prerequisites 23
 - installation prerequisites (AIX) 21
 - installation prerequisites (HP-UX) 23
 - installation prerequisites (Linux) 24
 - installation prerequisites (Solaris Operating Environment) 27
 - installation prerequisites (Windows) 10
 - installing
 - Windows 6

- DB2 servers (*continued*)
 - installing on AIX 7
 - installing on Windows 63
 - partitioned
 - preparing the Windows environment 15
- DB2 services (Windows) 11
- DB2 Setup wizard
 - installing DB2 servers
 - UNIX 65
 - language identifiers 105
- DB2 system administrator group 20
- DB2 users
 - UNIX 31
- DB2 Version 9
 - co-existence with DB2 UDB Version 8 71
- DB2 version co-existence
 - DB2 UDB Version 8 71
 - DB2 Version 9 71
- db2_deinstall 113
- DB2ADMNS
 - user groups 89
- db2fcms / db2fcmr daemons
 - description 30
- db2iupt command
 - upgrading your 32-bit DB2 instances 71
- db2licm command
 - compliance report 83
 - managing licenses 81
 - registering licenses 81
- db2nodes.cfg 95
 - specifying the netname field 15
- db2nodes.cfg file 90
- db2osconf command 41
- db2setup
 - displaying
 - national languages 106
 - language setting 106
- DB2USERS
 - user groups 89
- Default DB2 Selection wizard 72
- default language setting
 - Windows 103
- Deleting
 - Firefox browser profile 142
- directory schema
 - extending
 - on Windows 2000 and Windows .NET 35
- disk requirements
 - UNIX 9
 - Windows 9
- doce_deinstall 113
- documentation 127, 128
 - Information Center features 120
 - Information Center installation 119
 - terms and conditions of use 136
- dropping
 - instances 112

E

- enabling
 - Control Center administration
 - UNIX 99

- enabling communications
 - database partitioning feature (UNIX) 97
- ESE workstations 45

F

- Fast Communications Manager (FCM)
 - enabling communications between database partition servers 97
 - message buffers 21
 - overview 21
 - port numbers 97
 - port range 39
 - Windows 21
- FCM
 - Fast Communications Manager 21
- fcm_num_buffers configuration
 - parameter 21
- fenced user
 - definition 37
- file sets
 - db2fcms / db2fcmr daemons 30
 - description 30
- file systems
 - creating for a partitioned DB2 server
 - Linux 53
 - Solaris Operating Environment 55
- Firefox
 - Deleting a browser profile 142
- First Steps
 - Deleting a Firefox profile 142
 - interface 141
 - verifying
 - DB2 installation 78
- fix pack
 - applying 87

G

- group IDs
 - creating 37

H

- hardware prerequisites
 - AIX 21
 - HP-UX 23
 - Linux 24
 - Solaris Operating Environment 27
- hardware prerequisites
 - Windows 10
- help
 - displaying 132
 - for SQL statements 131
- HP-UX
 - creating
 - DB2 home file system, for a partitioned database system 51
 - required users, for a partitioned DB2 installation 58
 - hardware prerequisites 23
 - installation prerequisites 23
 - kernel configuration parameters 41
 - modifying
 - kernel parameters 40

- HP-UX (*continued*)
 - mounting the CD 116
 - operating system prerequisites 23
 - verifying
 - NFS is running 47

