

IBM[®] DB2 Connect[™]



Quick Beginnings for DB2 Connect[™] Personal Edition

Version 8

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Version 8

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Part 1. About DB2 Connect

Chapter 1. An Introduction to DB2 Connect

DB2 Connect provides connectivity to mainframe and midrange databases from Windows, and UNIX-based platforms. You can connect to DB2 databases on OS/390 and z/OS, iSeries, VSE, and VM. You can also connect to non-IBM databases that comply with the Distributed Relational Database Architecture (DRDA).

DB2 Connect product offerings

DB2 Connect has several connection solutions. DB2 Connect Personal Edition provides direct connectivity to host and iSeries database series, while DB2 Connect Enterprise Edition provides indirect connectivity that allows clients to access host and iSeries database servers through the DB2 Connect server. DB2 Connect Unlimited Edition provides a unique packaging solution that makes product selection and licensing easier.

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 iSeries systems. IBM's DB2 Universal Database (UDB) for iSeries, DB2 for OS/390 and z/OS, 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 iSeries databases manage the data, there is a great demand to integrate this data with applications running on Windows and UNIX 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 Object Linking and Embedding (OLE) DB.

DB2 Connect Enterprise Edition is currently available for AIX, HP-UX, Linux, Solaris, and Windows operating systems. These servers provide support for applications running on UNIX (AIX, HP-UX, Linux, and Solaris operating environment), and Windows workstations.

DB2 Connect Enterprise Edition is often installed on an intermediate server to connect DB2 clients to a host or iSeries database. It can also be used on machines where multiple local users want to access the host or iSeries servers directly.

For example, DB2 Connect Enterprise Edition may be installed on a large machine with many local users. It may also be installed on a web server, a machine that is running a Transaction Processor (TP) monitor, or other 3-tier application servers with multiple local SQL application processes and threads. In these cases, you can install DB2 Connect Enterprise Edition on the same machine for simplicity, or on a separate machine to off-load CPU cycles.

DB2 Connect Enterprise Edition is most appropriate for environments where:

- Host and iSeries database servers do not support native TCP/IP connectivity and direct connectivity from desktop workstations via SNA is not desirable.
- Web servers run web-based applications.
- Web servers run web-based application using data-aware Java applications.
- A middle-tier application server is used.
- TP monitors, such as CICS, Encina, Microsoft Transaction Server (MTS), Tuxedo, Component Broker, and MQSeries, are used.

DB2 Connect Personal Edition

DB2 Connect Personal Edition provides access from a single workstation to DB2 databases residing on servers such as OS/390, z/OS, OS/400, VM and VSE, as well as to DB2 Universal Database servers on UNIX and Windows operating systems. DB2 Connect Personal Edition provides the same rich set of APIs as DB2 Connect Enterprise Edition.

This product is currently available for Linux and Windows operating systems.

DB2 Connect Personal Edition is used to connect a single Windows operating system, or Linux workstation, to a host or iSeries database. DB2 Connect Personal Edition is best suited for environments where native TCP/IP support is provided by the database servers, and the application being deployed is a traditional 2-tier client-server application.

For example, DB2 Connect Personal Edition is a good choice for enabling traditional 2-tier VisualBasic and Microsoft Access applications. Applications that require a mid-tier application server need to use DB2 Connect Enterprise Edition.

DB2 Connect Unlimited Edition

DB2 Connect Unlimited Edition is a unique package offering that allows complete flexibility of DB2 Connect deployment and simplifies product selection and licensing. This product contains both DB2 Connect Personal Edition and DB2 Connect Enterprise Edition with license terms and conditions that allow the unlimited deployment of any DB2 Connect product. License charges are based on the size of the S/390 or zSeries server that DB2 Connect users will be working with.

This package offering is only available for OS/390 and z/OS systems, and licensing is only valid for DB2 for OS/390 and z/OS data sources.

Related concepts:

- “DB2 Connect” in the *DB2 Connect User’s Guide*
- “DB2 Connect and SQL statements” in the *DB2 Connect User’s Guide*
- “Thin clients” in the *Installation and Configuration Supplement*

Related tasks:

- “Response file installation of DB2 on UNIX” in the *Installation and Configuration Supplement*
- “Response file installation of DB2 on Windows” in the *Installation and Configuration Supplement*

Related reference:

- “Host databases” in the *DB2 Connect User’s Guide*
- “DB2 Connect administration utilities” in the *DB2 Connect User’s Guide*

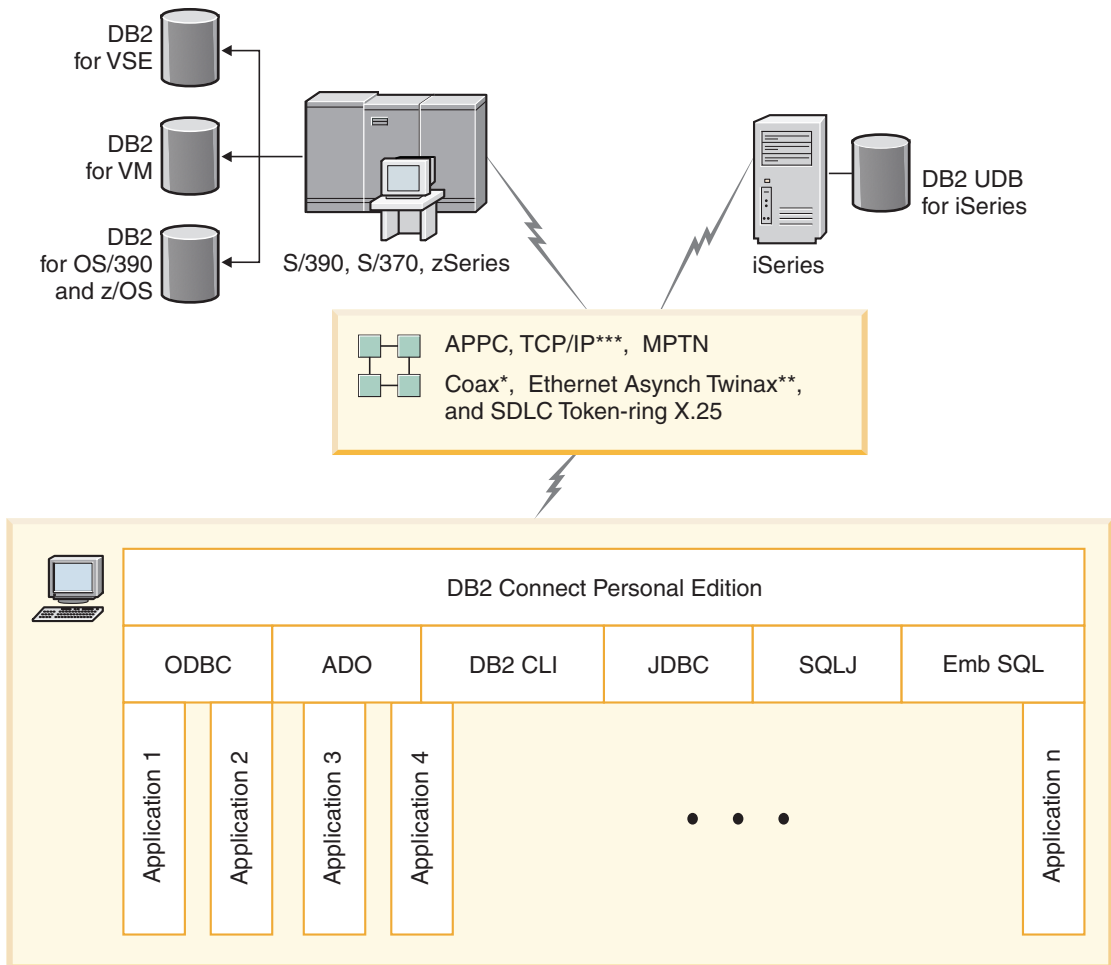
Accessing host or iSeries DB2 data using DB2 Connect Personal Edition

A direct connection without intermediate servers is a very convenient and desirable configuration. This is especially true for situations where the host or iSeries™ database server supports TCP/IP connectivity. For example, DB2® for OS/390® Version 5.1, or DB2 for AS/400® V4R2, or DB2 for VM Version 6.1. In such a configuration, each DB2 Connect™ workstation establishes a direct TCP/IP connection to DB2 for OS/390 or, for platforms with integrated SNA Support, connects via APPC to DB2 on other host and iSeries databases.

TCP/IP connectivity requires that the host or iSeries database support TCP/IP. DB2 for OS/390 Version 5.1 or later, DB2 for AS/400 V4R2 or later, and DB2 for VM Version 6.1 or later support native TCP/IP connections. An alternative to native TCP/IP is MPTN connectivity. MPTN connections require

that IBM® AnyNet® products be installed on the target database system, but do not require the host or iSeries database to provide native TCP/IP support.

Figure 1 on page 7 shows a workstation, with DB2 Connect Personal Edition installed, directly connected to a host or iSeries database server.



