IBM DB2 Universal Database
Personal Edition
for Linux**

IBM

Quick Beginnings

Version 6

IBM DB2 Universal Database
Personal Edition
for Linux**

IBM

Quick Beginnings

Version 6

GC09-2886-00

Before using this information and the product it supports, be sure to read the general information under "Appendix F. Notices" on page 77.

Contents

Welcome to DB2 Universal Database!

The DB2 Universal Database Quick Beginnings books provide a focused introduction to the installation and configuration of DB2 products.

This *Quick Beginnings* book will guide you through the planning, installation, and set up of a DB2 Personal Edition workstation. Once you have set up your Personal Edition workstation, you will create a sample database and access data from it.

If you plan to use your DB2 Personal Edition workstation as a DB2 client, you will also be guided through the steps required to establish a connection to a remote DB2 server.

Conventions

This book uses the following highlighting conventions:

- **Boldface** indicates commands or graphical user interface (GUI) controls such as names of fields, folders, icons, or menu choices.
- *Italics* indicates variables that you should replace with your own value. It is also used to indicate book titles and to emphasize words.
- `Monospace` indicates file names, directory paths, and examples of text you enter exactly as shown.

This icon marks a fast path. A fast path guides you to information specific to your configuration where multiple options are available.

This icon marks a tip. It provides additional information that can help you complete a task.

For a complete description of the DB2 library, see "Appendix E. How the DB2 Library Is Structured" on page 61.

- If you do not follow the documented installation method with the recommended defaults, it may be necessary to refer to the *Administration Guide* and the *Command Reference* to complete the installation and configuration.
- The term *Windows 32-bit operating systems* refers to Windows 95, Windows 98, or Windows NT.
- The term *Windows 9x* refers to Windows 95 or Windows 98.
- The term *DB2 client* refers to a DB2 Run-Time Client or a DB2 Administration Client.
- The term *DB2 Universal Database* refers to DB2 Universal Database on OS/2, UNIX, and Windows 32-bit operating systems, unless otherwise stated.

Part 1. Installing and Configuring DB2 Personal Edition

Chapter 1. Planning for Installation

If you know that your system meets all hardware and software requirements, and you want to begin installing your DB2 product right away, go to "Chapter 2. Installing and Configuring DB2 Personal Edition" on page 7.

For information on the DB2 family of products, see "Appendix D. About the DB2 Family of Products" on page 41.

There are many components that you might want to use in your environment. Use the product and planning information in this section to ensure that your system meets the prerequisites and to decide which components you want to install.

Before you begin your DB2 product installation, you should determine the requirements for the system that you are planning to install and configure.

Memory Requirements

The amount of memory that you require depends on the size of your databases. We suggest that you have a minimum of 128 MB of memory and a minimum 128 MB of swap space to accommodate average sized databases. For information about memory requirements during the day-to-day operations of your databases, refer to the *Administration Guide*.

Disk Requirements

This section shows the *minimum* amount of disk space that is required to install your DB2 product and components. It does not include the disk requirements necessary for the operating system, application development tools, and communications products. Consult each product's documentation for these values. Estimates for disk space requirements are listed here; the actual amounts required depend on the functions you are using.

For information about space requirements for data, refer to the *Administration Guide*.

Estimating Fixed Disk Requirements

To estimate the disk requirements for a particular configuration, add the recommended minimum disk sizes for the products and components that you want to install. Include an allowance for your application data and indexes.

Components

Use Table 1 to estimate the amount of disk space you need to install DB2 and associated components on your operating system.

Table 1. Estimating Disk Requirements

	Recommended Minimum Disk (MB)
DB2 Universal Database Personal Edition for Linux	
DB2 Personal Edition for Linux	55 MB
DB2 GUI Tools	63 MB
Online documentation in HTML format (English)	65 MB
Far-East Code Page Conversion Support	5 MB
Total Disk Space Required	__ MB

Software Requirements

This section outlines the software required to run DB2 products.

Product Requirements

Table 2 lists the operating system and communications software required for DB2 Universal Database.

Table 2. Software Requirements

Product	Hardware/Software Requirements	Communications
		Linux
• DB2 Universal Database Personal Edition	• Linux kernel 2.0.35 or higher. • *glibc* Version 2.0.7. • *pdksh* package (required to run the DB2 command line processor). • *libstdc++* Version 2.8. To install DB2, you will need the Red Hat Package Manager (*rpm*).	TCP/IP • For TCP/IP connectivity, no additional software is required.

Possible Client-to-Server Connectivity Scenarios

The following table shows the communication protocols that can be used when connecting a specific LAN, host or AS/400 DB2 client to a specific DB2 server or DB2 Connect server.

> DB2 Workgroup, DB2 Enterprise, and DB2 Enterprise - Extended Editions can service requests from host or AS/400 clients (DRDA ARs).

Table 3. Possible Client-to-Server Connectivity Scenarios

Client	Server					
	AIX	HP-UX	Linux	OS/2	Solaris	Windows NT
AS/400 V4R1	APPC	N/A	N/A	APPC	APPC	APPC
AS/400 V4R2	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
AIX	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
HP-UX	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
Linux	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP
MVS	APPC	N/A	N/A	APPC	APPC	APPC
OS/2	APPC IPX/SPX(1),(2) TCP/IP	TCP/IP	TCP/IP	APPC IPX/SPX(1),(2) NetBIOS TCP/IP	APPC IPX/SPX(1) TCP/IP	APPC IPX/SPX(1) NetBIOS TCP/IP
OS/390	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
Silicon Graphics IRIX	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP
SQL/DS	APPC	N/A	N/A	APPC	APPC	APPC
Solaris	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
VSE V6	APPC	N/A	N/A	APPC	APPC	APPC
VM V6	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
Windows 9x	TCP/IP	TCP/IP	TCP/IP	NetBIOS TCP/IP	TCP/IP	IPX/SPX(1) NPIPE NetBIOS TCP/IP
Windows NT	APPC IPX/SPX(1) TCP/IP	TCP/IP	TCP/IP	APPC IPX/SPX(1) NetBIOS TCP/IP	APPC IPX/SPX(1) TCP/IP	APPC IPX/SPX(1) NPIPE NetBIOS TCP/IP

1. Direct Addressing

2. File Server Addressing

Chapter 2. Installing and Configuring DB2 Personal Edition

This section describes how to install DB2 Universal Database Personal Edition on a Linux-based workstation. If you want to install a DB2 Administration Client, Run-Time Client, or Software Developer's Kit on a Linux-based workstation, refer to the *Installation and Configuration Supplement*. For information on how to deploy this product using a distributed installation, refer to the *Installation and Configuration Supplement*.

We assume in these instructions that you install and configure DB2 Universal Database products using the DB2 Installer program. We also assume that you select to install the Control Center, create an instance, and create an Administration Server using the DB2 Installer program.

Before You Begin

Before you begin the installation, be sure you have the following items and information:

__ 1. Ensure that your system meets all of the memory, hardware, and software requirements to install your DB2 product. For more information, see "Chapter 1. Planning for Installation" on page 3.

__ 2. A username for the default DB2 instance. We recommend that you create a new group and use it as the primary group for the DB2 instance owner.

__ 3. A username for fenced user defined functions (UDFs) and stored procedures. For security reasons, we recommend that you do not use the same username that you reserved for the DB2 instance.

__ 4. A username for the Administration Server. For security reasons, we recommend that you do not use the same username that you reserved for the DB2 instance.

You can have the DB2 Installer create these usernames, or you can create them manually. Usernames should conform to both your operating system's naming rules, and those of DB2. For more information on naming rules, see "Appendix C. Naming Rules" on page 37.

	When you use the DB2 Installer program, you should be aware of the following:
	• The DB2 Installer's **db2setup** command only works with Bash, Bourne, and Korn shells. Other shells are not supported.
	• You can generate a trace log, *db2setup.trc*, to record errors experienced during the installation. Run the **db2setup** command as follows:

```
db2setup -d
```

This creates a trace file, `/tmp/db2setup.trc`.

Installation Steps

To install DB2 Universal Database on Linux systems, perform the following steps:

Step 1. Identify and Record Parameter Values

Table 4 will help you determine the values required to install DB2 products, set up a DB2 instance, and configure the Administration Server. Before proceeding with the installation and configuration, complete the *Your Value* column in the table. If you want to choose the default value for a parameter, you do not need to provide any value in the *Your Value* column for that parameter. In Table 4, the only parameter for which a value is required is *DB2 Product Name*. All other parameters either have a default value or are optional.

Table 4. Parameter Values Required for Installation

Information Required for DB2 Installer	Default Value	Your Value
Product/Component		
DB2 Product Name[1]	None	
DB2 Product Messages[2]	None	
Documentation[2]	None	
DB2 Instance		
User Name	db2inst1	
UID	System-generated UID	
Group Name	db2iadm1	
GID	System-generated GID	
Password	ibmdb2	
TCP/IP Service Name	db2cdb2inst1	

Table 4. Parameter Values Required for Installation (continued)

Information Required for DB2 Installer	Default Value	Your Value
TCP/IP Port Number	50001	
User Name (UDF)	db2fenc1	
UID (UDF)	System-generated UID	
Group Name (UDF)	db2fadm1	
GID (UDF)	System-generated GID	
Password (UDF)	ibmdb2	
Administration Server		
User Name (DAS)	db2as	
UID (DAS)	System-generated UID	
Group Name (DAS)	db2asgrp	
GID (DAS)	System-generated GID	
Password (DAS)	ibmdb2	
TCP/IP Port Number (DAS)	523	523
Note: You must select at least one DB2 product to install. You can optionally select one or more filesets in this product. There is a separate fileset for each locale. Refer to the *Installation and Configuration Supplement* online document for the names of filesets for DB2 Product Messages and Documentation.		

Step 2. Mount the CD-ROM

To install your DB2 product using the DB2 Installer program, you must first mount the CD-ROM. Once you have mounted the CD-ROM, you can start the installation.

To mount the CD-ROM on a Linux workstation, perform the following steps:

Step 1. Log on to the system as a user with root authority.

Step 2. Insert the CD-ROM in the drive and mount it with a command similar to the following:

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

where */cdrom* represents the mount point of the CD-ROM.

Step 3. Log out.

Step 3. Install the DB2 Products

After you mount the CD-ROM file system, use the DB2 Installer program to install DB2.

To install your DB2 product, perform the following steps:

Step 1. Log on to the system as a user with `root` authority.

Step 2. Change to the directory where the CD-ROM is mounted by entering the following command:

```
cd /cdrom
```

where */cdrom* represents mount point of the CD-ROM.

Step 3. Enter the **./db2setup** command to start the DB2 Installer program. The **Install DB2 V6** window opens.

> It will take some time for the DB2 Installer program to start up, as it is scanning your system for information.

```
+ - - - - - - - - - - - - - - - - - - - - Install DB2 V6 - - - - - - - - - - - - - - - - - - - - +
|                                                                                                 |
|                                                                                                 |
|    Select the products you are licensed to install. Your Proof of                               |
|    Entitlement and License Information booklet identify the products for                         |
|    which you are licensed.                                                                       |
|                                                                                                 |
|    To see the preselected components or customize the selection, select                         |
|    Customize for the product.                                                                    |
|    [   ] DB2 Administration Client                         :  Customize. . . :                   |
|    [ * ] DB2 UDB Personal Edition                          [   Customize. . . ]                  |
|    [   ] DB2 Software Developer's Kit                       :  Customize. . . :                  |
|                                                                                                 |
|                                                                                                 |
|     To choose a language for the following components, select Customize for                      |
|     the product.                                                                                 |
|        DB2 Product Messages                                [   Customize. . . ]                  |
|        DB2 Product Library                                 [   Customize. . . ]                  |
|                                                                                                 |
|                                                                                                 |
|                                                                                                 |
|     [   OK    ]                    [  Cancel  ]                       [   Help   ]               |
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -+
```

Step 4. From the product list on the *Install DB2 V6* screen, select the products
that you want to install.

Press the **Tab** key to change the highlighted option and the **Enter** key
to select or deselect an option.

To display the components for a DB2 product that you want to
install, select **Customize**. To go back to a previous window at any
times, select **Cancel**.

> To refresh the current screen, press the **F5** key or **Ctrl+L**.

When you have finished selecting the DB2 product and its
components, select **OK** to complete the installation.

For more information or assistance during the installation of any DB2
product or component, select **Help**.

When the installation is complete, DB2 software is installed in the
/usr/IBMdb2/V6.1 directory.

> You can use the DB2 Installer program to create an additional
> instance, create an Administration Server, or add additional products
> or components after your initial installation. To create or add a new
> instance, an Administration Server, or additional DB2 products and
> components, enter the following command:
>
>   /usr/IBMdb2/V6.1/install/db2setup

Verifying the Installation

You can verify that DB2 is installed correctly by creating the SAMPLE database
on your system, and accessing data from the database. To create the SAMPLE
database, and access data from it, perform the following steps:

Step 1. Log on to the system as a user with System Administrative
(SYSADM) authority. For more information, see "Working with the
System Administrative Group" on page 33.