I

- Information Center
 - features 120
 - installing 119, 122, 124
 - supported browsers 120
 - updating 133
 - versions 132
 - viewing in different languages 132
- installation
 - Information Center 119, 122, 124
 - methods
 - UNIX 3
 - Windows 3
 - multiple CDs 38
- installation prerequisites
 - AIX 21
 - Linux 24
 - Solaris Operating Environment 27
 - Windows 10
- installing
 - database partition servers
 - response files 70
 - DB2 database user accounts (Windows) 12
 - DB2 for Linux on S/390 33
 - hardware prerequisites (Linux) 24
 - hardware prerequisites (Solaris Operating Environment) 27
 - hardware prerequisites (Windows) 10
 - Java prerequisites (AIX) 21
 - Java requirements 10
 - manually
 - listing products 29
 - operating system prerequisites (Linux) 24
 - operating system prerequisites (Solaris Operating Environment) 27
 - operating system prerequisites (Windows) 10
 - prerequisites (AIX) 21
 - prerequisites (HP-UX) 23
 - prerequisites (Linux) 24
 - prerequisites (Solaris Operating Environment) 27
 - prerequisites (Windows) 10
 - Windows elevated privileges 18
- instances
 - dropping 112
 - removing 112
 - stopping 112
- interface languages 105
 - changing
 - UNIX 104
 - Windows 103

J

- Java prerequisites
 - installing DB2 (HP-UX) 23

K

- kernel configuration parameters
 - HP-UX 41
 - modifying (HP-UX) 40
 - modifying (Linux) 41
 - modifying (Solaris Operating Environment) 43
- kernel parameters
 - db2osconf (HP-UX) 41
 - HP-UX 41
 - modifying (HP-UX) 40
 - modifying (Linux) 41
 - modifying (Solaris Operating Environment) 43

L

- LANG environment variable
 - setting 104, 106
- language identifiers
 - DB2 Setup wizard 105
- Licence Center
 - compliance report 83
- License Center
 - managing licenses 81
 - registering licenses
 - DB2 license key 82
 - upgrading licenses 84
- licenses
 - applying 73
 - compliance report 83
 - registering 81, 82
 - upgrading 84
- licensing information 81
 - checking compliance 83
- Linux
 - creating
 - file system for partitioned DB2 servers 53
 - required users for partitioned DB2 servers 60
 - hardware prerequisites 24
 - installation requirements 24
 - installing DB2 database
 - on zSeries 33
 - modifying
 - kernel parameters 41
 - mounting the CD-ROM 116
 - operating system prerequisites 24
 - verifying
 - NFS is running 47
- locales
 - supported 105

M

- maintenance
 - password 89
- memory requirements
 - UNIX 9

- memory requirements (*continued*)
 - Windows 9
- message buffers
 - Fast Communications Manager (FCM) 21
- modifying
 - kernel parameters (HP-UX) 40
 - kernel parameters (Linux) 41
 - kernel parameters (Solaris Operating Environment) 43
- mounting
 - CD-ROM
 - AIX 115
 - HP-UX 116
 - Linux 116
 - Solaris Operating Environment 117
- multiple CDs
 - installation 38

N

- national languages
 - displaying db2setup 106
- Network File System (NFS)
 - verifying operation 47
- network information service (NIS),
 - installation considerations 32
- NFS (Network File System)
 - verifying operation 47
- NIS (network information service),
 - installation considerations 32
- node configuration file
 - updating (UNIX) 95
- node configuration files
 - description 90
- nodes
 - FCM daemon (UNIX) 30
- notices 137
- notification lists, setting up 88

O

- operating system prerequisites
 - Linux 24
 - Solaris Operating Environment 27
 - Windows 10
- operating systems prerequisites
 - AIX 21
 - HP-UX 23
- ordering DB2 books 130

P

- partitioned database environment 68
- partition database server
 - installing 80
 - verifying installation
 - Windows 80
- partitioned database environments
 - server installation, verifying on UNIX 79
- password
 - maintenance 89
- passwords
 - rules 89

- port numbers
 - range availability
 - Windows 39
- port range
 - availability
 - UNIX 48
- port range availability 39
 - UNIX 97
- port ranges
 - default (UNIX) 97
- printed books
 - ordering 130
- problem determination
 - online information 135
 - tutorials 135