Not all protocols are supported for all platforms.

Legend

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

Figure 1. Direct connection between DB2 Connect and a host or iSeries database server

Managing connections to databases using the Configuration Assistant

The Configuration Assistant (CA) helps you manage your database connections to remote servers. This is the preferred method to set up any client to server communications.

You can also use the command line processor to set up DB2[®] clients on any platform.

With the CA, you can:

- Catalog databases so that they can be used by applications. Three methods are available:
 - Use a profile provided by a database administrator to automatically define your connections. Client access is automatically set up for that database.
 - Search the network for available databases and select one. Client access is automatically set up for those databases defined in the profile. DB2 Connect[™] Personal Edition cannot search for host or iSeries[™] databases except through a DB2 Connect Enterprise Edition server that has host or iSeries databases defined.
 - Manually configure a connection to a database by entering the required connection parameters.
- Remove cataloged databases, or change the properties of a cataloged database.
- Export and import client profiles that contain database and configuration information for a client.
- Test connections to local or remote databases identified on your system.
- Bind applications to a database by selecting utilities or bind files from a list.
- Add, change, remove CLI/ODBC data sources, and configure CLI/ODBC configuration settings.
- Tune the client configuration parameters on your system. Parameters are logically grouped and suggested settings are provided on the interface as parameters are selected.
- Update the database server password.

Related tasks:

- “Configuring a client to server connection using the Configuration Assistant (CA)” in the *Quick Beginnings for DB2 Servers*
- “Binding database utilities on DB2 Connect” in the *Quick Beginnings for DB2 Connect Personal Edition*
- “Configuring a connection to host or iSeries database servers using the CA” on page 49

Developing applications using the DB2 Application Development Client

The DB2 Application Development Client 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 Application Development Client is available on each server CD-ROM. In addition, the Developer Edition package contains the Application Development Clients for multiple supported operating systems. The Personal Developer's Edition package contains the Application Development CD-ROMs for Windows and Linux. The Universal Developer's Edition package contains the Application Development CD-ROMs for all supported operating systems.

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 Server Edition), they can also access DB2 UDB for iSeries, DB2 for OS/390 and z/OS, and DB2 for VSE & VM database servers.

The DB2 Application Development Client 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.

Related concepts:

- "DB2 Developer's Edition Products" in the *Application Development Guide: Programming Client Applications*

Related reference:

- "DB2 Application Development Client" in the *Application Development Guide: Building and Running Applications*

Typical steps required to install and configure DB2 Connect Personal Edition

Setting up DB2[®] Connect is a multi-step process. The topic will discuss the typical steps required to installing and configuring DB2 Connect[™] Personal Edition.

1. Determine how you want to use DB2 Connect in your network.
2. Verify that you have the correct hardware and software prerequisites on both your workstation and the host database server.
3. Verify that your host or iSeries[™] database server is configured to accept connections from DB2 Connect servers.
4. Install your DB2 Connect software. You will use this workstation to configure and verify your host and iSeries connections.
5. After installation, establish the connection between DB2 Connect and your host or iSeries database system.

DB2 Connect can locate and configure all TCP/IP and most SNA connections for you. You can use the Configuration Assistant (CA) to find the host database.

Note: You should consider switching to TCP/IP as SNA may no longer be supported in future release of DB2 Connect. SNA requires significant configuration knowledge and the configuration process itself can prove to be error prone. TCP/IP is simple to configure, has lower maintenance costs, and provides superior performance.

6. Bind the programs and utilities provided with DB2 Connect to your host or iSeries database.
7. Test the host or iSeries connection.
8. You are now ready to use DB2 Connect with all your applications. Workstations that will be used for application development should have the DB2 Application Development Client installed.
9. If you want to use this workstation to administer DB2 for OS/390[®] and z/OS, or DB2 Universal Database[™] for UNIX, Windows[®] servers, install the DB2 Administration Client.

Related tasks:

- “Binding database utilities on DB2 Connect” in the *Quick Beginnings for DB2 Connect Personal Edition*
- “Configuring a connection to host or iSeries database servers using the CA” on page 49

Related reference:

- “Memory requirements for DB2 Connect Personal Edition (Windows)” on page 16

- “Memory requirements for DB2 Connect Personal Edition (Linux)” on page 24
- “Disk requirements for DB2 Connect Personal Edition (Windows)” on page 17
- “Disk requirements for DB2 Connect Personal Edition (Linux)” on page 25

Part 2. Planning and installation

Chapter 2. Installing DB2 Connect PE on Windows

Installation requirements for DB2 Connect Personal Edition (Windows)

To install a DB2 Connect Personal Edition, the following operating system, software, and communications requirements must be met:

Operating system requirements

One of:

- Windows 98
- Windows ME
- Windows NT Version 4 with Service Pack 6a or higher
- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows .NET (32-bit and 64-bit)

Software requirements

- If you plan to use the Tivoli Storage Manager facilities for backup and restore of your databases, you require the Tivoli Storage Manager Client Version 3 or later.
- If you plan to use the Simple Network Management Protocol (SNMP) subagent, you require DPI 2.0 provided by IBM SystemView Agent. SNMP is not supported with DB2 offerings on Windows 64-bit platforms.
- Java Runtime Environment (JRE) Version 1.3.1 is required to run DB2's Java-based tools, such as the Control Center.

Communication requirements

- You can use APPC, TCP/IP, and MPTN (APPC over TCP/IP)
- For SNA (APPC) connectivity, one of the following communication products is required:
 - Windows 98 and Windows ME
 - IBM Personal Communications Version 5.0 (CSD 3) or later.
 - Windows NT:
 - IBM Communications Server Version 6.1.1 or later.
 - IBM Personal Communications Version 5.0 (CSD 3) or later.
 - Windows 2000:
 - IBM Communications Server Version 6.1.1 or later.
 - IBM Personal Communications Version 5.0 (CSD 3) or later.

- Windows XP:
 - IBM Personal Communications Version 5.5 (APAR IC23490)
- Microsoft SNA Server Version 3 Service Pack 3 or later.

Notes:

1. You should consider switching to TCP/IP as SNA may no longer be supported in future releases of DB2 Connect. SNA requires significant configuration knowledge and the configuration process itself can prove to be error prone. TCP/IP is simple to configure, has lower maintenance costs, and provides superior performance.
2. SNA is not supported on Windows XP (64-bit) and Windows .NET (64-bit).

Related tasks:

- “Installing DB2 Connect Personal Edition (Linux)” on page 27

Related reference:

- “Memory requirements for DB2 Connect Personal Edition (Windows)” on page 16
- “Disk requirements for DB2 Connect Personal Edition (Windows)” on page 17

Memory requirements for DB2 Connect Personal Edition (Windows)

The amount of memory required to run DB2 Connect Personal Edition depends on the components you install. The following table provides recommended memory requirements for DB2 Personal Edition installed with and without graphical tools such as the Control Center and Configuration Assistant.

Table 1. DB2 Connect Personal Edition for Windows memory requirements

Type of installation	Recommended memory (RAM)
DB2 Personal Edition without graphical tools	64 MB
DB2 Personal Edition with graphical tools	128 MB

When determining memory requirements, be aware of the following:

- These memory requirements do not account for non-DB2 software that may be running on your system.
- The actual amount of memory needed may be affected by specific performance requirements.

Related tasks:

- “Installing DB2 Connect Personal Edition (Windows)” on page 19

Related reference:

- “Disk requirements for DB2 Connect Personal Edition (Windows)” on page 17
- “Installation requirements for DB2 Connect Personal Edition (Windows)” on page 15

Disk requirements for DB2 Connect Personal Edition (Windows)

The disk requirements for DB2 Connect Personal Edition depend on the type of installation and the components you install. The DB2 Setup wizard provides typical, compact, and custom installation types. The following table provides an approximate disk space requirement for each installation type.

Table 2. DB2 Connect Personal Edition disk requirements

Installation type	Required disk space
Typical	150 MB
Compact	80 MB
Custom	80 MB to 200 MB

Typical installation

DB2 Connect Personal Edition is installed with most features and functionality, using a typical configuration. The typical installation includes graphical tools such as the Control Center and Configuration Assistant.

Compact installation

Only the basic DB2 Connect Personal Edition features and functions are installed. The compact installation does not include graphical tools.

Custom installation

A custom installation allows you to select the features you want to install.

The DB2 Setup wizard will provide a disk space estimate for the installation options you select.

Remember to include disk space allowance for required software, communication products, and documentation. In DB2 version 8, HTML and PDF documentation is provided on separate CD-ROMs.

Related tasks:

- “Installing DB2 Connect Personal Edition (Windows)” on page 19

Related reference:

- “Memory requirements for DB2 Connect Personal Edition (Windows)” on page 16
- “Installation requirements for DB2 Connect Personal Edition (Windows)” on page 15

Extending the directory schema (Windows 2000 and Windows .NET)

Extending the directory schema is part of the larger task of *Installing DB2 (Windows)*.