Step 2. Enter the **db2sampl** command to create the SAMPLE database.

The SAMPLE database is automatically catalogued with the database
alias SAMPLE when it is created.

Step 3. Start the database manager by entering the **db2start** command.

Step 4. Enter the following commands to connect to the SAMPLE database,
retrieve a list of all the employees that work in department 20, and
reset the database connection:

```
db2 connect to sample
db2 "select * from staff where dept = 20"
db2 connect reset
```

For information about entering DB2 commands, see "Entering
Commands Using the Command Center" on page 30 or "Entering
Commands Using the Command Line Processor" on page 31.

> 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.

Software Registration

DB2 software registration is handled automatically if you installed your DB2 product from a CD-ROM using the DB2 Installer program. If you installed DB2 using your Linux operating system's native installation tools, you must use the **db2licm** command to register DB2. Refer to the *Command Reference* for more information.

Part 2. Using DB2 Universal Database

Chapter 3. Configuring Client to LAN-Based Server Communications Using the Command Line Processor

To configure a client to communicate with a server, the remote server must be configured to accept in-bound requests for the communication protocol that you want to use. By default, the installation program automatically detects and configures any protocols running on your server.

If you have added a new protocol to your network, or wish to change any of the default settings on the server, refer to the *Installation and Configuration Supplement*.

This section describes how to configure a DB2 client to communicate with a non-host or AS/400-based DB2 server using the command line processor.

For instructions on entering DB2 commands, see "Entering Commands Using the Command Center" on page 30 or "Entering Commands Using the Command Line Processor" on page 31.

Configuring TCP/IP on the Client

This section assumes that TCP/IP is functional on the client and server workstations. See "Software Requirements" on page 4 for the communication protocol requirements for your platform. See "Possible Client-to-Server Connectivity Scenarios" on page 5 for the supported communication protocols for your particular client and server.

To set up TCP/IP communications on a DB2 client, perform the following steps:

Step 1. Identify and record parameter values.
Step 2. Configure the client:
    a. Resolve the server's host address.
    b. Update the `services` file.
    c. Catalog a TCP/IP node.
    d. Catalog the database.
Step 3. Test the connection between the client and server.

> Due to the characteristics of the TCP/IP protocol, TCP/IP may not be immediately notified of the failure of a partner on another host. As a result, a client application accessing a remote DB2 server using TCP/IP, or the corresponding agent at the server, may sometimes appear to be hung. DB2 uses the TCP/IP SO_KEEPALIVE socket option to detect when there has been a failure and the TCP/IP connection has been broken.
>
> If you are experiencing problems with your TCP/IP connection, refer to the *Troubleshooting Guide* for information on how to adjust this parameter and other common TCP/IP problems.

Step 1. Identify and Record Parameter Values

As you proceed through the configuration steps, complete the *Your Value* column in the following table. You can fill in some of the values before you start configuring this protocol.

Table 5. TCP/IP Values Required at the Client

Parameter	Description	Sample Value	Your Value
Host Name • Hostname (*hostname*) or • IP address (*ip_address*)	Use the *hostname* or *ip_address* of the remote server workstation. To resolve this parameter: • Enter the **hostname** command at the server to obtain the *hostname*. • Contact your network administrator to obtain the *ip_address* or enter the **ping** *hostname* command.	serverhost or 9.21.15.235	

Table 5. TCP/IP Values Required at the Client (continued)

Parameter	Description	Sample Value	Your Value
Service Name • Connection Service name (*svcename*) or • Port number/Protocol (*port_number/tcp*)	Values required in the `services` file. The Connection Service name is an arbitrary name that represents the Connection port number (*port_number*) on the client. The port number for the client must be the same as the port number that the *svcename* parameter maps to in the `services` file at the server. (The *svcename* parameter is located in the database manager configuration file on the server.) This value must not be in use by any other applications, and must be unique within the `services` file. This value generally must be 1024 or higher. Contact your database administrator for the values used to configure the server.	server1 3700/tcp	
Node name (*node_name*)	A local alias, or nickname, that describes the node to which you are trying to connect. You can choose any name you want; however, all node name values within your local node directory must be unique.	db2node	

Step 2. Configure the Client

The following steps configure this protocol on the client. Replace the sample values with your worksheet values.

A. Resolve the Server's Host Address

If your network has a name server, or you are planning to directly specify the IP address (*ip_address*) of the server, skip this step and proceed to "Step B. Update the Services File".

The client must know the address of the server with which it is attempting to establish communications. If a name server does not exist on your network, you may directly specify a hostname that maps to the IP address (*ip_address*) of the server in the local hosts file. The hosts file for your platform is located in the /etc directory.

If you plan to support a Linux client that uses Network Information Services (NIS), and your network does not use a name server, you must update the hosts file located on your NIS master server.

Edit the client's hosts file and add an entry for the server's hostname. For example:

```
9.21.15.235     serverhost  # host address for serverhost
```

where:

9.21.15.235   represents the *ip_address*

serverhost   represents the *hostname*

represents a comment describing the entry

If the server is not in the same domain as the client, you must provide a fully qualified domain name such as serverhost.vnet.ibm.com, where vnet.ibm.com is the domain name.

Step B. Update the Services File

If you plan to catalog a TCP/IP node using a port number (*port_number*), skip this step and go to "Step C. Catalog a TCP/IP Node" on page 21.

Using a local text editor, add the Connection Service name and port number to the client's services file for TCP/IP support. The services file for your platform is located in the /etc directory. For example:

```
server1  3700/tcp  # DB2 connection service port
```

where:

server1   represents the Connection Service name

3700   represents the Connection port number

tcp   represents the communication protocol that you are using

represents a comment describing the entry

The port number used on the client must match the port number used on the server.

> If you are planning on supporting a Linux client that uses Network Information Services (NIS), you must update the `services` file located on your NIS master server.
>
> The file called `services` is located in the `/etc` directory.

Step C. Catalog a TCP/IP Node

You must add an entry to the client's node directory to describe the remote node. This entry specifies the chosen alias (*node_name*), the *hostname* (or *ip_address*), and the *svcename* (or *port_number*) that the client will use to access the remote server.

To catalog a TCP/IP node, perform the following steps:

Step 1. Log on to the system with a valid DB2 user ID. For more information, see "Appendix C. Naming Rules" on page 37.

> If you are adding a database to a system that has a DB2 or DB2 Connect server product installed, log on to this system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority on the instance. For more information, see "Working with the System Administrative Group" on page 33.
>
> This restriction is controlled by the *catalog_noauth* database manager configuration parameter. For more information, refer to the *Administration Guide*.

Step 2. Set up the instance environment and invoke the DB2 command line processor by entering one of the following commands:

```
. INSTHOME/sqllib/db2profile   (for Bash, Bourne or Korn shell)
source INSTHOME/sqllib/db2cshrc (for C shell)
```

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

Step 3. Catalog the node by entering the following commands:

```
db2 catalog tcpip node node_name remote [hostname|ip_address]
    server [svcename|port_number]
db2 terminate
```

For example, to catalog the remote server *serverhost* on the node called *db2node*, using the service name *server1*, enter the following commands:

```
db2 catalog tcpip node db2node remote serverhost server server1
db2 terminate
```

To catalog a remote server with the IP address *9.21.15.235* on the
node called *db2node*, using the port number *3700*, enter the following:

```
db2 catalog tcpip node db2node remote 9.21.15.235 server 3700
db2 terminate
```

> If you need to change values that were set with the **catalog node**
> command, perform the following steps:
>
> Step 1. Run the **uncatalog node** command in the command line
> processor as follows:
>
> ```
> db2 uncatalog node node_name
> ```
>
> Step 2. Recatalog the node with the values that you want to use.

Step D. Catalog the Database

Before a client application can access a remote database, the database must be
cataloged on the server node and on any client nodes that will connect to it.
When you create a database, it is automatically cataloged on the server with
the database alias (*database_alias*) the same as the database name
(*database_name*). The information in the database directory, along with the
information in the node directory, is used on the client to establish a
connection to the remote database.

To catalog a database on the client, perform the following steps:

Step 1. Log on to the system with a valid DB2 user ID. For more
information, see "Appendix C. Naming Rules" on page 37.

> If you are adding a database to a system that has a DB2 or DB2
> Connect server product installed, log on to this system as a user with
> System Administrative (SYSADM) or System Controller (SYSCTRL)
> authority on the instance. For more information, see "Working with
> the System Administrative Group" on page 33.
>
> This restriction is controlled by the *catalog_noauth* database manager
> configuration parameter. For more information, refer to the
> *Administration Guide*.

Step 2. Fill in the *Your Value* column in the following worksheet.

Table 6. Worksheet: Parameter Values for Cataloging Databases

Parameter	Description	Sample Value	Your Value
Database name (*database_name*)	The database alias (*database_alias*) of the *remote* database. When you create a database, it is automatically cataloged on the server with the database alias (*database_alias*) the same as the database name (*database_name*).	sample	

Table 6. Worksheet: Parameter Values for Cataloging Databases (continued)

Parameter	Description	Sample Value	Your Value
Database alias (*database_alias*)	An arbitrary local nickname for the remote database, on the client. If you do not provide one, the default is the same as the database name (*database_name*). This is the name that you use when connecting to a database from a client.	tor1	
Node name (node_name)	The name of the node directory entry that describes where the database resides. Use the same value for node name (*node_name*) that you used to catalog the node in the previous step.	db2node	

Step 3. Set up the instance environment and invoke the DB2 command line processor by entering one of the following commands:

```
. INSTHOME/sqllib/db2profile    (for Bash, Bourne or Korn shell)
source INSTHOME/sqllib/db2cshrc (for C shell)
```

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

Step 4. Catalog the database by entering the following commands:

```
db2 catalog database database_name as database_alias at node node_name
db2 terminate
```

For example, to catalog a remote database called SAMPLE so that it has the alias *tor1*, on the node *db2node*, enter the following commands:

```
db2 catalog database sample as tor1 at node db2node
db2 terminate
```

If you need to change values that were set with the **catalog database** command, perform the following steps:

Step a. Enter the **uncatalog database** command as follows:

```
db2 uncatalog database database_alias
```

Step b. Recatalog the database with the value that you want to use.

Step 3. Test the Client-to-Server Connection

When you have finished configuring the client for communications, perform the following steps to test the connection:

You will need to connect to a remote database to test the connection.

Step 1. Start the database manager by entering the **db2start** command on the server (if it was not automatically started at boot time).

Step 2. Enter the following command to connect the client to the remote database:

```
db2 connect to database_alias user userid using password
```

The values for *userid* and *password* must be valid for the system on which they are authenticated. By default, authentication takes place on the server for a DB2 server and on the host or AS/400 machine for a DB2 Connect server.

If the connection is successful, you will get a message showing the name of the database to which you have connected. You are now able to retrieve data from that database. For example, to retrieve a list of all the table names listed in the system catalog table, enter the following SQL command in the Command Center or command line processor:

```
"select tabname from syscat.tables"
```

When you are finished using the database connection, enter the **db2 connect reset** command to end the database connection.

You are now ready to start using DB2. For more advanced topics, refer to the *Administration Guide* and the *Installation and Configuration Supplement*.

Troubleshooting the Client-to-Server Connection

If the connection fails, check the following items:

At the *server*:

__ 1. The *db2comm* registry value includes the value tcpip.

Check the settings for the *db2comm* registry value by entering the **db2set DB2COMM** command. For more information, refer to the *Administration Guide*.

__ 2. The services file was updated correctly.

__ 3. The service name (*svcename*) parameter was updated correctly in the database manager configuration file.

__ 4. The database was created and cataloged properly.

__ 5. The database manager was stopped and started again (enter the **db2stop** and **db2start** commands on the server).

> If there are problems starting a protocol's connection managers, a warning message appears and the error messages are logged in the `db2diag.log` file. This file is located in the *INSTHOME*/sqllib/db2dump directory, where *INSTHOME* represents home directory of the instance owner.
>
> For more information on the `db2diag.log` file, refer to the *Troubleshooting Guide*.

At the *client*:

__ 1. If used, the `services` and `hosts` files were updated correctly.

__ 2. The node was cataloged with the correct hostname (*hostname*) or IP address (*ip_address*).

__ 3. The port number matches, or the service name maps to, the port number used on the server.

__ 4. The node name (*node_name*) that was specified in the database directory points to the correct entry in the node directory.

__ 5. The database was cataloged properly, using the *server's* database alias (*database_alias*) that was cataloged when the database was created on the server, as the database name (*database_name*) on the client.

If the connection still fails after you verify these items, refer to the *Troubleshooting Guide*.

Part 3. Appendixes

Appendix A. Basic Task Knowledge

This section describes the basic tasks that you will need to know to use this product effectively.