R

- registry
 - verifying access 77
- remote
 - commands, enabling on UNIX 98
- removing
 - DAS 111
 - DB2
 - UNIX 110
 - DB2 database
 - Windows 109
- reserved ports
 - DB2 database 39
- response file
 - multiple CDs 38
- response files
 - installing
 - database partition servers 70
- rhosts file
 - creating 98
 - updating 98
- rules
 - password 89

S

- S/390
 - installing DB2 Database for Linux 33
- sample databases
 - creating 78
 - DB2 database 78
 - warehousing 78
- SDK levels for DB2 35
- searching
 - DB2 documentation 120
- security
 - NIS installation considerations 32
 - user groups 89
- set-up
 - tool 141
- setting
 - LANG environment variable 104, 106
- setting up
 - contact lists 88
 - notification lists 88
- Software Development Kit for Java
 - levels for DB2 database 35

- Solaris Operating Environment
 - creating
 - file systems, partitioned DB2 servers 55
 - required users, partitioned DB2 servers 61
 - hardware prerequisites 27
 - installation prerequisites 27
 - modifying
 - kernel parameters 43
 - mounting the CD-ROM 117
 - operating system prerequisites 27
 - verifying
 - NFS is running 47
 - SQL statements
 - displaying help 131
 - supported configurations
 - clients 5
 - SYSADM
 - Windows 20
 - SYSADM_GROUP configuration
 - parameter 20
 - system administrator group
 - DB2 database
 - Windows 20

T

- terms and conditions
 - use of publications 136
- troubleshooting
 - online information 135
 - tutorials 135
- tutorials
 - troubleshooting and problem determination 135
 - Visual Explain 135

U

- uninstalling
 - DB2 database
 - Windows 109
- UNIX
 - changing the DB2 interface
 - language 104
 - DB2 groups 31
 - DB2 users 31
 - default port ranges 97
 - enabling
 - Control Center administration 99
 - remote commands 98
 - installing
 - DB2 servers, using the DB2 Setup wizard 65
 - removing
 - DB2 110
 - DB2 instances 112
 - DB2 products 113
 - listing products 29
 - updating the node configuration
 - file 95
 - verifying a partitioned database server installation 79
- updates
 - DB2 Information Center 133

- updates (*continued*)
 - Information Center 133
- updating
 - db2nodes.cfg (UNIX) 95
 - node configuration file 95
 - rhosts file 98
- Upgrading 32-bit DB2 instances 71
- Upgrading to 64-bit DB2 instances 71
- user accounts
 - DB2 Administration Server (Windows) 12
 - instance user (Windows) 12
 - required for installation (Windows) 12
- user groups
 - DB2ADMNS 89
 - DB2USERS 89
 - security 89
- user IDs
 - creating 37
- user privileges, Windows 17
- users
 - creating for a partitioned DB2 server
 - AIX 57
 - HP-UX 58
 - Linux 60
 - Solaris Operating Environment 61

V

- verifying
 - DB2 installation
 - using First Steps 78
- verifying access
 - registry 77
- verifying port range
 - availability
 - UNIX 48
 - Windows 39
- Visual Explain
 - tutorial 135

W

- Windows
 - changing default language
 - setting 103
 - DB2 system administrator group 20
 - DB2 user accounts 12
 - extending the directory schema
 - Windows 2000 and Windows Server 2003 35
 - Windows Server 2003 35
 - Fast Communications Manager (FCM) 21
 - granting user rights 17
 - hardware prerequisites 10
 - installation
 - elevated privileges 18
 - installation prerequisites 10
 - installing
 - DB2 server 6
 - DB2 servers with the DB2 Setup wizard 63
 - operating system prerequisites 10
 - removing DB2 database 109

- Windows (*continued*)
 - verifying
 - partition database server installation 80
 - Windows elevated privileges
 - installing DB2 products 18
 - Windows services 11
 - wizards
 - Default DB2 Selection 72

Z

- zSeries
 - installing DB2 Database for Linux 33

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