If you plan to use LDAP with Windows 2000 or Windows .NET, you must extend the directory schema to contain DB2 object classes and attribute definitions. You must do this once before you install DB2.

Prerequisites:

Your Windows user account must have Schema Administration authority.

Procedure:

To extend the directory schema, logon to a domain controller and execute the **db2schex.exe** program from the installation CD with Schema Administration authority. You can execute this program with Schema Administration authority, without logging off and logging on again, as follows:

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

where **x:** represents the CD-ROM letter. When **db2schex.exe** completes, you can continue with the installation.

Your next step is *Starting the DB2 Setup wizard (Windows)*.

Related reference:

- “Installation requirements for DB2 servers (Windows)” in the *Quick Beginnings for DB2 Servers*

Installing DB2 Connect Personal Edition (Windows)

This task describes how to install DB2 Connect Personal Edition on Windows operating systems.

Prerequisites:

Before you launch the DB2 Setup wizard:

- Ensure that your system meets the following requirements:
 - Hardware, distribution, and software requirements
 - Memory requirements
 - Disk requirements
- If you are installing on Windows 2000 or Windows .NET and intend to use Lightweight Directory Access Protocol (LDAP), you must extend the directory schema.
- It is recommended that you use an Administrator account to perform the installation. The Administrator account must belong to the local administrator's group on the Windows computer where you are installing your DB2 product and should have the following advanced user rights:
 - Act as part of the operating system
 - Create token object
 - Increase quotas
 - Replace a process level token

You can perform the installation without advanced user rights, but the setup program may be unable to validate accounts.

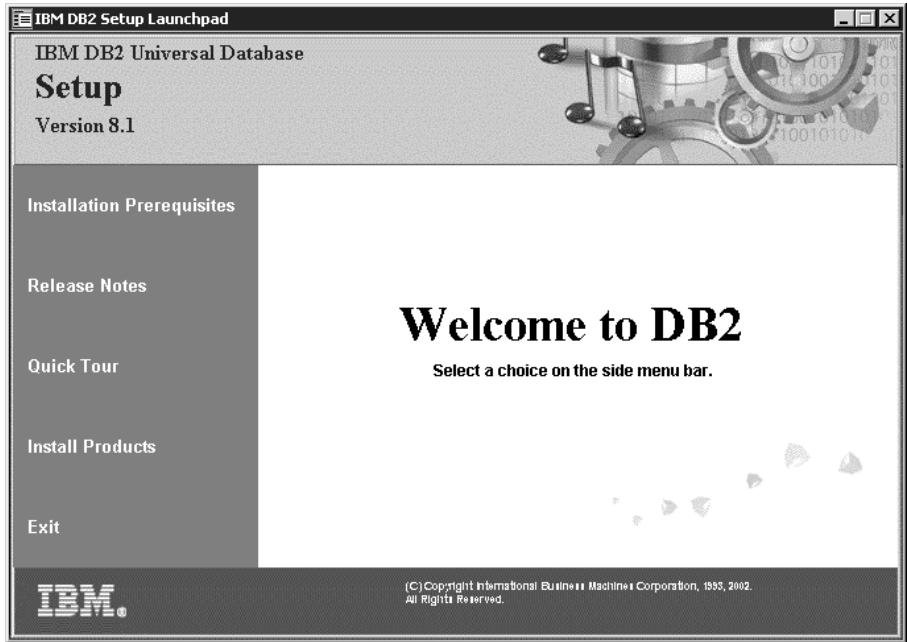
- If you want to install DB2 Connect with a non-Administrator account, refer to the non-administrator installation of DB2 Connect.

Procedure:

To install DB2 Connect Personal Edition:

1. Log on to the system as a user with administrator authority.
2. Close all programs so the installation program can update files as required.
3. Insert the CD-ROM into the drive. The auto-run feature automatically starts the DB2 Setup wizard. The DB2 Setup wizard will determine the system language, and launch the setup program for that language. If you want to run the setup program in a different language, or the setup program failed to auto-start, you can run invoke the DB2 Setup wizard manually.

4. The DB2 Launchpad opens.



From this window, you can view the installation prerequisites and the release notes, or you can proceed directly to the installation.

5. Once you have initiated the installation, proceed by following the setup program's prompts. Online help is available to guide you through the remaining steps. To invoke the online help, click Help or press F1. You can click **Cancel** at any time to end the installation.

For information on errors encountered during installation, see the `db2.log` file. The `db2.log` file stores general information and error messages resulting from the install and uninstall activities. By default, the `db2.log` file is located in the `x:\db2log` directory, where `x`: represents the drive on which your operating system is installed.

To invoke the DB2 Setup wizard manually:

1. Click **Start** and select the **Run** option.
2. In the **Open** field, enter the following command:

```
x:\setup /i language
```

where:

- `x`: represents your CD-ROM drive
- `language` represents the territory code for your language (for example, EN for English).

3. Click **OK**.

Related concepts:

- “Typical steps required to install and configure DB2 Connect Personal Edition” on page 10

Related tasks:

- “Extending the directory schema (Windows 2000 and Windows .NET)” on page 18

Related reference:

- “Memory requirements for DB2 Connect Personal Edition (Windows)” on page 16
- “Disk requirements for DB2 Connect Personal Edition (Windows)” on page 17
- “Installation requirements for DB2 Connect Personal Edition (Windows)” on page 15
- “db2setup - Install DB2” in the *Command Reference*

Non-Administrator installation of DB2 Connect (Windows)

For a non-Administrator’s installation, which is only available on Windows® NT, Windows 2000 Professional, and Windows XP, the account you are logged on as must belong to a group with more authority than the Guests group. For example, you can log on as a user account that belongs to the Users group or the Power Users group.

Some information about DB2® Connect that must appear in the registry must be entered in the HKEY_CURRENT_USER folder in the registry. Although many items will be stored under the HKEY_LOCAL_MACHINE folder in the registry for non-Administrator installations of DB2 Connect, the environment settings must be changed in HKEY_CURRENT_USER.

System shortcuts must be changed to user shortcuts for the non-Administrator install. Moreover, since services are required to install any of the DB2 Connect™ products, but cannot be created without administrative authority, services that would be automatically started are run as processes when a non-administrator installs.

The following are installation situations you might encounter in an environment where both administrator and non-administrator installations exist:

- A non-Administrator has installed DB2 Connect, and then an Administrator attempts to install DB2 Connect on the same machine. The Administrator will get a message that the product is already installed. The Administrator

does have the authority to uninstall and reinstall the product to get around this issue. These products cannot co-exist on Windows platforms because there is only a single registry and you can not have DB2 installed multiple times.

- A non-administrator has installed DB2 Connect, and then a second non-Administrator attempts to install DB2 Connect on the same machine. In this scenario, the installation will fail, and return an error message that the user must be an Administrator to install the product.
- An Administrator has installed DB2 Connect, and then a non-Administrator attempts to install DB2 Connect on the same machine. In this scenario, the install will fail, and return an error message that the user must be an Administrator to install the product. An Administrator always has the authority to uninstall or reinstall.

Related tasks:

- “Installing DB2 Connect Personal Edition (Windows)” on page 19
- “Installing DB2 Connect Enterprise Edition (Windows)” in the *Quick Beginnings for DB2 Connect Personal Edition*

Chapter 3. Installing DB2 Connect PE on Linux

Installation requirements for DB2 Connect Personal Edition (Linux)

To install a DB2 Connect Personal Edition, the following operating system, software, and communications requirements must be met:

Hardware requirements

Your processor must be one of:

- x86 compatible (for example, Intel, AMD, or Cyrix).
- Intel Itanium processor (IA64) for the 64-bit version of Linux

Distribution requirements

You require one of the following Linux operating system distributions:

32-bit version of Linux

- Red Hat Linux
- SuSE Linux
- Turbo Linux
- Caldera Open Linux

64-bit version of Linux

- Red Hat Linux 7.2
- SuSE Linux SLES-7

Software requirements

Table 3. Linux Software requirements

Software requirement	Additional information
For 32-bit Linux: glibc 2.2.4 or greater	If your current distribution doesn't meet this requirement, a distribution upgrade is recommended.
For 32-bit and 64-bit Linux: pdksh 5.2 or higher	This is a public domain version of the Korn shell that DB2 commands require.
For 32-bit Linux: kernel 2.4.7 or greater	This prerequisite is based on the kernel levels tested by IBM. Other kernel levels may or may not work.
For 32-bit Linux: rpm 4.0 or greater	DB2 is distributed as a number of rpm packages.

Table 3. Linux Software requirements (continued)

Software requirement	Additional information
For 32-bit and 64-bit Linux: IBM Developer Kit for Linux, Java 2 Technology Edition, Version 1.3.1	This is an optional component, but is required to use the DB2 Control Center to administer your databases using a graphical user interface and create or run Java applications, including stored procedures and user-defined functions. Only the IBM JDK is supported.
On 64-bit Linux gcc 3.0.2 and the gcc3 libstdc++ runtime libraries is required for IBM JDK	

Communication requirements

For TCP/IP connectivity, no additional software is required.