Go to the section that describes the task that you want to perform:
- "Starting the Software Registration Tool".
- "Starting the Control Center".
- "Entering Commands Using the Command Center" on page 30.
- "Entering Commands Using the Command Line Processor" on page 31.
- "Working with the System Administrative Group" on page 33.

Starting the Software Registration Tool

DB2 software registration is handled automatically if you installed your DB2 product from CD-ROM using the DB2 Installer program. If you installed DB2 using your Linux operating system's native installation tools, you must enter the **db2licm** command to register DB2. Refer to the *Command Reference* for further information.

Starting the Control Center

You must have the prerequisite Java Runtime Environment (JRE) level to launch the Control Center using this command. For more information, refer to the Control Center README, which can be found in the *INSTHOME*/sqllib/cc/prime directory, where *INSTHOME* represents the home directory of the instance owner.

To start the Control Center, enter the **db2cc** command at a command prompt.

You can also run the Control Center as an applet through an application viewer. For more information, refer to the Control Center README, which can be found in the *INSTHOME*/sqllib/cc/prime directory (where *INSTHOME* represents the home directory of the instance owner) where you installed your DB2 product.

Entering Commands Using the Command Center

This section describes how to enter commands using the Command Center. The Command Center provides an interactive window to:

- Run SQL statements, DB2 commands, and operating system commands.
- See the execution result of SQL statements and DB2 commands in a results window. You can scroll through the results and save the output to a file.
- Save a sequence of SQL statements and DB2 commands to a script file. You can then schedule the script to run as a job. When a saved script is modified, all jobs dependent on the saved script inherit the new modified behavior.
- Recall and run a script file.
- See the execution plan and statistics associated with a SQL statement before execution. You do this by invoking Visual Explain in the interactive window.
- Get quick access to database administrative tools from the main tool bar.
- Display all the command scripts known to the system through the Script Center, with summary information listed for each.

Start the Command Center in one of the follows ways:

- Click on the **Command Center** icon in the Control Center.
- Enter the **db2cctr** command.

> You must have the prerequisite Java Runtime Environment (JRE) level to launch the Command Center using this command.

The Command Center contains a large input area in which you enter your commands. To run the commands you have entered, click on the **Execution** icon (the gears icon), or press **CTRL+Enter**.

> In the Command Center, you do not have to enter a command with the db2 prefix; instead, you just enter the DB2 command. For example:
>
> ```
> list database directory
> ```
>
> To enter operating system commands, precede the operating-system command with an exclamation mark (!). For example:
>
> ```
> !ls
> ```

If you want to enter multiple commands, you must end each command with the termination character, then press then **Enter** key to start the next

command on a new line. The default termination character is a semicolon (;). To specify a different termination character, click on the **Tools Settings** icon in the menu toolbar.

For example, you could connect to a database called SAMPLE and list all the system tables by entering the following command:

```
connect to sample;
list tables for system
```

After you have clicked on the **Execution** icon (or pressed **CTRL+Enter**), the Command Center switches to the Results window which informs you how the commands are proceeding.

To recall commands that you have entered, select the **Script** Tab, click on the drop down box, and select a command.

To save commands as scripts, select **Script**->**Save as** from the menu bar. For more information, click on the **Help** push button or press the **F1** key.

> If you want to store commonly used SQL statements or DB2 commands as scripts, click on the **Script Center** icon from the main tool bar. For more information, click on the **Help** push button or press the **F1** key.

Entering Commands Using the Command Line Processor

You can use the command line processor to enter DB2 commands, SQL statements, and operating system commands. It operates in the following modes:

Command Line Mode
> Operates at any shell prompt. You can enter DB2 commands and SQL statements by prefixing the command or statement with the db2 prefix. Operating systems commands are entered directly as this is an ordinary shell prompt.

Interactive Input Mode
> The db2 prefix that you use for DB2 commands (in Command Line Mode) is pre-entered for you. You can enter operating systems commands, DB2 commands, or SQL statements and view their output.

File Input Mode
> Processes commands that are stored in a file. For information on the file input mode, refer to the *Command Reference*.

Command Line Mode

You can use any command window to enter a DB2 command. If you are
entering commands via the Command Line Mode, you must include the db2
prefix. For example:

```
db2 list database directory
```

> If the DB2 command contains characters that have special meaning
> on the operating system you are using, you will need to enter the
> command in quotation marks to ensure that it is run properly.
>
> For example, the following command would retrieve all the
> information from the *employee* table, even if the * character has a
> special meaning on the operating system:
>
> ```
> db2 "select * from employee"
> ```

If you need to enter a long command that does not fit on one line, use the line
continuation character, \. When you have reached the end of the line, press
the **Enter** key to continue entering the command on the next line. For
example:

```
db2 select empno, function, firstname, lastname, birthdate, from \
> employee where function='service' and \
> firstname='Lily' order by empno desc
```

Interactive Input Mode

To invoke the command line processor in interactive input mode, enter the
db2 command from the command line processor

In interactive input mode, the prompt looks like this:

```
db2 =>
```

In interactive input mode, you do not have to enter DB2 commands with a
db2 prefix; instead, you just enter the DB2 command. For example:

```
db2 => list database directory
```

To enter operating system commands in interactive mode, precede the
operating-system command with an exclamation mark (!). For example:

```
db2 => !ls
```

If you need to enter a long command that does not fit on one line, use the line
continuation character, \. When you have reached the end of the line, press
the **Enter** key to continue entering the command on the next line. For
example:

```
db2 => select empno, function, firstname, lastname, birthdate, from \
db2 (cont.) => employee where function='service' and \
db2 (cont.) => firstname='Lily' order by empno desc
```

To end interactive input mode, enter the **quit** or **terminate** command.

For more information on advanced topics using the CLP, refer to the *Command Reference*.

Working with the System Administrative Group

By default, System Administrative (SYSADM) authority is granted to any valid DB2 username that belongs to the primary group of the instance owner's username.

For information on how to change the default SYSADM settings and how to assign this authority to a different user or set of users, refer to the *Administration Guide*.

Appendix B. National Language Support (NLS)

> This feature applies if you intend to use DB2 Personal Edition as a client to access remote servers.

This section contains information about the National Language Support (NLS) provided by DB2, including information about supported locales and code sets. For information on developing applications that use NLS, refer to the *Application Development Guide.*

Language and Codeset Support for UNIX Operating Systems

DB2 supports many code sets and locales without translating the messages for the corresponding languages. Supporting a locale means that you can create and use a database in that locale, but you may have to view all panels and messages in a different language, if translated messages are not available in DB2. For a complete list of locales supported, refer to the *Administration Guide.*

If you want to operate in a different language environment, perform the following steps:

Step 1. Ensure that the appropriate message option for the desired language has been installed.

Step 2. Set the *LANG* environment variable to the desired locale.

For example, to use `fr_FR` messages on DB2 for Linux, you must have the `fr_FR` message option installed and must set *LANG* to `fr_FR`.

The selected message catalog filesets are placed in the following directory on the target workstation:

```
/usr/IBMdb2/V6.1/msg/%L
```

where *%L* is equal to the locale name of the message catalog.

Appendix C. Naming Rules

Go to the section that describes the naming rules that you require information on:

- "General Naming Rules"
- "Database, Database Alias, and Catalog Node Name Rules"
- "Object Name Rules" on page 38
- "Username, User ID, Group Name, and Instance Name Rules" on page 39
- "Password Rules" on page 40
- "DB2SYSTEM Naming Rules" on page 39

General Naming Rules

Unless otherwise specified, all names can include the following characters:

- A through Z

> When used in most names, characters A through Z are converted from lowercase to uppercase.

- 0 through 9
- @, #, $, and _ (underscore)

Unless otherwise specified, all names must begin with one of the following characters:

- A through Z
- @, #, and $

Do not use SQL reserved words to name tables, views, columns, indexes, or authorization IDs.

For a list of SQL reserved words, refer to the *SQL Reference*.

Database, Database Alias, and Catalog Node Name Rules

Database names are the identifying names assigned to databases in the database manager.

Database alias names are synonyms given to remote databases. Database aliases must be unique within the System Database Directory in which all aliases are stored.

When naming a database or database alias, see "General Naming Rules" on page 37.

In addition, the name you specify can *only* contain 1 to 8 characters.
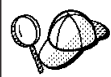
> To avoid potential problems, do not use the special characters @, #, and $ in a database name if you intend to have a client remotely connect to a host database. Also, because these characters are not common to all keyboards, do not use them if you plan to use the database in another country.

Object Name Rules

Database objects include:
- Tables
- Views
- Columns
- Indexes
- User-defined functions (UDFs)
- User-defined types (UDTs)
- Triggers
- Aliases
- Table spaces
- Schemas

When naming database objects, see "General Naming Rules" on page 37.

In addition, the name you specify:
- Can contain 1 to 18 characters *except* for the following:
  - Table names (including view names, summary table names, alias names, and correlation names), which can contain up to 128 characters; and
  - column names, which can contain up to 30 characters
- Cannot be any of the SQL reserved words that are listed in the *SQL Reference.*

> Using delimited identifiers, it is possible to create an object that violates these naming rules; however, subsequent use of the object could result in errors.
>
> For example, if you create a column with a + or − sign included in the name and you subsequently use that column in an index, you will experience problems when you attempt to reorganize the table. To avoid potential problems with the use and operation of your database, *do not* violate these rules.

Username, User ID, Group Name, and Instance Name Rules

Usernames or *User IDs* are the identifiers assigned to individual users. When naming users, groups, or instances, see "General Naming Rules" on page 37.

In addition, the name you specify:

- Can contain 1 to 8 characters
- Cannot be any of the following:
  - USERS
  - ADMINS
  - GUESTS
  - PUBLIC
  - LOCAL
- Cannot begin with:
  - IBM
  - SQL
  - SYS
- Cannot include accented characters
- In general, when naming users, groups, or instances, Linux users should use lowercase names.

DB2SYSTEM Naming Rules

DB2 uses the *DB2SYSTEM* name to identify a physical DB2 machine, system, or workstation within a network. On Linux, the DB2SYSTEM name defaults to the TCP/IP hostname.

When selecting a *DB2SYSTEM* name, see "General Naming Rules" on page 37.

In addition, the name you specify:

- Must be unique within a network

- Can contain a maximum of 21 characters

Password Rules

When determining passwords, Linux users should restrict the length of the password to a maximum of 8 characters.

Appendix D. About the DB2 Family of Products

The DB2 Family of Products consists of DB2 Universal Database (UDB) and
DB2 Connect, as well as some associated DB2 products. Each product is
available in different versions that address the needs of today's marketplace.
This section provides a brief description of the IBM DB2 Family of Products:

DB2 Universal Database

DB2 Universal Database Enterprise - **Extended Edition**
> DB2 UDB Enterprise - Extended Edition provides a relational database
> management system that is web-enabled with Java support; scalable
> from single processors to symmetric multiprocessors; and multimedia
> capable with image, audio, video, and text support. With DB2
> Universal Database, local and remote client applications can create,
> update, control, and manage relational databases using Structured
> Query Language (SQL), DB2 APIs (Application Programming
> Interfaces), ODBC (Open Database Connectivity), JDBC (Java Database
> Connectivity), SQLJ (Embedded SQL for Java), or DB2 CLI (Call Level
> Interface).
>
> DB2 Universal Database Enterprise - Extended Edition offers the
> ability to partition a database across multiple independent machines
> of a common platform. To the end-user and application developer, the
> partitioned database still appears as a single database on a single
> machine. This fully scalable database system enables an application to
> use multiple machines for a database that is too large for a single
> machine to handle efficiently. SQL operations and utilities can execute
> in parallel both within and between the individual database partitions,
> which can speed up the execution time of a single query or command.
>
> DB2 Universal Database Enterprise - Extended Edition includes DB2
> Connect functionality that allows access to DB2 databases on AS/400,
> MVS/ESA, OS/390, VM, or VSE systems. This product also includes
> the Federated Database Object Support feature which provides
> transparent read access to a collection of heterogeneous and
> semiautonomous data sources, and the ability to perform Distributed
> Requests.
>
> This product is currently available for AIX, Solaris, and Windows NT
> operating systems.

DB2 Universal Database Enterprise Edition
> DB2 UDB Enterprise Edition provides a relational database
> management system that is web-enabled with Java support; scalable
> from single processors to symmetric multiprocessors; and multimedia

capable with image, audio, video, and text support. With DB2 Universal Database, local and remote client applications can create, update, control, and manage relational databases using Structured Query Language (SQL), DB2 APIs (Application Programming Interfaces), ODBC (Open Database Connectivity), JDBC (Java Database Connectivity), SQLJ (Embedded SQL for Java), or DB2 CLI (Call Level Interface).

DB2 Universal Database Enterprise Edition also includes the DB2 Connect functionality that allows access to DB2 databases on AS/400, MVS/ESA, OS/390, VM, and VSE systems. This product also includes the Federated Database Object Support feature which provides transparent read access to a collection of heterogeneous and semiautonomous data sources, and the ability to perform Distributed Requests.

This product is currently available on AIX, HP-UX, Linux, OS/2, Solaris and Windows NT operating systems.

DB2 Universal Database Workgroup Edition

DB2 UDB Workgroup Edition provides a relational database management system that is web-enabled with Java support; scalable from single processors to symmetric multiprocessors; and multimedia capable with image, audio, video, and text support. With DB2 Universal Database, local and remote client applications can create, update, control, and manage relational databases using Structured Query Language (SQL), DB2 APIs (Application Programming Interfaces), ODBC (Open Database Connectivity), JDBC (Java Database Connectivity), SQLJ (Embedded SQL for Java), or DB2 CLI (Call Level Interface).

This product is currently available for Linux, OS/2, and Windows NT.

DB2 Universal Database Personal Edition

DB2 UDB Personal Edition provides a relational database management system that is web-enabled with Java support; and multimedia capable with image, audio, video, and text support. DB2 Universal Database enables local applications to create, update, control, and manage relational databases using the same rich set of APIs as DB2 Enterprise Edition.

DB2 Personal Edition can also act as a client to access remote DB2 servers and can accept inbound Administration Client requests to remotely manage its resources.

This product is currently available for Linux, OS/2, Windows 9x, and Windows NT.

DB2 Universal Database Satellite Edition

DB2 Satellite Edition is a small-footprint version of DB2 Universal

Database that is appropriate for single-user systems, both mobile and branch offices, that occasionally connect to a DB2 control server to exchange data with corporate systems. Administration of DB2 Satellite Edition is scalable, and can be performed through batch jobs that are stored in a control database that resides on a DB2 Workgroup, DB2 Enterprise, or DB2 Enterprise - Extended Edition server.

This product is currently available for Windows 9x and Windows NT.

DB2 Connect

DB2 Connect Enterprise Edition

DB2 Connect Enterprise Edition is a connectivity server that concentrates and manages connections from multiple desktop clients and web applications to DB2 database servers running on host or AS/400 systems. IBM's DB2 for AS/400, DB2 for OS/390, and DB2 for VSE & VM databases continue to be the systems of choice for managing most critical data for the world's largest organizations. While these host and AS/400 databases manage the data, there is a great demand to integrate this data with applications running on Windows, UNIX, OS/2 and Apple workstations.

DB2 Connect Enterprise Edition enables local and remote client applications to create, update, control, and manage DB2 databases and host systems using Structured Query Language (SQL), DB2 APIs (Application Programming Interfaces), ODBC (Open Database Connectivity), JDBC (Java Database Connectivity), SQLJ (Embedded SQLJ for Java), or DB2 CLI (Call Level Interface). In addition, DB2 Connect supports Microsoft Windows data interfaces such as ActiveX Data Objects (ADO), Remote Data Objects (RDO), and OLE DB.

DB2 Connect Enterprise Edition is currently available for AIX, HP-UX, Linux, OS/2, Solaris, and Windows NT operating systems. These servers provide support for applications running on Windows 3.1, Windows 9x, Windows NT, UNIX (AIX, SCO OpenServer, SCO UnixWare 7, Solaris, HP-UX, Linux, Silicon Graphics IRIX, SINIX), OS/2, and Apple Macintosh workstations.

DB2 Connect Personal Edition

DB2 Connect Personal Edition provides access from a single workstation to DB2 databases residing on servers such as MVS/ESA, OS/390, OS/400, VM and VSE, as well as to DB2 Universal Database servers on Windows NT, UNIX, and OS/2. DB2 Connect Personal Edition provides the same rich set of APIs as DB2 Connect Enterprise Edition, and also features integrated SNA support on all Windows platforms.

This product is currently available for Linux, OS/2, Windows 9x, and Windows NT operating systems.

Associated DB2 Products

DB2 Universal Developer's Edition

DB2 Universal Developer's Edition provides all the tools and software you need to create and test multimedia database client/server applications that can run on any DB2 UDB product.

DB2 Universal Developer's Edition contains a collection of DB2 Universal Database servers, DB2 clients, DB2 Connect products, DB2 Software Developer's Kits, extenders for audio, video, image, and text, and application development tools for all supported operating systems.

DB2 Personal Developer's Edition

DB2 Personal Developer's Edition provides all the tools and software you need to create and test multimedia database applications that run only on DB2 UDB Personal Edition products.

The DB2 Personal Developer's Edition contains a collection of DB2 Universal Database servers, DB2 clients, DB2 Connect Personal Edition, DB2 Software Developer's Kits, extenders for audio, video, image, and text, and application development tools for all supported operating systems.

DB2 Run-Time Client CD-ROMs

DB2 Run-Time Client CD-ROMs contain all the latest DB2 Run-Time Clients. A DB2 Run-Time Client provides the ability for workstations from a variety of platforms to access DB2 databases. These workstations are known as DB2 Run-Time Clients.

DB2 Run-Time Client CD-ROMs are included with all DB2 server and DB2 Developer's Edition product packages.

DB2 Administration Client CD-ROMs

DB2 Administration CD-ROMs contain all the latest DB2 Administration Clients.

A DB2 Administration Client provides the ability for workstations from a variety of platforms to access and administer DB2 databases. These workstations are known as DB2 Administration Clients. The DB2 Administration Client that matches the operating system of the DB2 product that is installed is included as a component with all DB2 Universal Database and DB2 Connect products.

The DB2 Administration Client has all of the features of the DB2 Run-Time Client and also includes all the DB2 Administration GUI tools, documentation, and support for Thin Clients. The DB2

Administration Client CD-ROMs are included with all DB2 server and DB2 Developer's Edition product packages.

DB2 DataJoiner
DB2 DataJoiner allows you to access data residing on multiple and diverse platforms, both IBM and multi-vendor, relational and non-relational, as a single database image. With DB2 DataJoiner, you can access all the data in your enterprise as if it were local.

DB2 Data Links Manager
DB2 Data Links Manager manages data files that are not normally found in a database (for example, engineering blueprints or medical x-rays). These data files can be on a file system outside of the database. Manipulation of this data is managed and controlled by DATALINK values in a DB2 database. Use DB2 Data Links Manager to control access to files that are external to a DB2 database.

This product is currently available for AIX and Windows NT operating systems.

DB2 Query Patroller
DB2 Query Patroller provides query and resource management for decision support systems enabling the success of highly scalable data warehouses. As an application, it takes ODBC queries from a client, analyzes them and then dynamically distributes the workload across different nodes on the DB2 UDB Enterprise - Extended Edition installation.

This product is currently available for AIX and Solaris operating systems.

DB2 Net.Data
IBM Net.Data is an application that allows Web developers to easily build dynamic Internet applications using ″Web Macros″. Net.Data Web Macros have the simplicity of HTML and the power of dynamic SQL. Net.Data provides database connectivity to a variety of data sources including information stored in relational databases and flat files. Data sources, such as DB2, Oracle, and Sybase, and DRDA enabled data sources, can be on a wide range of platforms.

Working with DB2 Data

As well as providing a relational database to store your data, DB2 UDB Personal Edition for Linux lets you issue requests to administer, query, update, insert, or delete data using local or remote client applications.

Working with Data Using DB2 UDB Personal Edition

As well as providing a relational database to store your data, DB2 UDB Personal Edition lets you issue requests to query, update, insert, or delete data from local applications. Figure 1 shows DB2 UDB Personal Edition with local applications accessing the local database.
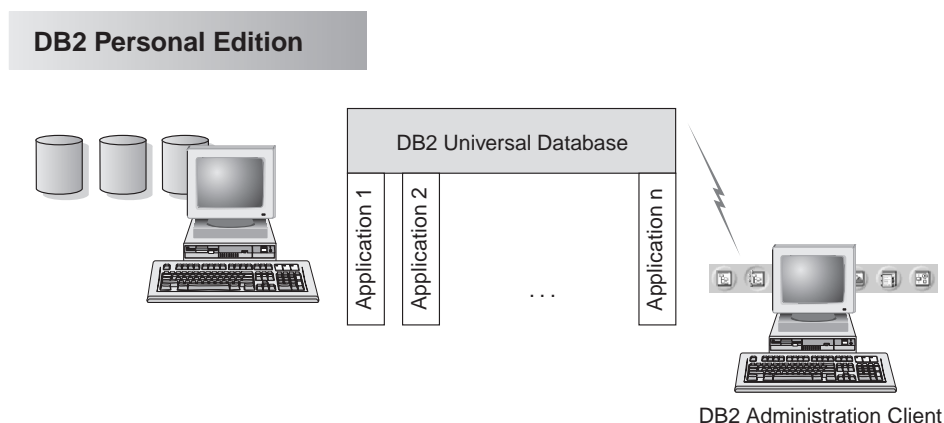

Figure 1. DB2 Personal Edition with Local Applications

DB2 UDB Personal Edition includes graphical tools that enable you to tune performance, access remote DB2 servers, manage all servers from a single site, and process SQL queries. For a description of these tools, see "Administering Instances and Databases with the DB2 Administration Tools" on page 53.

Accessing Host or AS/400 DB2 Data from the Desktop Using DB2 Connect Enterprise Edition

A DB2 server with the DB2 Connect Server Support feature installed, or a DB2 Connect server, enables DB2 clients on a LAN access to data that is stored on host or AS/400 systems.

> DB2 Universal Database Enterprise Edition and DB2 Universal Database Enterprise - Extended Edition include the **DB2 Connect Server Support** component. All references to DB2 Connect Enterprise Edition also apply to the DB2 Connect Server Support component.

DB2 Connect Enterprise Edition is most appropriate for environments where:
- Host and AS/400 database servers do not support native TCP/IP connectivity and direct connectivity from desktop workstations via SNA is not desirable.
- Application is implemented using data-aware Java applets.

- Web servers are used to implement web-based applications.
- Middle-tier application server is employed.
- Transaction monitors such as CICS, Encina, Microsoft Transaction Server (MTS), Tuxedo, Component Broker, and MQSeries are used.

Applications are provided with transparent access to host or AS/400 data through a standard architecture for managing distributed data. This standard is known as Distributed Relational Database Architecture (DRDA). Use of DRDA allows your applications to establish a fast connection to host and AS/400 databases without expensive host components or proprietary gateways.

A great deal of the data in many large organizations is managed by DB2 for AS/400, DB2 for MVS/ESA, DB2 for OS/390, or DB2 for VSE & VM. Applications that run on any of the supported platforms can work with this data transparently, as if a local database server managed it. DB2 Connect Enterprise Edition is required for supporting applications which access host or AS/400 data and exploit transaction monitors (for example, CICS, Encina, Microsoft Transaction Server) as well as applications that are implemented as Java applets. In addition, you can use a wide range of off-the-shelf or custom-developed database applications with DB2 Connect and its associated tools. For example, you can use DB2 Connect products with:

- *Spreadsheets*, such as Lotus 1-2-3 and Microsoft Excel, to analyze real-time data without having the cost and complexity of data extract and import procedures.
- *Decision support tools*, such as Business Objects, Brio and Cognos, and Crystal Reports, to provide real-time information.
- *Database products*, such as Lotus Approach and Microsoft Access.
- *Development tools*, such as PowerSoft PowerBuilder, Microsoft Visual Basic, and Borland Delphi, to create client/server solutions.

Although DB2 Connect is often installed on an intermediate server machine to connect DB2 clients to a host or AS/400 database, it is also installed on machines where multiple local users want to access the host or AS/400 servers directly. For example, DB2 Connect may be installed on a large machine with many local users. It may also be installed on a Web server, Transaction Processor (TP) monitor, or other 3-tier application server machines with multiple local SQL application processes and threads. In these cases, you can choose to install DB2 Connect on the same machine for simplicity, or on a separate machine to off-load CPU cycles.

A DB2 server with the DB2 Connect functionality installed, or a DB2 Connect server, enables multiple clients to connect to host or AS/400 data and can significantly reduce the effort that is required to establish and maintain access

to enterprise data. Figure 2 on page 49 illustrates IBM's solution for environments in which you want to use a DB2 client making an indirect connection to a host or AS/400 database server through DB2 Connect Enterprise Edition.

In the example, you could replace the DB2 Connect server with a DB2 server that has the DB2 Connect Server Support component installed.

DB2 for
MVS

DB2 for
VSE

DB2 for
VM

OS/390

S/390, S/370

DB2 for
AS/400

AS/400

APPC TCP/IP*** MPTN

Coax* Ethernet Asynch Twinax**
SDLC Token-ring X.25
ESCON

DB2 Connect Enterprise Edition

Communication Support

APPC, Named Pipes, NetBIOS,
IPX/SPX, TCP/IP

Application 1

Application 2

. . .