Related tasks:

- “Mounting the CD-ROM on Linux” in the *Installation and Configuration Supplement*
- “Installing DB2 Connect Personal Edition (Linux)” on page 27

Related reference:

- “Memory requirements for DB2 Connect Personal Edition (Linux)” on page 24
- “Disk requirements for DB2 Connect Personal Edition (Linux)” on page 25

Memory requirements for DB2 Connect Personal Edition (Linux)

The amount of memory required to run DB2 Connect Personal Edition depends on the components you install. The following table provides recommended memory requirements for DB2 Personal Edition installed with and without graphical tools such as the Control Center and Configuration Assistant.

Table 4. DB2 Connect Personal Edition for Linux memory requirements

Type of installation	Recommended minimum memory (RAM)
DB2 Personal Edition without graphical tools	64 MB
DB2 Personal Edition with graphical tools	128 MB

When determining memory requirements, be aware of the following:

- These memory requirements do not account for non-DB2 software that may be running on your system.
- Specific performance requirements may increase the minimum amount of memory needed.

Related tasks:

- “Installing DB2 Connect Personal Edition (Linux)” on page 27

Related reference:

- “Disk requirements for DB2 Connect Personal Edition (Linux)” on page 25
- “Installation requirements for DB2 Connect Personal Edition (Linux)” on page 23

Disk requirements for DB2 Connect Personal Edition (Linux)

The disk requirements DB2 Connect Personal Edition depend on the the type of installation and the components you install. The DB2 Setup wizard provides typical, compact, and custom installation types. The following table provides an approximate disk space requirement for each installation type.

Table 5. DB2 Connect Personal Edition

Installation type	Required disk space
Typical	150 MB
Compact	80 MB
Custom	80 MB to 200 MB

Typical installation

DB2 Connect Personal Edition is installed with most features and functionality, using a typical configuration. Includes graphical tools such as the Control Center and Configuration Assistant.

Compact installation

Only the basic DB2 Connect Personal Edition features and functions are installed. The compact installation does not include graphical tools.

Custom installation

A custom installation allows you to select the features you want to install.

The DB2 Setup wizard will provide a disk space estimate for the installation options you select.

Remember to include disk space allowance for required software, communication products, and documentation. In DB2 version 8, HTML and PDF documentation is provided on separate CD-ROMs.

Related tasks:

- “Installing DB2 Connect Personal Edition (Linux)” on page 27

Related reference:

- “Memory requirements for DB2 Connect Personal Edition (Linux)” on page 24
- “Installation requirements for DB2 Connect Personal Edition (Linux)” on page 23

Mounting the DB2 CD-ROM (Linux)

Mounting the DB2 CD-ROM (Linux) is part of the larger task of *Installing DB2*.

You must mount the installation CD-ROM before you can run the DB2 Setup wizard.

Prerequisites:

You must logon with a user ID that has root authority.

Procedure:

Many Linux distributions will automatically mount the CD. The mount point is often `/mnt/cdrom` or `/media/cdrom`. If your mount point is `/mnt/cdrom`, enter the following command:

```
mount /mnt/cdrom
```

Some distributions disable execute privileges on CD-ROM devices by default. To mount with execute permission at mount point `/mnt/cdrom`, issue the following command as root:

```
mount -o exec /mnt/cdrom
```

If your CD-ROM was not automatically mounted, enter:

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

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

Related tasks:

- “Starting the DB2 Setup wizard (Linux)” in the *Quick Beginnings for DB2 Personal Edition*

Installing DB2 Connect Personal Edition (Linux)

We recommend that you use the DB2 Setup wizard to install DB2 Connect Personal Edition on Linux. The DB2 Setup wizard is a Java-based installation tool that automates the installation and configuration of any DB2 products. If you prefer not to use this wizard, you can install a DB2 product manually using the `db2_install` script.

Prerequisites:

Before beginning your installation:

- Ensure that your system meets the following requirements:
 - Hardware, distribution, and software requirements
 - Memory requirements
 - Disk requirements
- You require root authority to perform the installation.
- The DB2 product CD-ROM must be mounted on your system. See mounting the DB2 installation CD.

Procedure:

To install DB2 Connect Personal Edition on Linux:

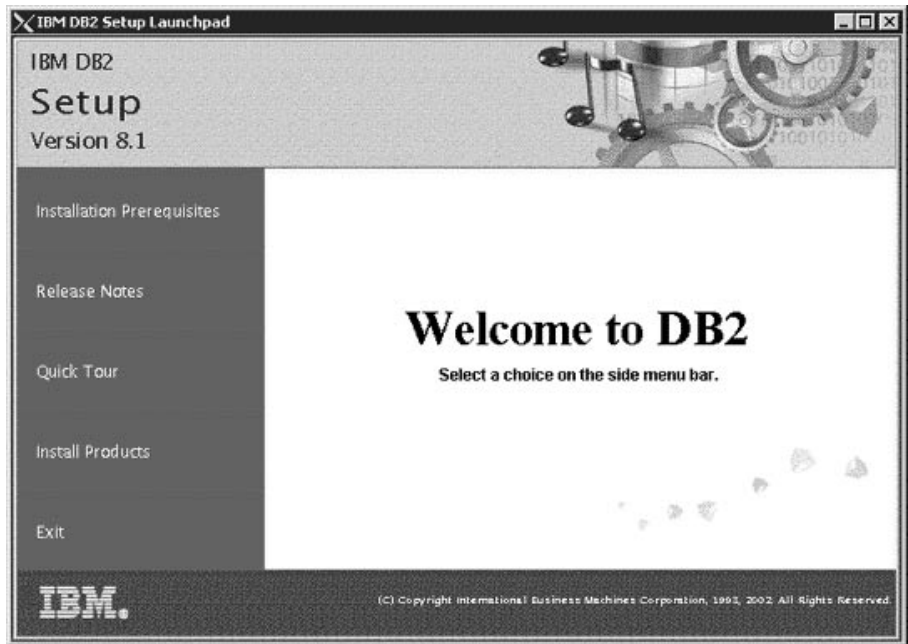
1. Log on to the system as a user with root authority.
2. Change to the directory where the CD-ROM is mounted by entering the following command:

```
cd /mnt/cdrom
```

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

3. Enter the `./db2setup` command to start the DB2 Setup wizard. You must have X windows running to launch the graphical installer. After a few

moments, the IBM DB2 Setup Launchpad opens.



From this window, you can view the installation prerequisites and the release notes or you can proceed directly to the installation.

Once you have initiated the installation, proceed through the DB2 Setup wizard installation panels and make your selections. Installation help is available to guide you through the DB2 Setup wizard. To invoke the installation help, click **Help** or press F1. You can click **Cancel** at any time to end the installation. DB2 files will only be copied to your system once you have clicked **Finish** on the last DB2 Setup wizard installation panel.

When you have completed your installation, DB2 Connect Personal Edition will be installed in `/opt/IBM/db2/V8.1`.

Related concepts:

- “Typical steps required to install and configure DB2 Connect Personal Edition” on page 10

Related tasks:

- “Mounting the DB2 CD-ROM (Linux)” on page 26

Related reference:

- “Memory requirements for DB2 Connect Personal Edition (Linux)” on page 24
- “Disk requirements for DB2 Connect Personal Edition (Linux)” on page 25
- “Installation requirements for DB2 Connect Personal Edition (Linux)” on page 23

Part 3. Preparing host and iSeries databases for DB2 Connect communications

These topics describe the steps required to configure host and iSeries database servers to accept connections from DB2 Connect workstations. These steps must be performed by users who have the necessary system privileges and special expertise, such as your network or system administrator, or your DB2 administrator.

For more information on configuring host and iSeries database servers, refer to the following publications:

- The *DB2 for OS/390 and z/OS Installation Guide* contains the most complete and up-to-date information for DB2 Universal Database for OS/390 and z/OS.
- *Distributed Relational Database Cross Platform Connectivity and Applications* contains useful post-configuration information.
- *AS/400 Distributed Database Programming*

The sample values used in this section match those used elsewhere in this book. When you follow the instructions provided you *must* substitute your own values for elements such as network name, Logical Unit (LU) name, and mode name.

Chapter 4. Preparing DB2 for OS/390 and z/OS databases for DB2 Connect communications

Preparing DB2 Universal Database for OS/390 and z/OS for connections from DB2 Connect

Your VTAM administrator and your host system administrator must configure VTAM and OS/390 or z/OS to prepare DB2 Universal Database for OS/390 and z/OS to receive inbound connection requests from your DB2 Connect workstation.

This topic provides:

- Examples of VTAM definitions required at your DB2 Universal Database for OS/390 and z/OS host for use with DB2 Connect SNA connections. These should be compared with current definitions.
- Instructions for establishing TCP/IP network connections between DB2 Connect and DB2 Universal Database for OS/390 and z/OS.
- DB2 host configuration steps. Many details of these steps changed with the introduction of DB2 UDB for OS/390 Version 5.1. Most of these steps apply to SNA users, but some also apply to users who will connect to DB2 Universal Database for OS/390 and z/OS via TCP/IP.