Application n

DB2 Run-Time Client   DB2 Administration Client
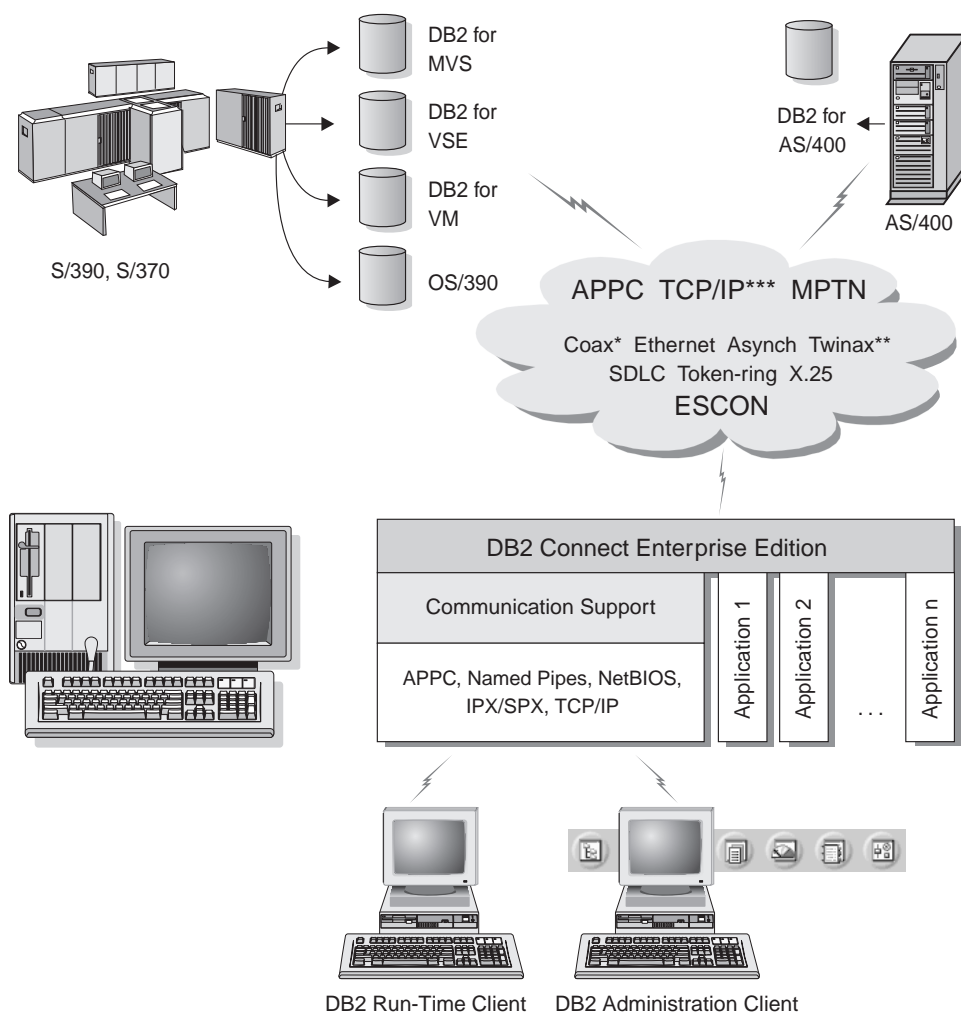
Not all protocols are supported for all platforms.

  * For Host connections only
 ** For AS/400
*** TCP/IP connectivity requires DB2 for OS/390 V5R1, DB2 for AS/400 V4R2,
    or DB2 for VM V6.1

Figure 2. DB2 Connect Enterprise Edition

Accessing DB2 Data from the Web Using Java

Java Database Connectivity (JDBC) and Embedded SQL for Java (SQLJ) are provided with DB2 to allow you to create applications that access data in DB2 databases from the Web.

Programming languages containing embedded SQL are called host languages. Java differs from the traditional host languages C, COBOL, and FORTRAN, in ways that significantly affect how it embeds SQL:

- SQLJ and JDBC are open standards, enabling you to easily port SQLJ or JDBC applications from other standards-compliant database systems to DB2 Universal Database.
- All Java types representing composite data, and data of varying sizes, have a distinguished value, null, which can be used to represent the SQL NULL state, giving Java programs an alternative to NULL indicators that are a fixture of other host languages.
- Java is designed to support programs that, by nature, are heterogeneously portable (also called ″super portable″ or simply ″downloadable″). Along with Java's type system of classes and interfaces, this feature enables component software. In particular, an SQLJ translator written in Java can call components that are specialized by database vendors in order to leverage existing database functions such as authorization, schema checking, type checking, transactional, and recovery capabilities, and to generate code optimized for specific databases.
- Java is designed for binary portability in heterogeneous networks, which promises to enable binary portability for database applications that use static SQL.
- You can run JDBC applets inside a web page on any system with a Java-enabled browser, regardless of the platform of your client. Your client system requires no additional software beyond this browser. The client and the server share the processing of JDBC and SQLJ applets and applications.

The JDBC server and the DB2 client must reside on the same machine as the Web server. The JDBC server calls the DB2 client to connect to local, remote, host, and AS/400 databases. When the applet requests a connection to a DB2 database, the JDBC client opens a TCP/IP connection to the JDBC server on the machine where the Web server is running. See Figure 3 on page 51 for an example of a Java-enabled browser accessing data from remote DB2 databases.
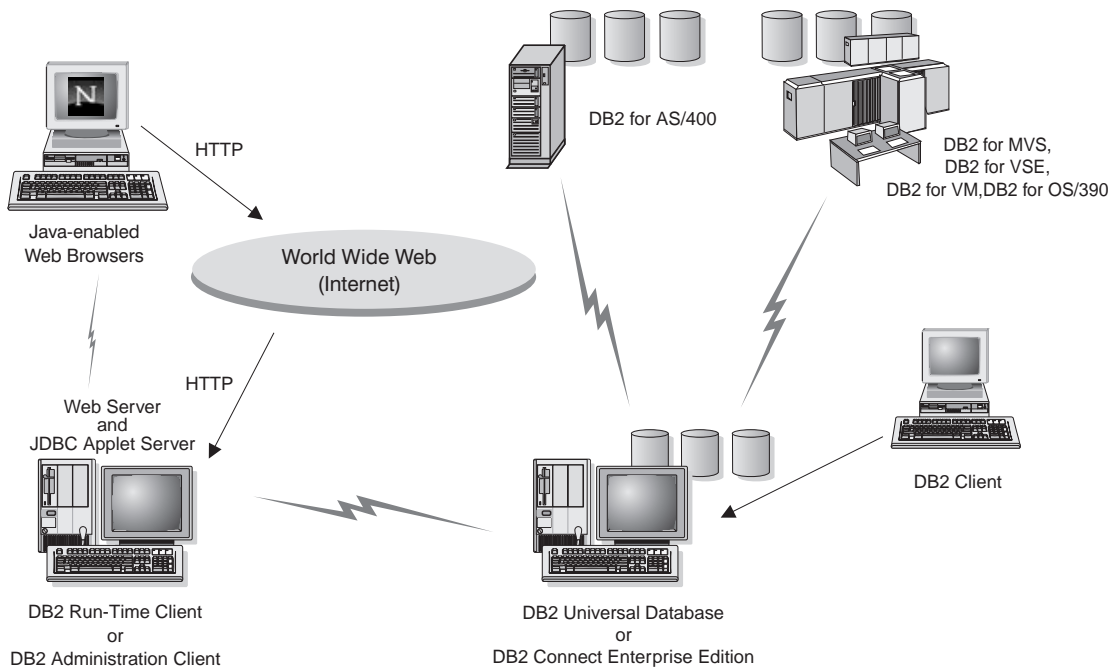
Figure 3. Accessing Data Stored on DB2 Using JDBC

JDBC and SQLJ applications can be run from any system that has a DB2 client installed; a Web browser and a Web server are not required.

For more information on Java enablement, refer to the DB2 Java Enablement web page at `http://www.software.ibm.com/data/db2/java/`. For more information on the JDBC API, point your browser to `http://splash.javasoft.com/`.

Accessing DB2 Data from the Web Using Net.Data

Net.Data is provided with DB2 to allow you to create applications that access data in DB2 databases from the Web.

Use *Net.Data* to create applications that are stored on a Web server and viewable from any Web browser. While viewing these documents, users can either select automated queries or define new ones that retrieve the specified information directly from a DB2 database.

Automated queries do not require user input; they are links in an HTML document and, when selected, they trigger existing SQL queries and return the results from a DB2 database. These links can be triggered repeatedly to access current DB2 data. Customized queries require user input. Users define the search characteristics on the Web page by selecting options from a list or by entering values in fields. They submit the search by clicking on a push button. Net.Data uses the information that is supplied by the user to dynamically build a complete SQL statement, and it sends the query to the DB2 database.

A demonstration of Net.Data applications is available from the IBM Software Net.Data page at `http://www.software.ibm.com/data/net.data`.

Net.Data can be installed with a DB2 server to allow local access to databases. Net.Data can be installed with a DB2 client to allow remote access to databases. In both cases, Net.Data and the Web server must be installed on the same system. See Figure 4 for an example of a workstation with Net.Data that is being used to access data from a remote DB2 database.

Accessing DB2 Data Using DB2 Net.Data
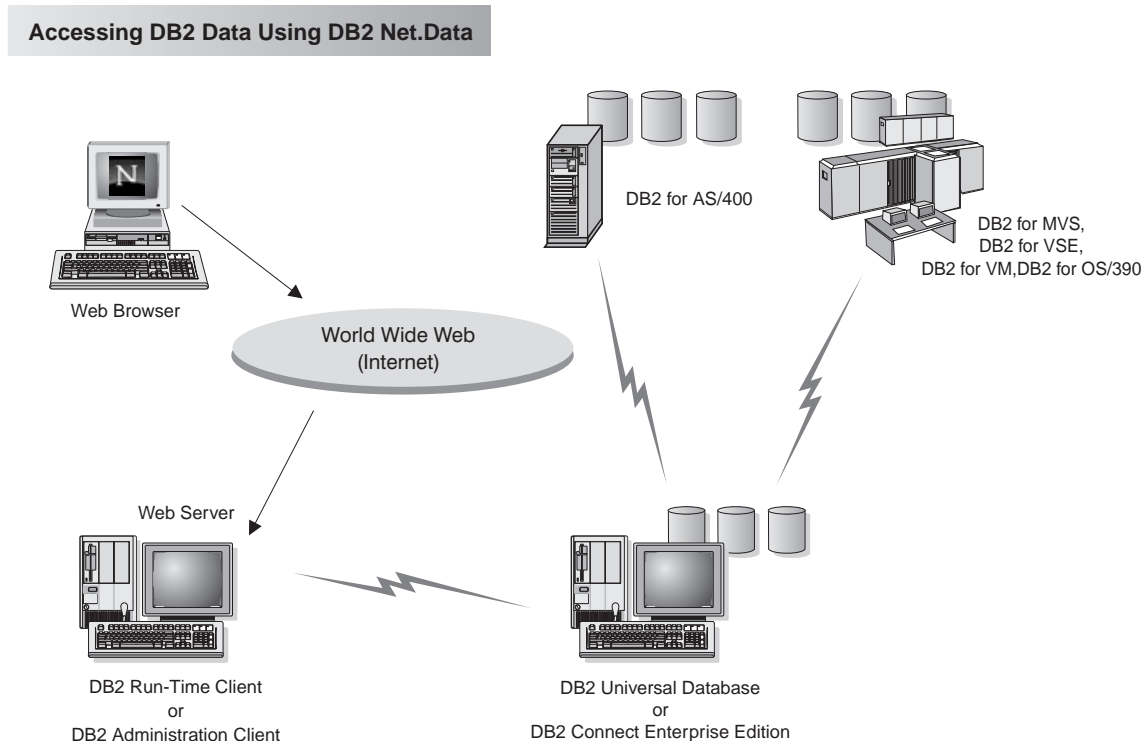
Figure 4. Accessing Internet Data Stored on DB2 Using Net.Data

Administering Instances and Databases with the DB2 Administration Tools

You can administer local or remote servers using the DB2 Administration Tools. Use the *Control Center* to perform administration tasks such as configuring DB2 instances and databases, backing up and recovering data, scheduling jobs, and managing media, all from a graphical interface.

If you want to access DB2 for OS/390 functions from the Control Center:
1. Verify the following information with your systems administrator:
   a. You have a DB2 for OS/390 license (Version 5 or later).
   b. You are using DB2 UDB for Enterprise Edition.
2. Apply a function modification identifier. Read the DB2 for OS/390 Program Directory. The program directory identifies and describes the contents of FMIDs for each tape or cartridge.
3. Apply any additional service to DB2 as described in the program directory.
4. Ensure that you enabled the stored procedures address space.

Managing Instances and Database Objects Using the Control Center

The Control Center displays instances and database objects (such as table spaces, tables, and packages) and their relationships to each other. Using the Control Center, you can manage local and remote servers from a single point of control. See Figure 5 on page 54 for an example of the main Control Center window.
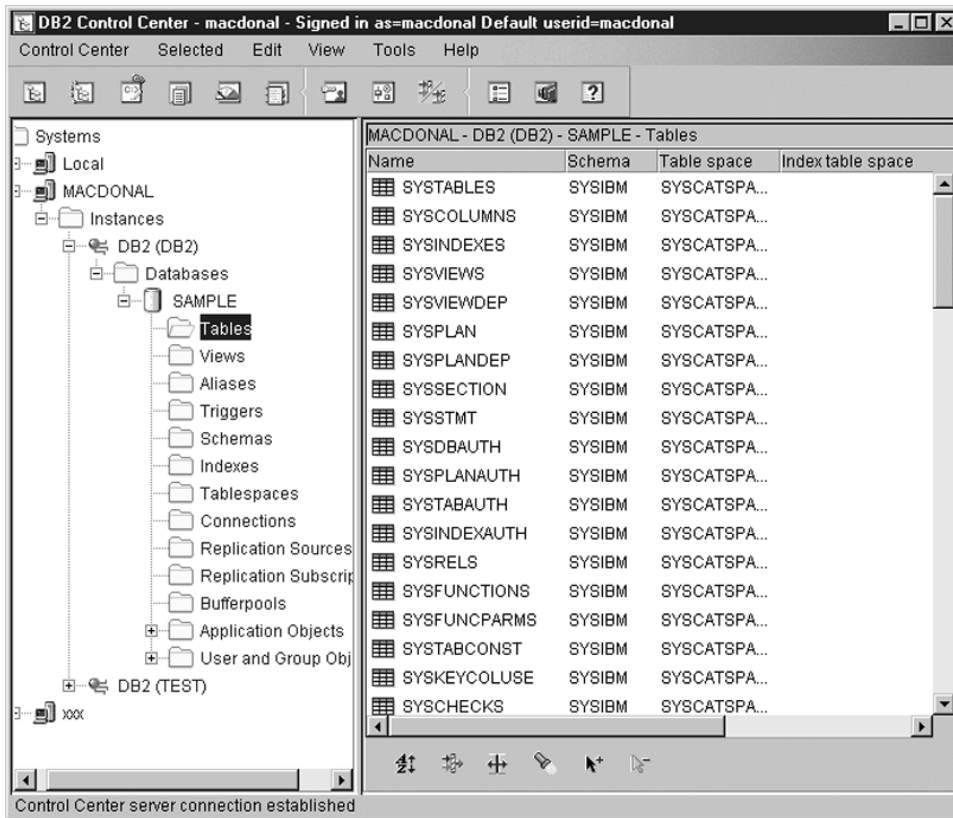
Figure 5. Control Center Main Window

From the Control Center, you can perform operations on database objects. These operations include:

- Create and drop a database
- Create, alter, and drop a table space or table
- Create, alter, and drop an index
- Backup and recover a database or table space
- Define the replication sources and subscriptions to replicate data between systems
- Monitor resources and events on a server.

You can also control DB2 instances by:

- Maintaining communication protocols
- Setting database manager and database configuration values that affect performance.

SmartGuides are provided to help you perform complex tasks. For example, a SmartGuide is available to tune the performance of your system. See "Completing Tasks with SmartGuides" on page 61 for descriptions of the various SmartGuides and how to start them.

The Control Center provides additional functionality to assist you in managing your servers:

| Control Center | Command Center | Alert Center | Tool Setting | Licence Center | Help |

| Satellite Center | Script Center | Journal | Legend | Information Center |
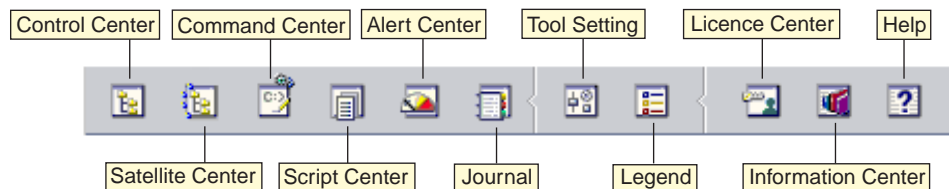
Control Center
>	Use the Control Center to start another session of the Control Center to administer a server.

Satellite Center
>	Use the Satellite Center to manage the Satellites that are served by a particular DB2 Control Server. It provides create, remove, modify, and manage functions for Satellites and Groups. You can also create and manage scripts to administer the Satellites.

Command Center
>	Use the Command Center to enter DB2 commands and SQL statements in an interactive window and see the execution result in a result window. You can scroll through the results and save the output to a file.

Script Center
>	Use the Script Center to create scripts, which you can store and invoke at a later time. These scripts can contain DB2 commands, SQL statements, as well as operating system commands. Scripts can be scheduled to run unattended. These jobs can be run once or set up to run on a repeating schedule; a repeating schedule is particularly useful for tasks like backup.

Alert Center
>	Use the Alert Center to monitor your system for early warnings of potential problems or to automate actions to correct problems discovered.

Journal
>	Use the Journal to view all available information about jobs that are pending execution, executing, or that have completed execution. You

can also view the recovery history log, the alerts log, and the messages log; and review the results of jobs that are run unattended.

Tools Setting
Use the Tools Setting to change the settings for the DB2 Administration Tools.

License Center
Use the License Center to manage licenses and display license status and usage of any DB2 products installed on your system. You can also use the License Center to configure your system for proper license monitoring.

Information Center
The Information Center provides quick access to DB2 product information. This product information includes such items as: database tasks, reference material, DB2 documentation, troubleshooting aids, sample programs for application development, and DB2 web-related URLs.

You can also analyze performance using the DB2 Performance Monitor and Visual Explain. These tools are available from the Control Center.

	Use the **DB2 Performance Monitor** to monitor the performance of your system. You can monitor activity by sampling data over a period of time or using data for a particular event. See "Monitoring Databases Using DB2 Performance Monitor" on page 57 for more information.
	Use **Visual Explain** to view the access plan for explained SQL statements as a graph. You can use the information available from the graph to tune your SQL queries for better performance. See "Viewing SQL Access Plans Using Visual Explain" on page 57 for more information.

You can find additional information in the *Administration Guide* or in the online help.

Managing Communications on the Server

The Control Center allows you to view, update, and reset server protocol settings. These functions are accessed by clicking with the right mouse button on an instance and selecting the **Setup communications** option from the pop-up menu. This tool helps database administrators to:

- Configure communication parameters in the database manager by clicking with the right mouse button on an instance and selecting the **Configure** option from the pop-up menu.

> By default, the setup program automatically detects and configures most communication protocols that it detects on your system.

- Export database information in a profile that can be used to configure clients by clicking with the right mouse button on a system and selecting the **Export** option from the pop-up menu.

> DB2 Personal Edition does not accept inbound client requests for data. You can only configure inbound communications on a DB2 Personal Edition workstation to allow administrative requests from a DB2 Administration Client.

For information on how to configure server communications, refer to the *Installation and Configuration Supplement.*

Monitoring Databases Using DB2 Performance Monitor

With the DB2 Performance Monitor, you can:

- Identify and analyze performance problems in database applications or the database manager.
- Use the early warning system to detect potential problems.
- Automate actions to correct problems that are discovered.
- Define your own statistics, in addition to the default set that is provided.

You can choose to monitor the current state of database activity or collect information when specific events occur. The Performance Monitor allows you to capture point-in-time information at specified intervals. The Event Analyzer allows you to view information about the occurrence of events such as deadlocks and transaction completions.

For additional information, refer to the *Administration Guide* or the online help.

Viewing SQL Access Plans Using Visual Explain

Visual Explain helps database administrators and application developers to:

- View the access plan chosen by the database manager's optimizer for a given SQL statement.
- Tune SQL statements for better performance.
- Design application programs and databases.
- View all the details of an access plan, including the statistics in the system catalogs.
- Decide whether or not to add an index to a table.
- Identify the source of problems by analyzing the access plan or performance of SQL statements.

- Use the portable snapshot function to view snapshots from any remote DB2 server.
- Display access plans for queries on all supported DB2 configurations.

For additional information, refer to the *Administration Guide* or the online help.

Understanding the Administration Server

The Administration Server responds to requests from the DB2 Administration Tools and the Client Configuration Assistant (CCA). The DB2 Administration Tools allow you to start, stop, and set database manager configuration parameters for servers. These tools are also used by the CCA to catalog databases for a client.

The Administration Server must reside on every server that you want to administer and detect. The Administration Server is automatically created and started for you; its default name is db2as.

Developing Applications Using the DB2 Software Developer's Kit

The DB2 Software Developer's Kit is a collection of tools that are designed to meet the needs of database application developers. It includes libraries, header files, documented APIs, and sample programs to build character-based, multimedia, or object-oriented applications.

A platform-specific version of the DB2 Software Developer's Kit is available for each of the supported operating systems and is currently available in the DB2 Universal Developer's Edition and the DB2 Personal Developer's Edition. Applications that are developed with the DB2 Software Developer's Kit will run on any platform where the equivalent DB2 client component is installed. Through a DB2 client, these applications can access all servers and, by using the DB2 Connect product (or the DB2 Connect functionality supplied with DB2 Enterprise - Extended or DB2 Enterprise Edition), they can also access DB2 Universal Database for AS/400, DB2 Universal Database for OS/390, and DB2 for VSE & VM database servers.

The DB2 Software Developer's Kit allows you to develop applications that use the following interfaces:
- Embedded SQL
- Call Level Interface (CLI) development environment (which is compatible with ODBC from Microsoft)
- Java Database Connectivity (JDBC)
- Embedded SQL for Java (SQLJ)

- DB2 Application Programming Interfaces (APIs) that use administrative functions to manage a DB2 database.

The DB2 Software Developer's Kit includes:
- Precompilers for Java, C, C++, COBOL, and FORTRAN.
- Libraries, include files, and code samples to develop applications that use SQLJ and DB2 CLI.
- JDBC and SQLJ support to develop Java applications and applets.
- Interactive SQL, through the CLP, to prototype SQL statements and perform ad-hoc database queries.
- An API to enable other application development tools to implement precompiler support for DB2 directly with their products.
- An SQL92 and MVS Conformance Flagger to identify embedded SQL statements in applications not conforming to the ISO/ANSO SQL92 Entry Level standard, or which are not supported by DB2 for OS/390.

For complete information on the functionality of the Software Developer's Kit, and instructions on how to use them, as well as a full list of supported compilers for your platform, refer to the *Application Building Guide*.

Running Your Own Applications

Various types of applications can access DB2 databases:
- Applications developed using a DB2 Software Developer's Kit that include embedded SQL (including Java SQLJ applications and applets), APIs, stored procedures, user-defined functions, calls to DB2 CLI, or calls to JDBC applications and applets.
- ODBC applications such as Lotus Approach.
- Net.Data macros containing HTML and SQL.

For more information on running your own applications, refer to the *Installation and Configuration Supplement*.

Appendix D. About the DB2 Family of Products **59**

Appendix E. How the DB2 Library Is Structured

The DB2 Universal Database library consists of SmartGuides, online help, books and sample programs in HTML format. This section describes the information that is provided, and how to access it.

To access product information online, you can use the Information Center. You can view task information, DB2 books, troubleshooting information, sample programs, and DB2 information on the Web. See "Accessing Information with the Information Center" on page 72 for details.

Completing Tasks with SmartGuides

SmartGuides help you complete some administration tasks by taking you through each task one step at a time. SmartGuides are available through the Control Center and the Client Configuration Assistant. The following table lists the SmartGuides.

Note: Create Database, Index, and Configure Multisite Update SmartGuide are available for the partitioned database environment.

SmartGuide	Helps You to...	How to Access...
Add Database	Catalog a database on a client workstation.	From the Client Configuration Assistant, click **Add**.
Back up Database	Determine, create, and schedule a backup plan.	From the Control Center, click with the right mouse button on the database you want to back up and select **Backup**->**Database using SmartGuide**.
Configure Multisite Update SmartGuide	Perform a multi-site update, a distributed transaction, or a two-phase commit.	From the Control Center, click with the right mouse button on the **Database** icon and select **Multisite Update**.
Create Database	Create a database, and perform some basic configuration tasks.	From the Control Center, click with the right mouse button on the **Databases** icon and select **Create**->**Database using SmartGuide**.

SmartGuide	Helps You to...	How to Access...
Create Table	Select basic data types, and create a primary key for the table.	From the Control Center, click with the right mouse button on the **Tables** icon and select **Create**->**Table using SmartGuide**.
Create Table Space	Create a new table space.	From the Control Center, click with the right mouse button on the **Table spaces** icon and select **Create**->**Table space using SmartGuide**.
Index	Advise which indexes to create and drop for all your queries.	From the Control Center, click with the right mouse button on the **Index** icon and select **Create**->**Index using SmartGuide**.
Performance Configuration	Tune the performance of a database by updating configuration parameters to match your business requirements.	From the Control Center, click with the right mouse button on the database you want to tune and select **Configure using SmartGuide**.
Restore Database	Recover a database after a failure. It helps you understand which backup to use, and which logs to replay.	From the Control Center, click with the right mouse button on the database you want to restore and select **Restore**->**Database using SmartGuide**.