If you anticipate that DB2 for OS/390 or z/OS will participate in a multisite update transaction (two-phase commit) then refer to the *Enabling Multisite Updates* topic.

Procedure:

To prepare DB2 Universal Database for OS/390 and z/OS to receive connection requests from DB2 Connect, you need to configure your protocol:

- Configuring DB2 Universal Database for OS/390 and z/OS
- Configuring TCP/IP for DB2 Universal Database for OS/390 and z/OS
- Configuring VTAM

Related tasks:

- “Configuring DB2 Universal Database for OS/390 and z/OS” on page 34
- “Configuring TCP/IP for DB2 Universal Database for OS/390 and z/OS” on page 35
- “Configuring VTAM” on page 38
- “Enabling Multisite Updates using the Control Center” on page 56

Configuring DB2 Universal Database for OS/390 and z/OS

Before you can use DB2 Connect, your DB2 Universal Database for OS/390 and z/OS Administrator must configure DB2 Universal Database for OS/390 and z/OS to permit connections from DB2 Connect workstations. This section indicates the *minimum* updates required to permit a DB2 Connect client to make a connection to the DB2 Universal Database for OS/390 and z/OS database server. For more detailed examples, refer to the *DB2 for OS/390 and z/OS Installation Guide*.

Recommended APARs:

DB2 for OS/390 and z/OS Version 7: Apply the fixes for APARs PQ50016 and PQ50017.

Updating SYSIBM.LUNAMES:

This section contains examples of commands to update these tables for DB2 Universal Database for OS/390 and z/OS. Work with your DB2 administrator to determine the updates required for your DB2 Universal Database for OS/390 and z/OS system. For more information on the DB2 Universal Database for OS/390 and z/OS communications database tables, refer to the *DB2 Universal Database for OS/390 and z/OS SQL Reference*.

To permit database connection requests to be accepted from any incoming DB2 Connect LU, just insert a blank row. Use an SQL similar to the following:

```
INSERT INTO SYSIBM.LUNAMES (LUNAME) VALUES ('      ')
```

Alternatively, if you want to restrict access by LU name, you can use an SQL command similar to the following to update this table:

```
INSERT INTO SYSIBM.LUNAMES (LUNAME,
                             SECURITY_OUT,
                             ENCRYPTPSWDS,
                             USERNAMES)
VALUES('NYX1GW01','P','N','0');
```

Result:

Table 6. Result set from update to table

COLUMN	EXAMPLE	REMARK
=====	=====	=====
LUNAME	NYX1GW01	Name of the DB2 Connect LU
SECURITY_OUT	P	
ENCRYPTPSWDS	N	

Table 6. Result set from update to table (continued)

COLUMN	EXAMPLE	REMARK
USERNAMES	0	

Configuring TCP/IP for DB2 Universal Database for OS/390 and z/OS

This topic describes how to configure TCP/IP communications between your DB2 Connect workstation and DB2 UDB for OS/390 Version 5.1 or later. The instructions assume the following conditions:

- You are connecting to a single host database via TCP/IP. Multiple host connections will be handled in exactly the same way, although the *port number* and *service number* required in each case may be different.
- The target database resides on DB2 UDB for OS/390 Version 5.1 or later.
- All the necessary software prerequisites are installed.
- DB2 clients have been set up as required.

Prerequisite OS/390 software for TCP/IP support:

OS/390 V2R3+ is the minimum operating system level required for TCP/IP support. OS/390 V2R5+ is the recommended operating system level, and the best performer. All versions of z/OS support TCP/IP.

The following informational APARs for DB2 for OS/390 are regularly updated with information about PTFs to install for various OS/390 components, particularly TCP/IP for OS/390. If you use TCP/IP connectivity with DB2 for OS/390, it is extremely important that you review and apply PTFs and APAR fixes described in the following DB2 for OS/390 information APARs:

- II11164
- II11263
- II10962

Collecting information:

Before you can use DB2 Connect over a TCP/IP connection, you must collect information about both the host database server and the DB2 Connect server. For each host server that you are connecting to via TCP/IP, you must have the following information:

- The location of the TCP/IP services and hosts files at the DB2 Connect workstation:

On UNIX
/etc/

On Windows NT, Windows 2000, Windows XP and Windows .NET

Usually %SystemRoot%\system32\drivers\etc\, where %SystemRoot% represents the Windows install path directory.

On Windows 98 and Windows ME

Usually x:\windows\, where x: represents the Windows install path directory.

You may want to add the host information to a *domain name server* to avoid maintaining this file on multiple systems.

- The locations of the equivalent files at the target DB2 Universal Database for OS/390 and z/OS host.
- The TCP/IP *port number* defined to DB2 Universal Database for OS/390 and z/OS.

Note: The associated *service name* information is not exchanged between the DB2 Connect workstation and DB2 Universal Database for OS/390 and z/OS.

Port number 446 has been registered as the default for communication from a DB2 Connect workstation.

- The TCP/IP addresses and host names for both the host and the DB2 Connect workstation.
- The LOCATION NAME of the DB2 for OS/390 database server.
- The user ID and password to be used when issuing CONNECT requests to the database at the host or iSeries server.

Refer to your local network administrator and your DB2 for OS/390 and z/OS administrator for help getting this information. Use one copy of the example work sheet, Table 7, to plan *each* TCP/IP connection between DB2 Connect and a host database server.

Table 7. Example Worksheet for Planning TCP/IP Connections to DB2 Universal Database for OS/390 and z/OS

Ref.	Description	Sample Value	Your Value
User Information			
TCP-1	User name	A.D.B.User	
TCP-2	Contact info	(123)-456-7890	
TCP-5	User ID	ADBUSER	
TCP-6	Database type	db2390	
TCP-7	Connection type (must be TCPIP).	TCPIP	TCPIP
Network Elements at the Host			
TCP-8	Host name	MVSHOST	
TCP-9	Host IP address	9.21.152.100	

Table 7. Example Worksheet for Planning TCP/IP Connections to DB2 Universal Database for OS/390 and z/OS (continued)

Ref.	Description	Sample Value	Your Value
TCP-10	Service name	db2inst1c	
TCP-11	Port number	446	446
TCP-12	LOCATION NAME	NEW_YORK3	
TCP-13	User ID		
TCP-14	Password		
Network Elements at the DB2 Connect Workstation			
TCP-18	Host name	mcook02	
TCP-19	IP address	9.21.27.179	
TCP-20	Service name	db2inst1c	
TCP-21	Port number	446	446
DB2 Directory Entries at the DB2 Connect Workstation)			
TCP-30	Node name	MVSIPNOD	
TCP-31	Database name	nyc3	
TCP-32	Database alias	mvsipdb1	
TCP-33	DCS database name	nyc3	
<p>Notes:</p> <ol style="list-style-type: none"> To obtain the host's IP address TCP-9, enter at the host: TSO NETSTAT HOME To obtain the port number TCP-11, look for DSNL0041 in the DB2 master address space or system log. 			

Configuring the TCP/IP connection:

Use these steps in this section to complete the configuration and make the connection.

Complete the worksheet:

Complete a copy of the example worksheet for each TCP/IP host:

- Fill in the values to be used for the host name and IP address of the DB2 Universal Database for OS/390 and z/OS host (items 8 and 9).
- Fill in the values to be used for the host name and IP address of the DB2 Connect workstation (items 18 and 19).
- Determine the port number or service name to be used for the connection (items 10 and 11, or 20 and 21).
- Determine the LOCATION NAME of the DB2 for OS/390 and z/OS database server to which you wish to connect.

5. Determine the values to be used for user ID and PASSWORD when connecting to the host database.

Update the DB2 Universal Database for OS/390 and z/OS host:

At your zSeries server:

1. Verify the host address or the host name.
2. Verify the port number or the service name.
3. Update the services file with the correct port number and service name if necessary.
4. Update the hosts file (or the Domain Name Server used by the DB2 Universal Database for OS/390 and z/OS system) with the host name and IP address of the DB2 Connect workstation if necessary.
5. Ensure the new definitions are active before attempting to test the connection. Refer to your host network administrator or change control staff if necessary.
6. Check with the DB2 Universal Database for OS/390 and z/OS administrator that you have a valid user ID, password, and database *LOCATION NAME*.
7. PING the DB2 Connect server, using the correct port number if that option is supported by TCP/IP on the host system. For example:

```
ping remote_host_name -p port_number
```

Configuring VTAM

To configure VTAM, your VTAM Administrator needs to determine the names and options to be used on your system. The following definitions must be provided to enable the DB2 Connect workstation to connect to the host:

- The VTAM APPL definition for DB2 Universal Database for OS/390 and z/OS. The APPL name, or LU name, for the DB2 subsystem is NYM2DB2 in these examples.
- The VTAM PU and LU definitions for DB2 Connect. The PU and LU definitions for the DB2 Connect workstation are NYX1 and NYX1GW01 respectively in these examples.
- The VTAM log mode definition for DB2. The log mode entry to be used for the connection is IBMRDB in these examples.