Accessing Online Help

Online help is available with all DB2 components. The following table describes the various types of help. You can also access DB2 information through the Information Center. For information see "Accessing Information with the Information Center" on page 72.

Type of Help	Contents	How to Access...
Command Help	Explains the syntax of commands in the command line processor.	From the command line processor in interactive mode, enter:
		? *command*
		where *command* is a keyword or the entire command.
		For example, ? `catalog` displays help for all the CATALOG commands, while ? `catalog database` displays help for the CATALOG DATABASE command.

Type of Help	Contents	How to Access...
Control Center Help *Client Configuration Assistant Help* *Event Analyzer Help* *Command Center Help*	Explains the tasks you can perform in a window or notebook. The help includes prerequisite information you need to know, and describes how to use the window or notebook controls.	From a window or notebook, click the **Help** push button or press the F1 key.
Message Help	Describes the cause of a message, and any action you should take.	From the command line processor in interactive mode, enter: ? *XXXnnnnn* where *XXXnnnnn* is a valid message identifier. For example, ? `SQL30081` displays help about the SQL30081 message. To view message help one screen at a time, enter: ? *XXXnnnnn* | `more` To save message help in a file, enter: ? *XXXnnnnn* > *filename.ext* where *filename.ext* is the file where you want to save the message help.
SQL Help	Explains the syntax of SQL statements.	From the command line processor in interactive mode, enter: `help` *statement* where *statement* is an SQL statement. For example, **help** SELECT displays help about the SELECT statement. **Note:** SQL help is not available on UNIX-based platforms.
SQLSTATE Help	Explains SQL states and class codes.	From the command line processor in interactive mode, enter: **?** *sqlstate* or **?** *class-code* where *sqlstate* is a valid five-digit SQL state and *class-code* is the first two digits of the SQL state. For example, ? `08003` displays help for the 08003 SQL state, while ? `08` displays help for the 08 class code.

DB2 Information – Hardcopy and Online

The table in this section lists the DB2 books. They are divided into two groups:

Cross-platform books
> These books contain the common DB2 information for all platforms.

Platform-specific books
> These books are for DB2 on a specific platform. For example, there are separate *Quick Beginnings* books for DB2 on OS/2, on Windows NT, and on the UNIX-based platforms.

Cross-platform sample programs in HTML
> These samples are the HTML version of the sample programs that are installed with the SDK. They are for informational purposes and do not replace the actual programs.

Most books are available in HTML and PostScript format, or you can choose to order a hardcopy from IBM. The exceptions are noted in the table.

On OS/2 and Windows platforms, HTML documentation files can be installed under the doc\html subdirectory. Depending on the language of your system, some files may be in that language, and the remainder are in English.

On UNIX platforms, you can install multiple language versions of the HTML documentation files under the doc/%L/html subdirectories. Any documentation that is not available in a national language is shown in English.

You can obtain DB2 books and access information in a variety of different ways:

View   See "Viewing Online Information" on page 71.

Search   See "Searching Online Information" on page 74.

Print   See "Printing the PostScript Books" on page 74.

Order   See "Ordering the Printed Books" on page 75.

Name	Description	Form Number File Name for Online Book	HTML Directory
	Cross-Platform Books		

Name	Description	Form Number File Name for Online Book	HTML Directory
Administration Guide	*Administration Guide, Design and Implementation* contains information required to design, implement, and maintain a database. It also describes database access using the Control Center(whether local or in a client/server environment), auditing, database recovery, distributed database support, and high availability. *Administration Guide, Performance* contains information that focuses on the database environment, such as application performance evaluation and tuning. You can order both volumes of the *Administration Guide* in the English language in North America using the form number SBOF-8922.	Volume 1 SC09-2839 db2d1x60 Volume 2 SC09-2840 db2d2x60	db2d0
Administrative API Reference	Describes the DB2 application programming interfaces (APIs) and data structures you can use to manage your databases. Explains how to call APIs from your applications.	SC09-2841 db2b0x60	db2b0
Application Building Guide	Provides environment setup information and step-by-step instructions about how to compile, link, and run DB2 applications on Windows, OS/2, and UNIX-based platforms. This book combines the *Building Applications* books for the OS/2, Windows, and UNIX-based environments.	SC09-2842 db2axx60	db2ax
APPC, CPI-C and SNA Sense Codes	Provides general information about APPC, CPI-C, and SNA sense codes that you may encounter when using DB2 Universal Database products. **Note:** Available in HTML format only.	No form number db2apx60	db2ap

Name	Description	Form Number / File Name for Online Book	HTML Directory
Application Development Guide	Explains how to develop applications that access DB2 databases using embedded SQL or JDBC, how to write stored procedures, user-defined types, user-defined functions, and how to use triggers. It also discusses programming techniques and performance considerations. This book was formerly known as the *Embedded SQL Programming Guide*.	SC09-2845 db2a0x60	db2a0
CLI Guide and Reference	Explains how to develop applications that access DB2 databases using the DB2 Call Level Interface, a callable SQL interface that is compatible with the Microsoft ODBC specification.	SC09-2843 db2l0x60	db2l0
Command Reference	Explains how to use the command line processor, and describes the DB2 commands you can use to manage your database.	SC09-2844 db2n0x60	db2n0
Data Movement Utilities Guide and Reference	Explains how to use the Load, Import, Export, Autoloader, and Data Propogation utilities to work with the data in the database.	SC09-2858 db2dmx60	db2dm
DB2 Connect Personal Edition Quick Beginnings	Provides planning, installing, and configuring information for DB2 Connect Personal Edition.	GC09-2830 db2c1x60	db2c1
DB2 Connect User's Guide	Provides concepts, programming and general usage information about the DB2 Connect products.	SC09-2838 db2c0x60	db2c0
Connectivity Supplement	Provides setup and reference information on how to use DB2 for AS/400, DB2 for OS/390, DB2 for MVS, or DB2 for VM as DRDA application requesters with DB2 Universal Database servers, and on how to use DRDA application servers with DB2 Connect application requesters. **Note:** Available in HTML and PostScript formats only.	No form number db2h1x60	db2h1
Glossary	Provides a comprehensive list of all DB2 terms and definitions. **Note:** Available in HTML format only.	No form number db2t0x50	db2t0

Name	Description	Form Number File Name for Online Book	HTML Directory
Installation and Configuration Supplement	Guides you through the planning, installation, and set up of platform-specific DB2 clients. This supplement contains information on binding, setting up client and server communications, DB2 GUI tools, DRDA AS, distributed installation, and the configuration of distributed requests and access methods to heterogeneous data sources.	GC09-2857 db2iyx60	db2iy
Message Reference	Lists messages and codes issued by DB2, and describes the actions you should take.	GC09-2846 db2m0x60	db2m0
Replication Guide and Reference	Provides planning, configuration, administration, and usage information for the IBM Replication tools supplied with DB2.	SC26-9642 db2e0x60	db2e0
SQL Getting Started	Introduces SQL concepts, and provides examples for many constructs and tasks.	SC09-2856 db2y0x60	db2y0
SQL Reference, Volume 1 and Volume 2	Describes SQL syntax, semantics, and the rules of the language. Also includes information about release-to-release incompatibilities, product limits, and catalog views. You can order both volumes of the *SQL Reference* in the English language in North America with the form number SBOF-8923.	SBOF-8923 Volume 1 db2s1x60 Volume 2 db2s2x60	db2s0
System Monitor Guide and Reference	Describes how to collect different kinds of information about databases and the database manager. Explains how to use the information to understand database activity, improve performance, and determine the cause of problems.	SC09-2849 db2f0x60	db2f0
Troubleshooting Guide	Helps you determine the source of errors, recover from problems, and use diagnostic tools in consultation with DB2 Customer Service.	S10J-8169	db2p0

Name	Description	Form Number File Name for Online Book	HTML Directory
What's New	Describes the new features, functions, and enhancements in DB2 Universal Database, Version 6.0, including information about Java-based tools.	SC09-2851 db2q0x60	db2q0
Platform-Specific Books			
Administering Satellites Guide and Reference	Provides planning, configuration, administration, and usage information for satellites.	GC09-2821 db2dsx60	db2ds
DB2 Personal Edition Quick Beginnings	Provides planning, installation, migration, and configuration information for DB2 Universal Database Personal Edition on the OS/2, Windows 95, and Windows NT operating systems.	GC09-2831 db2i1x60	db2i1
DB2 for OS/2 Quick Beginnings	Provides planning, installation, migration, and configuration information for DB2 Universal Database on the OS/2 operating system. Also contains installing and setup information for many supported clients.	GC09-2834 db2i2x60	db2i2
DB2 for UNIX Quick Beginnings	Provides planning, installation, migration, and configuration information for DB2 Universal Database on UNIX-based platforms. Also contains installing and setup information for many supported clients.	GC09-2836 db2ixx60	db2ix
DB2 for Windows NT Quick Beginnings	Provides planning, installation, migration, and configuration information for DB2 Universal Database on the Windows NT operating system. Also contains installing and setup information for many supported clients.	GC09-2835 db2i6x60	db2i6
DB2 Enterprise - Extended Edition for UNIX Quick Beginnings	Provides planning, installation, and configuration information for DB2 Enterprise - Extended Edition for UNIX. Also contains installing and setup information for many supported clients.	GC09-2832 db2v3x60	db2v3

Name	Description	Form Number File Name for Online Book	HTML Directory
DB2 Enterprise - Extended Edition for Windows NT Quick Beginnings	Provides planning, installation, and configuration information for DB2 Enterprise - Extended Edition for Windows NT. Also contains installing and setup information for many supported clients.	GC09-2833 db2v6x60	db2v6
DB2 Connect Enterprise Edition for OS/2 and Windows NT Quick Beginnings	Provides planning, migration, installation, and configuration information for DB2 Connect Enterprise Edition on the OS/2 and Windows NT operating systems. Also contains installation and setup information for many supported clients. This book was formerly part of the *DB2 Connect Enterprise Edition Quick Beginnings.*	GC09-2828 db2c6x60	db2c6
DB2 Connect Enterprise Edition for UNIX Quick Beginnings	Provides planning, migration, installation, configuration, and usage information for DB2 Connect Enterprise Edition in UNIX-based platforms. Also contains installation and setup information for many supported clients. This book was formerly part of the *DB2 Connect Enterprise Edition Quick Beginnings.*	GC09-2829 db2cyx60	db2cy
DB2 Data Links Manager for AIX Quick Beginnings	Provides planning, installation, configuration, and task information for DB2 Data Links Manager for AIX.	GC09-2837 db2z0x60	db2z0
DB2 Data Links Manager for Windows NT Quick Beginnings	Provides planning, installation, configuration, and task information for DB2 Data Links Manager for Windows NT.	GC09-2827 db2z6x60	db2z6
DB2 Query Patroller Administration Guide	Provides administration information on DB2 Query Patrol.	SC09-2859 db2dwx60	db2dw
DB2 Query Patroller Installation Guide	Provides installation information on DB2 Query Patrol.	GC09-2860 db2iwx60	db2iw
DB2 Query Patroller User's Guide	Describes how to use the tools and functions of the DB2 Query Patrol.	SC09-2861 db2wwx60	db2ww

Name	Description	Form Number File Name for Online Book	HTML Directory
	Cross-Platform Sample Programs in HTML		
Sample programs in HTML	Provides the sample programs in HTML format for the programming languages on all platforms supported by DB2 for informational purposes (not all samples are available in all languages). Only available when the SDK is installed. See *Application Building Guide* for more information on the actual programs. **Note:** Available in HTML format only.	No form number	db2hs/c db2hs/cli db2hs/clp db2hs/cpp db2hs/cobol db2hs/cobol_mf db2hs/fortran db2hs/java db2hs/rexx

Notes:

1. The character in the sixth position of the file name indicates the language of a book. For example, the file name db2d0e60 indicates that the *Administration Guide* is in English. The following letters are used in the file names to indicate the language of a book:

Language	Identifier
Brazilian Portuguese	b
Bulgarian	u
Czech	x
Danish	d
Dutch	q
English	e
Finnish	y
French	f
German	g
Greek	a
Hungarian	h
Italian	i
Japanese	j
Korean	k
Norwegian	n
Polish	p
Portuguese	v
Russian	r
Simp. Chinese	c
Slovenian	l
Spanish	z

Swedish	s
Trad. Chinese	t
Turkish	m

2. For late breaking information that could not be included in the DB2 books:
   - On UNIX-based platforms, see the `Release.Notes` file. This file is located in the `DB2DIR/Readme/%L` directory, where `%L` is the locale name and DB2DIR is:
     - `/usr/lpp/db2_06_01` on AIX
     - `/opt/IBMdb2/V6.1` on HP-UX, Solaris, SCO UnixWare 7, and Silicon Graphics IRIX
     - `/usr/IBMdb2/V6.1` on Linux.
   - On other platforms, see the `RELEASE.TXT` file. This file is located in the directory where the product is installed.
   - Under Windows `Start` menu

Viewing Online Information

The manuals included with this product are in Hypertext Markup Language (HTML) softcopy format. Softcopy format enables you to search or browse the information, and provides hypertext links to related information. It also makes it easier to share the library across your site.