The sample VTAM definitions are provided in the sections that follow. These samples use parameters that match the parameters used elsewhere in this book.

Sample Network Element Names (VTAM):

The following example shows the sample VTAM definitions used to configure a host database server.

```
DB2 Connect Server:
- Network ID           : SPIFNET
- Local Node Name     : NYX1      (PU name)
- Local Node ID      : 05D27509

- LU Name             : SPIFNET.NYX1GW01
                      (the same LU is used
                      for DB2 Connect,
                      for DB2 Universal Database,
                      and for the SPM)
- LU Alias            : NYX1GW01

HOST:
- Network ID         : SPIFNET
- Node Name          : NYX

- LU Name            : SPIFNET.NYM2DB2
- LU Alias           : NYM2DB2
- LAN Destination Address : 400009451902 (NCP TIC address)

MODE DEFINITION:
- Mode Name          : IBMRDB

DB2 for OS/390:
- Location           : NEW_YORK3

SECURITY:
- Security Type      : Program
- Authentication Type : DCS
```

Sample VTAM APPL Definition for OS/390 or z/OS:

The following example shows the sample VTAM application major node definitions. In most cases, such a definition will already exist with a different LU name. Otherwise, this application major node must be defined, and DB2 Universal Database for OS/390 and z/OS must be customized to use the LU name defined. This name is the Partner LU name required by DB2 Connect.

```

-----1-----2-----3-----4-----5-----6-----7--
DB2APPLS VBUILD TYPE=APPL

NYM2DB2  APPL  APPC=YES,                X
           AUTH=(ACQ),                  X
           AUTOSES=1,                   X
           DLOGMOD=IBMRDB,              X
           DMINWNL=512,                 X
           DMINWNR=512,                 X
           DSESSLIM=2048,               X
           EAS=6000,                    X
           MODETAB=RDBMODES,            X
           PARSESS=YES,                 X
           PRTCT=SFLU,                  X
           MODETAB=RDBMODES,            X
           SECACPT=ALREADYV,            X
           SRBEXIT=YES,                 X
           VERIFY=NONE,                 X
           VPACING=8

```

Note: Continuations must begin in column 16, with continuation marks in column 72.

Sample VTAM PU and LU Definitions for DB2 Connect:

If your security policies allow it, enable DYNPU and DYNLU in VTAM to allow any PU and LU access through VTAM. Contact your VTAM administrator for more information.

The following example shows the sample VTAM switched major node definitions. Follow this example to enable a specific LU or PU.

If you already use SNA applications on the DB2 Connect workstation, then a PU definition already exists. However, an independent LU definition might not exist. The independent LU definition required for DB2 Connect must have LOCADDR=0 specified.


```

-----+-----1-----+-----2-----+-----3-----+-----4-----+-----5-----+-----6-----+-----7--
      SWITCHED MAJOR NODE DEFINITION FOR PU NYX1 and
      INDEPENDENT LU NYX1GW01

LOC300   VBUILD TYPE=LOCAL

NYX1           ADDR=01, IDBLK=071, IDNUM=27509, ANS=CONT, DISCNT=NO,           X
              IRETRY=YES, ISTATUS=ACTIVE, MAXDATA=4302, MAXOUT=7,           X
              MAXPATH=1, PUTYPE=2, SECNET=NO, MODETAB=RDBMODES           X
              SSCPFM=USSSCS, PACING=0, VPACING=2

NYX1GW01  LOCADDR=000, MODETAB=RDBMODES, DLOGMODE=IBMRDB

OTHERLU   LOCADDR=002

```

Sample VTAM Log Mode Definition for DB2:

The following example shows the sample VTAM logon mode table definition for the IBMRDB and SNASVCMG modes. This example specifies a 4K *RUSIZE*, which may not be suitable for your environment, for example, if you are using Ethernet, which has a maximum Frame Size of 1536 bytes. Your VTAM administrator should check these values and advise you which mode table entry name and *RUSIZE* to specify for DB2 Connect. You must define the *SNASVCMG* logon mode when using APPC.

```

-----1-----2-----3-----4-----5-----6-----7---
RDBMODES MODTAB

IBMRDB  MODEENT LOGMODE=IBMRDB, DRDA DEFAULT MODE *
        TYPE=0, NEGOTIABLE BIND *
        PSNDPAC=X'01', PRIMARY SEND PACING COUNT *
        SSNDPAC=X'01', SECONDARY SEND PACING COUNT *
        SRCVPAC=X'00', SECONDARY RECEIVE PACING COUNT *
        RUSIZES=X'8989', RUSIZES IN-4K OUT-4K *
        FMPROF=X'13', LU6.2 FM PROFILE *
        TSPROF=X'07', LU6.2 TS PROFILE *
        PRIPROT=X'B0', LU6.2 PRIMARY PROTOCOLS *
        SECPROT=X'B0', LU6.2 SECONDARY PROTOCOLS *
        COMPROT=X'D0B1', LU6.2 COMMON PROTOCOLS *
        PSERVIC=X'06020000000000000000122F00' LU6.2 LU TYPE *

SNASVCMG MODEENT LOGMODE=SNASVCMG, DRDA DEFAULT MODE *
        PSNDPAC=X'00', PRIMARY SEND PACING COUNT *
        SSNDPAC=X'02', SECONDARY SEND PACING COUNT *
        SRCVPAC=X'00', SECONDARY RECEIVE PACING COUNT *
        RUSIZES=X'8585', RUSIZES IN-1K OUT-1K *
        FMPROF=X'13', LU6.2 FM PROFILE *
        TSPROF=X'07', LU6.2 TS PROFILE *
        PRIPROT=X'B0', LU6.2 PRIMARY PROTOCOLS *
        SECPROT=X'B0', LU6.2 SECONDARY PROTOCOLS *
        COMPROT=X'D0B1', LU6.2 COMMON PROTOCOLS *
        PSERVIC=X'06020000000000000000000300' LU6.2 LU TYPE *

```

Chapter 5. Preparing DB2 UDB for iSeries databases for DB2 Connect communications

Preparing DB2 Universal Database for iSeries for connections from DB2 Connect

DB2 Connect gives remote system applications access to data on your DB2 UDB for iSeries system.

Procedure:

To set up the connection, you need to know the following:

1. The local network name. You can get this information by entering DSPNETA.
2. The local adapter address. You can get this information by entering WRKLIND (*trlan).
3. The mode name. You can get a list of mode names by entering WRKMODD. If the mode IBMRDB has been defined on your iSeries system, you should use it.
4. The local control point name. You can get this information by entering DSPNETA.
5. The remote transaction program name. The default is X'07'6DB (X'07F6C4C2'). The default is always used by DB2 UDB for iSeries. If entering a hexadecimal number is not convenient, an alias is QCNTEDDM.
6. The relational database name. You can get this information by entering DSPRDBDIRE. This will display a list. The line containing *LOCAL in the Remote Location column identifies the RDBNAME which must be defined to the client. If there is no *LOCAL entry, you can add one, or use the system name obtained from the DSPNETA command on the server.

Here is an example:

Table 8. Display Relational Database Directory Entries

```
                Display Relational Database Directory Entries
Position to . . . . .
Type options, press Enter.
    5=Display details  6=Print details
Option                Relational                Remote
                    Database                    Location Text
-----
```

Table 8. Display Relational Database Directory Entries (continued)

—	DLHX	RCHAS2FA
—	JORMT2FA	JORMT2FA
—	JORMT4FD	JORMT4FD
—	JOSNAR7B	RCHASR7B
—	RCHASR7B	*LOCAL
—	RCHASR7C	RCHASR7C
—	R7BDH3SNA	RCH2PDH3
—	RCHASDH3	RCHASDH3

When you have obtained these parameters from your iSeries server, enter your values into the worksheet that follows:

Table 9. Configuration parameters from iSeries

Item	Parameter	Example	Your value
A-1	Local network name	SPIFNET	
A-2	Local adapter address	400009451902	
A-3	Mode name	IBMRDB	
A-4	Local control point name	SYD2101A	
A-5	Remote transaction program	X'07F6C4C2'(default)	
A-6	Relational database name	NEW_YORK3	

For more information, refer to the *DRDA Connectivity Guide*.

Chapter 6. Preparing DB2 for VM and VSE databases for DB2 Connect communications

Preparing DB2 for VSE & VM for connections from DB2 Connect

For information about how to set up DB2 for VSE & VM as an application server, refer to the *DRDA Connectivity Guide*.