You can view the online books or sample programs with any browser that conforms to HTML Version 3.2 specifications.

To view online books or sample programs on all platforms other than SCO UnixWare 7:
- If you are running DB2 administration tools, use the Information Center. See "Accessing Information with the Information Center" on page 72 for details.
- Select the `Open Page` menu item of your Web browser. The page you open contains descriptions of and links to DB2 information:
  - On UNIX-based platforms, open the following page:

        file:/*INSTHOME*/sqllib/doc/%L/html/index.htm

    where *%L* is the locale name.
  - On other platforms, open the following page:

        sqllib\doc\html\index.htm

    The path is located on the drive where DB2 is installed.

If you have not installed the Information Center, you can open the page by double-clicking on the **DB2 Online Books** icon. Depending on the system you are using, the icon is in the main product folder or the Windows Start menu.

To view online books or sample programs on the SCO UnixWare 7:

- DB2 Universal Database for SCO UnixWare 7 uses the native SCOhelp utility to search the DB2 information. You can access SCOhelp by the following methods:
  - entering the ″scohelp″ command on the command line,
  - selecting the Help menu in the Control Panel of the CDE desktop or
  - selecting Help in the Root menu of the Panorama desktop

  For more information on SCOhelp, refer to the *Installation and Configuration Supplement.*

Accessing Information with the Information Center

The Information Center provides quick access to DB2 product information. The Information Center is available on all platforms on which the DB2 administration tools are available.

Depending on your system, you can access the Information Center from the:

- Main product folder
- Toolbar in the Control Center
- Windows Start menu
- Help menu of the Control Center

The Information Center provides the following kinds of information. Click the appropriate tab to look at the information:

Tasks	Lists tasks you can perform using DB2.
Reference	Lists DB2 reference information, such as keywords, commands, and APIs.
Books	Lists DB2 books.
Troubleshooting	Lists categories of error messages and their recovery actions.
Sample Programs	Lists sample programs that come with the DB2 Software Developer's Kit. If the Software Developer's Kit is not installed, this tab is not displayed.
Web	Lists DB2 information on the World Wide

Web. To access this information, you must have a connection to the Web from your system.

When you select an item in one of the lists, the Information Center launches a viewer to display the information. The viewer might be the system help viewer, an editor, or a Web browser, depending on the kind of information you select.

The Information Center provides some search capabilities, so you can look for specific topics, and filter capabilities to limit the scope of your searches.

For a full text search, click the Search button of the Information Center follow the *Search DB2 Books* link in each HTML file.

The HTML search server is usually started automatically. If a search in the HTML information does not work, you may have to start the search server by double-clicking its icon on the Windows or OS/2 desktop.

Refer to the release notes if you experience any other problems when searching the HTML information.

Note: Search function is not available in the Linux and Silicon Graphics environments.

Setting Up a Document Server

By default, the DB2 information is installed on your local system. This means that each person who needs access to the DB2 information must install the same files. To have the DB2 information stored in a single location, use the following instructions:

1. Copy all files and subdirectories from \sqllib\doc\html on your local system to a Web server. Each book has its own subdirectory containing all the necessary HTML and GIF files that make up the book. Ensure that the directory structure remains the same.
2. Configure the Web server to look for the files in the new location. For information, see the NetQuestion Appendix in *Installation and Configuration Supplement*.
3. If you are using the Java version of the Information Center, you can specify a base URL for all HTML files. You should use the URL for the list of books.
4. Once you are able to view the book files, you should bookmark commonly viewed topics. Among those, you will probably want to bookmark the following pages:

- List of books
- Tables of contents of frequently used books
- Frequently referenced articles, such as the *ALTER TABLE* topic
- The Search form

For information about setting up a search, see the NetQuestion Appendix in *Installation and Configuration Supplement* book.

Searching Online Information

To search for information in the HTML books, you can do the following:

- Click on **Search the DB2 Books** at the bottom of any page in the HTML books. Use the search form to find a specific topic. This function is not available in the Linux or Silicon Graphics IRIX environments.
- Click on **Index** at the bottom of any page in an HTML book. Use the index to find a specific topic in the book.
- Display the table of contents or index of the HTML book, and then use the find function of the Web browser to find a specific topic in the book.
- Use the bookmark function of the Web browser to quickly return to a specific topic.
- Use the search function of the Information Center to find specific topics. See "Accessing Information with the Information Center" on page 72 for details.

Printing the PostScript Books

If you prefer to have printed copies of the manuals, you can decompress and print PostScript versions. For the file name of each book in the library, see the table in "DB2 Information – Hardcopy and Online" on page 64. Specify the full path name for the file you intend to print.

On OS/2 and Windows platforms:

1. Copy the compressed PostScript files to a hard drive on your system. The files have a file extension of `.exe` and are located in the `x:\doc\`*language*`\books\ps` directory, where x: is the letter representing the CD-ROM drive and *language* is the two-character country code that represents your language (for example, EN for English).
2. Decompress the file that corresponds to the book that you want. Each compressed book is a self-extracting executable file. To decompress the book, simply run it as you would run any other executable program. The result from this step is a printable PostScript file with a file extension of `.ps`.

3. Ensure that your default printer is a PostScript printer capable of printing Level 1 (or equivalent) files.
4. Enter the following command from a command line:

```
print filename.ps
```

On UNIX-based platforms:
1. Mount the CD-ROM. Refer to your *Quick Beginnings* manual for the procedures to mount the CD-ROM.
2. Change to `/cdrom/doc/%L/ps` directory on the CD-ROM, where */cdrom* is the mount point of the CD-ROM and *%L* is the name of the desired locale. The manuals will be installed in the previously-mentioned directory with file names ending with `.ps.Z`.
3. Decompress and print the manual you require using the following command:
   - For AIX:

     ```
     zcat filename | qprt -P PSPrinter_queue
     ```
   - For HP-UX, Solaris, or SCO UnixWare 7:

     ```
     zcat filename | lp -d PSPrinter_queue
     ```
   - For Linux:

     ```
     zcat filename | lpr -P PSPrinter_queue
     ```
   - For Silicon Graphics IRIX:

     ```
     zcat < filename | lp -d PSPrinter_queue
     ```

   where *filename* is the full path name and extension of the compressed PostScript file and *PSprinter_queue* is the name of the PostScript printer queue.

   For example, to print the English version of *DB2 for UNIX Quick Beginnings* on AIX, you can use the following command:

   ```
   zcat /cdrom/doc/en/ps/db2ixe60.ps.Z || qprt -P ps1
   ```

Ordering the Printed Books

You can order the printed DB2 manuals either as a set or individually. There are three sets of books available. The form number for the entire set of DB2 books is `SBOF-8926-00`. The form number for the books listed under the heading ″Cross-Platform Books″ is `SBOF-8924-00`.

Note: These form numbers only apply if you are ordering books that are printed in the English language in North America.

You can also order books individually by the form number listed in "DB2 Information – Hardcopy and Online" on page 64. To order printed versions,

contact your IBM authorized dealer or marketing representative, or phone
1-800-879-2755 in the United States or 1-800-IBM-4YOU in Canada.

Appendix F. Notices

Any reference to an IBM licensed program in this publication is not intended
to state or imply that only IBM's licensed program may be used. Any
functionally equivalent product, program or service that does not infringe any
of IBM's intellectual property rights may be used instead of the IBM product,
program, or service. Evaluation and verification of operation in conjunction
with other products, except those expressly designated by IBM, is the user's
responsibility.

IBM may have patents or pending patent applications covering subject matter
in this document. The furnishing of this document does not give you any
license to these patents. You can send license inquiries, in writing, to the

> IBM Director of Licensing
> IBM Corporation, North Castle Drive
> Armonk, NY 10504-1785
> U.S.A.

Licensees of this program who wish to have information about it for the
purpose of enabling: (i) the exchange of information between independently
created programs and other programs (including this one) and (ii) the mutual
use of the information which has been exchanged, should contact:

> IBM Canada Limited
> Office of the Lab Director
> 1150 Eglinton Ave. East
> North York, Ontario
> M3C 1H7
> CANADA

Such information may be available, subject to appropriate terms and
conditions, including in some cases, payment of a fee.

This publication may contain examples of data and reports used in daily
business operations. To illustrate them as completely as possible, the examples
include the names of individuals, companies, brands, and products. All of
these names are fictitious and any similarity to the names and addresses used
by an actual business enterprise is entirely coincidental.

Trademarks

The following terms are trademarks or registered trademarks of the IBM Corporation in the United States and/or other countries:

ACF/VTAM	MVS/ESA
ADSTAR	MVS/XA
AISPO	OS/400
AIX	OS/390
AIXwindows	OS/2
AnyNet	PowerPC
APPN	QMF
AS/400	RACF
CICS	RISC System/6000
C Set++	SP
C/370	SQL/DS
DATABASE 2	SQL/400
DataHub	S/370
DataJoiner	System/370
DataPropagator	System/390
DataRefresher	SystemView
DB2	VisualAge
DB2 Connect	VM/ESA
DB2 Universal Database	VSE/ESA
Distributed Relational Database Architecture	VTAM
DRDA	WIN-OS/2
Extended Services	
FFST	
First Failure Support Technology	
IBM	
IMS	
LAN Distance	

Trademarks of Other Companies

The following terms are trademarks or registered trademarks of the companies listed:

C-bus is a trademark of Corollary, Inc. in the United States, other countries, or both.

HP-UX is a trademark of Hewlett-Packard.

Java, HotJava, Solaris, Solstice, and Sun are trademarks of Sun Microsystems, Inc.

Microsoft, Windows, Windows NT, Visual Basic, and the Windows logo are trademarks or registered trademarks of Microsoft Corporation in the United States, other countries, or both.

PC Direct is a trademark of Ziff Communications Company in the United States, other countries, or both and is used by IBM Corporation under license.

ActionMedia, LANDesk, MMX, Pentium, and ProShare are trademarks of Intel Corporation in the United States, other countries, or both.

UNIX is a registered trademark in the United States, other countries or both and is licensed exclusively through X/Open Company Limited.

Other company, product, or service names, which may be denoted by a double asterisk (**), may be trademarks or service marks of others.

Index

W

Contacting IBM

This section lists ways you can get more information from IBM.

If you have a technical problem, please take the time to review and carry out the actions suggested by the *Troubleshooting Guide* before contacting DB2 Customer Support. Depending on the nature of your problem or concern, this guide will suggest information you can gather to help us to serve you better.

For information or to order any of the DB2 Universal Database products contact an IBM representative at a local branch office or contact any authorized IBM software remarketer.

Telephone

If you live in the U.S.A., call one of the following numbers:
- 1-800-237-5511 to learn about available service options.
- 1-800-IBM-CALL (1-800-426-2255) or 1-800-3IBM-OS2 (1-800-342-6672) to order products or get general information.
- 1-800-879-2755 to order publications.

For information on how to contact IBM outside of the United States, see Appendix A of the IBM Software Support Handbook. You can access this document by accessing the following page:

`http://www.ibm.com/support/`

then performing a search using the keyword "handbook".

Note that in some countries, IBM-authorized dealers should contact their dealer support structure instead of the IBM Support Center.

World Wide Web
> http://www.software.ibm.com/data/
> http://www.software.ibm.com/data/db2/library/

The DB2 World Wide Web pages provide current DB2 information about news, product descriptions, education schedules, and more. The DB2 Product and Service Technical Library provides access to frequently asked questions, fixes, books, and up-to-date DB2 technical information. (Note that this information may be in English only.)

Anonymous FTP Sites
> ftp.software.ibm.com

Log on as anonymous. In the directory /ps/products/db2, you can find demos, fixes, information, and tools concerning DB2 and many related products.

Internet Newsgroups
> comp.databases.ibm-db2, bit.listserv.db2-l

These newsgroups are available for users to discuss their experiences with DB2 products.

CompuServe
> **GO IBMDB2** to access the IBM DB2 Family forums

All DB2 products are supported through these forums.

To find out about the IBM Professional Certification Program for DB2 Universal Database, go to http://www.software.ibm.com/data/db2/db2tech/db2cert.html

---

IBM®

Part Number: CT6S4NA

CT6S4NA