Related concepts:

- “DB2 for VM” in the *Connectivity Supplement*
- “DB2 for VSE” in the *Connectivity Supplement*

Related tasks:

- “Preparing the application requester or application server for DRDA communications (VM)” in the *Connectivity Supplement*

Part 4. Configuring DB2 Connect to communicate with host and iSeries databases

Chapter 7. Configuring DB2 Connect to communicate with host and iSeries databases

Configuring a connection to host or iSeries database servers using the CA

This task describes how to connect DB2 Connect Personal Edition (PE) or DB2 Connect Enterprise Edition to a remote database host or iSeries database server using the Configuration Assistant (CA). The Configuration Assistant is a DB2 GUI tool that can be used to configure database connections and other database settings.

The Configuration Assistant (CA) was referred to as the Client Configuration Assistant (CCA) in previous releases of DB2.

Prerequisites:

- The Configuration Assistant must be installed on DB2 Connect workstation. In DB2 version 8, the Configuration Assistant is available as part of the DB2 Administration Client and DB2 Application Development Client.
- The remote server must be configured to accept inbound client requests. By default, the server installation program detects and configures most protocols on the server for inbound client connections.

Procedure:

To configure a connection to a database using the CA, select one of the following methods:

- Connecting to a database using discovery
- Connecting to a database using a profile
- Connecting to a database manually using the CA

Related tasks:

- “Configuring a database connection using Discovery” on page 52
- “Configuring a database connection using a profile” on page 51
- “Configuring a database connection using the Configuration Assistant (CA)” on page 50

Configuration tasks

Configuring a database connection using the Configuration Assistant (CA)

If you have the information for the database you want to connect to and the server upon which it resides, you can manually enter all of the configuration information. This method is analogous to entering commands via the command line processor, however, the parameters are presented graphically.

Prerequisites:

Before you configure a connection to a database using the CA:

- Ensure that you have a valid DB2 user ID.
- If adding a database to a system that has a DB2 Server or DB2 Connect server product installed, ensure that you have a user ID with SYSADM or SYSCTRL authority for the instance.

Procedure:

To add a database to your system manually using the CA:

1. Log on to the system with a valid DB2 user ID.
2. Start the CA. The CA can be started from the Start menu on Windows or using the **db2ca** command on both Windows and UNIX systems.
3. On the CA menu bar, under **Selected**, choose **Add a database using wizard**.
4. Select the **Manually configure a connection to a database** radio button and click **Next**.
5. If you are using Lightweight Directory Access Protocol (LDAP), select the radio button that corresponds to the location where you would like your DB2 directories to be maintained. Click **Next**.
6. Select the radio button that corresponds to the protocol that you want to use from the **Protocol** list.

If DB2 Connect is installed on your machine and you select TCP/IP or APPC, you have the option to select **The database physically resides on a host or OS/400 system**. If you select this check box, you will have the option of selecting the type of connection that you want to make to the host or OS/400 database:

- To make a connection through a DB2 Connect gateway, select the **Connect to the server via the gateway** radio button.
- To make a direct connection, select the **Connect directly to the server** radio button.

Click **Next**.

7. Enter the required communication protocol parameters and click **Next**.
8. Enter the database alias name of the remote database that you want to add in the **Database name** field and a local database alias name in the **Database alias** field.

If you are adding a host or OS/400 database, type the Location name for an OS/390 or z/OS database, the RDB name for an OS/400 database, or the DBNAME for a VSE or VM database in the **Database name** field. Optionally add a comment that describes this database in the **Comment** field.

Click **Next**.

9. If you are planning to use ODBC, register this database as an ODBC data source. ODBC must be installed to perform this operation.
10. Click **Finish**. You are now able to use this database. Select the **Exit** menu action to close the CA.

Related tasks:

- “Configuring a database connection using Discovery” on page 52
- “Configuring a database connection using a profile” on page 51
- “Testing a database connection” on page 53

Configuring a database connection using a profile

A server profile contains information about server instances on a system, and databases within each server instance. A client profile contains database information that was cataloged on another client system. Use the steps in the following task to connect to a database using a profile.

Prerequisites:

Before you connect to a database through the CA using a profile:

- Ensure that you have a valid DB2 user ID.
- If adding a database to a system that has a DB2 Server or DB2 Connect server product installed, ensure that you have a user ID with SYSADM or SYSCtrl authority for the instance.

Procedure:

To connect to a database using a profile:

1. Log on to the system with a valid DB2 user ID.
2. Start the CA. The CA can be started from the Start menu on Windows or using the **db2ca** command on both Windows and UNIX systems.
3. On the CA menu bar, under **Selected**, choose **Add a database using wizard**.

4. Select the **Use a profile** radio button and click **Next**.
5. Click the ... push button and select a profile. Select a remote database from the object tree that is displayed from the profile, and if the database selected is a gateway connection, select a connection route to the database. Click the **Next** push button.
6. Enter a local database alias name in the **Database alias** field and optionally enter a comment that describes this database in the **Comment** field. Click **Next**.
7. If you are planning to use ODBC, register this database as an ODBC data source. ODBC must be installed to perform this operation.
8. Click **Finish**. You are now able to use this database. Select the **Exit** menu action to exit the CA.

Related tasks:

- “Creating client profiles using the export function of the Configuration Assistant (CA)” on page 68
- “Testing a database connection” on page 53

Configuring a database connection using Discovery

You can use the Discovery feature of the Configuration Assistant to search a network for databases.

Prerequisites:

Before you configure a connection to a database using Discovery:

- Ensure that you have a valid DB2 user ID.
- If adding a database to a system that has a DB2 Server or DB2 Connect server product installed, ensure that you have a user ID with SYSADM or SYSCTRL authority for the instance.

Restrictions:

A DB2 Administration Server (DAS) must be running and enabled for the Discovery feature of the CA to return information about DB2 systems.

Procedure:

To add a database to your system using Discovery:

1. Log on to the system with a valid DB2 user ID.
2. Start the CA. The CA can be started from the Start menu on Windows or using the **db2ca** command on both Windows and UNIX systems.
3. On the CA menu bar, under **Selected**, choose **Add a database using wizard**.

4. Select the **Search the network** radio button and click **Next**.
5. Double-click on the folder beside **Known Systems** to list all the systems known to your client.
6. Click the [+] sign beside a system to get a list of the instances and databases on it. Select the database that you want to add, click the **Next** push button,
7. Enter a local database alias name in the **Database alias** field and optionally enter a comment that describes this database in the **Comment** field.
8. If you are planning to use ODBC, register this database as an ODBC data source. ODBC must be installed to perform this operation.
9. Click **Finish**. You are now able to use the database you added. Click **Close** to exit the CA.

Related tasks:

- “Configuring a database connection using the Configuration Assistant (CA)” on page 50
- “Configuring a database connection using a profile” on page 51
- “Testing a database connection” on page 53

Testing a database connection

After configuring the database, the database connection should be tested.

Procedure:

To test a database connection:

1. Start the **CA**.
2. Highlight the database in the details view and invoke the **Test Connection** menu action. The Test Connection window opens.
3. Select the type of connection that you would like to test (**CLI** is the default). Enter a valid user ID and password for the remote database and click **Test Connection**. If the connection is successful, a message confirming the connection appears on the Results page.

If the connection test failed, you will receive a help message. To change any settings you may have incorrectly specified, select the database in the details view and invoke the **Change Database** menu action.

Related tasks:

- “Configuring a database connection using Discovery” on page 52
- “Configuring a database connection using the Configuration Assistant (CA)” on page 50
- “Configuring a database connection using a profile” on page 51

Chapter 8. Enabling multisite updates

Multisite Updates

Multisite update, also known as distributed unit of work (DUOW) and two-phase commit, is a function that enables your applications to update data in multiple remote database servers with guaranteed integrity. For example, a banking transaction that involves the transfer of money from one account to another in a different database server.

In such a transaction, it is critical that updates which implement debit operations on one account do not get committed unless updates required to process credits to the other account are committed as well. The multisite update considerations apply when data representing these accounts is managed by two different database servers.

DB2[®] products provide comprehensive support for multisite updates. This support is available for applications developed using regular SQL as well as applications that use transaction processing monitors (TP monitors) that implement the X/Open XA interface specification. Examples of such TP monitors products include IBM[®] TxSeries (CICS and Encina), IBM Message and Queuing Series, IBM Component Broker Series, IBM San Francisco Project as well as Microsoft[®] Transaction Server (MTS), BEA Tuxedo and several others. There are different setup requirements depending on whether native SQL multisite update or TP monitor multisite update is used.

Both the native SQL and TP monitor multisite update programs must be precompiled with the `CONNECT 2 SYNCPOINT TWOPHASE` options. Both can use the SQL Connect statement to indicate which database they want to be used for the SQL statements that follow. If there is no TP monitor to tell DB2 it is going to coordinate the transaction (as indicated by DB2 receiving the `xa_open` calls from the TP monitor to establish a database connection), then the DB2 software will be used to coordinate the transaction.

When using TP monitor multisite update, the application must request commit or rollback by using the TP monitor's API, for example CICS[®] `SYNCPOINT`, Encina[®] `Abort()`, MTS `SetAbort()`. When using native SQL multisite update, the normal SQL `COMMIT` and `ROLLBACK` must be used.

TP monitor multisite update can coordinate a transaction that accesses both DB2 and non-DB2 resource managers such as Oracle, Informix[™] or SQLServer. Native SQL multisite update is used with DB2 servers only.

For a multisite update transaction to work, each of the databases participating in a distributed transaction must be capable of supporting distributed unit of work. Currently, the following DB2 servers provided DUOW support that enabled them to participate in distributed transactions:

- DB2 UDB for UNIX[®] and Windows[®] Version 5 or later
- DB2 for OS/390[®] Version 5.1
- DB2 UDB for OS/390 Version 6.1 or later
- DB2 for z/OS[™] Version 7
- DB2 UDB for iSeries[™] Version 4 or later
- DB2 Server for VM and VSE V5.1 or later (SNA only)

A distributed transaction can update any mix of supported database servers. For example, your application can update several tables in DB2 UDB on Windows NT or Windows 2000, a DB2 for OS/390 and z/OS database, and a DB2 UDB for iSeries database, all within a single transaction.

Related concepts:

- “Remote unit of work” in the *DB2 Connect User’s Guide*
- “Distributed requests” in the *DB2 Connect User’s Guide*
- “Multisite update and sync point manager” on page 58

Related tasks:

- “Enabling Multisite Updates using the Control Center” on page 56
- “Testing Multisite Update using the Control Center” on page 57

Enabling Multisite Updates using the Control Center

You can use the Control Center to provide multisite updates.

Procedure:

To enable multistie updates:

1. Launch the Multisite Update Wizard. From the Control Center.
2. Click the [+] sign to expand the tree view.
3. With the right mouse button, select the instance that you wish to configure. A pop-up menu opens.
4. Select **Multisite Update** —> **Configure** menu item.
5. The Multisite Update Wizard provides a notebook-type interface. Each page of the wizard will prompt you for certain information about your configuration.

- a. Specify a Transaction Processor (TP) monitor. This field will show the defaults for the TP monitor you have enabled. If you do not want to use a TP monitor, select **Do Not Use a TP Monitor**. Click **Next**.
- b. Specify the communications protocols you will use. Click **Next**.
- c. Specify a Transaction Manager database. This panel defaults to the first database you connect to (1ST_CONN). You can leave this default or select another catalogued database. Click **Next**.
- d. Specify the types of database servers involved in the update, and also whether or not TCP/IP is to be used exclusively.
- e. Specify the sync point manager settings. This page will only appear if the settings on the previous page indicate that you need to use DB2's sync point manager in a multisite update scenario.

Related concepts:

- “Multisite Updates” on page 55

Related tasks:

- “Testing Multisite Update using the Control Center” on page 57

Testing Multisite Update using the Control Center

You can test your multisite update setup using the Control center.

Procedure:

To test multisite update:

1. Select the instance with the right mouse button and choose the **Multisite Update** —> **Test** menu option from the pop-up menu. The Test Multisite Update window opens.
2. Select the databases you want to test from the available databases in the **Available Databases** list box. You can use the arrow buttons (> and >>) in the middle to move selections to and from the **Selected databases** list box. You can also change the selected userid and password by directly editing them in the **Selected databases** list box.
3. When you have finished your selection, click **OK**. The Multisite Update Test Result window opens.
4. The Multisite Update Test Result window shows which of the databases you selected succeeded or failed the update test. The window will show SQL codes and error messages for those that failed. Click **Close** to close the window.
5. Click **Close** to close the Test Multisite Update window.

Related concepts:

- “Multisite Updates” on page 55

Related tasks:

- “Enabling Multisite Updates using the Control Center” on page 56

Multisite update and sync point manager

Host and iSeries™ database servers require DB2® Connect to participate in a distributed transaction originating from Windows, UNIX, and web applications. In addition, many of the multisite update scenarios that involve host and iSeries database servers require that the sync point manager (SPM) component be configured. When a DB2 instance is created, the DB2 SPM is automatically configured with default settings.

The need for SPM is dictated by the choice of protocol (SNA or TCP/IP) and use of a TP monitor. The following table provides a summary of scenarios that require the use of SPM. The table also shows if DB2 Connect™ is required for any access to the host or iSeries from Intel or UNIX® machines. For multisite updates, the SPM component of DB2 Connect is required if the access is via SNA or if you are using a TP monitor.

Table 10. Multisite update scenarios that require SPM – TCP/IP

Transaction Processor Monitor Used?	Sync Point Manager Needed?	Product Required (Choose One)	Host and iSeries Database Supported
Yes	Yes	<ul style="list-style-type: none"> • DB2 Connect EE • DB2 UDB ESE 	<ul style="list-style-type: none"> • DB2 for OS/390® V5.1 • DB2 UDB for OS/390 V6.1 or later • DB2 UDB for z/OS™ V7 or later
No	No	<ul style="list-style-type: none"> • DB2 Connect PE • DB2 Connect EE • DB2 UDB ESE 	<ul style="list-style-type: none"> • DB2 for OS/390 V5.1 • DB2 UDB for OS/390 V6.1 or later • DB2 UDB for z/OS V7 or later

Table 11. Multisite update scenarios that require SPM – SNA

Transaction Processor Monitor Used?	Sync Point Manager Needed?	Product Required (Choose One)	Host and iSeries Database Supported
Yes	Yes	<ul style="list-style-type: none"> • DB2 Connect EE* • DB2 UDB ESE* <p>Note: *AIX, Windows[®] NT, and Windows 2000 platforms only.</p>	<ul style="list-style-type: none"> • DB2 for OS/390 V5.1 • DB2 UDB for OS/390 V6.1 or later • DB2 UDB for z/OS V7 or later • DB2 for AS/400[®] V3.1 or later • DB2 UDB for iSeries V4 or later • DB2 Server for VM or VSE V5.1 or later
No	Yes	<ul style="list-style-type: none"> • DB2 Connect EE* • DB2 UDB ESE* <p>Note: *AIX, Windows NT, and Windows 2000 platforms only.</p>	<ul style="list-style-type: none"> • DB2 for OS/390 V5.1 • DB2 UDB for OS/390 V6.1 or later • DB2 UDB for z/OS V7 • DB2 for AS/400 V3.1 or later • DB2 UDB for iSeries V4 or later • DB2 Server for VM and VSE V5.1 or later

Note: A distributed transaction can update any mix of supported database servers. For example, your application can update several tables in DB2 UDB on Windows, a DB2 for OS/390 database and a DB2 UDB for iSeries database all within a single transaction.

Related concepts:

- “Multisite Updates” on page 55

Part 5. Configuring DB2 clients to use DB2 Connect

Chapter 9. Configuring DB2 clients to use DB2 Connect

When installing DB2 Connect Personal Edition, you can also choose to install a DB2 run-time client. These topics detail the instructions of how to configure a connection from the DB2 run-time client to a DB2 UDB server. The DB2 run-time client can connect to databases on Windows and UNIX, as well as host or iSeries databases using DB2 Connect. You can connect directly to host or iSeries databases using DB2 Connect Personal Edition, if you have it installed on the same workstation as the DB2 run-time client, or you can connect through a DB2 Connect Enterprise Edition server.

Configuring a client to server connection using the Configuration Assistant (CA)

This task describes how to connect your DB2 client to a remote database using the Configuration Assistant (CA). The Configuration Assistant is a DB2 GUI tool that can be used to configure database connections and other database settings.

The Configuration Assistant (CA) was referred to as the Client Configuration Assistant (CCA) in previous releases of DB2.

Prerequisites:

- The Configuration Assistant must be installed on your DB2 client. For DB2 version 8, the Configuration Assistant is available as part of the DB2 Administration Client and DB2 Application Development Client.
- The remote server must be configured to accept inbound client requests. By default, the server installation program detects and configures most protocols on the server for inbound client connections.

Procedure:

To configure a connection to a database using the CA, select one of the following methods:

- Connecting to a database using discovery
- Connecting to a database using a profile
- Connecting to a database manually using the CA

Configuration tasks

Configuring a database connection using the Configuration Assistant (CA)

If you have the information for the database you want to connect to and the server upon which it resides, you can manually enter all of the configuration information. This method is analogous to entering commands via the command line processor, however, the parameters are presented graphically.

Prerequisites:

Before you configure a connection to a database using the CA:

- Ensure that you have a valid DB2 user ID.
- If adding a database to a system that has a DB2 Server or DB2 Connect server product installed, ensure that you have a user ID with SYSADM or SYSCTRL authority for the instance.

Procedure:

To add a database to your system manually using the CA:

1. Log on to the system with a valid DB2 user ID.
2. Start the CA. The CA can be started from the Start menu on Windows or using the **db2ca** command on both Windows and UNIX systems.
3. On the CA menu bar, under **Selected**, choose **Add a database using wizard**.
4. Select the **Manually configure a connection to a database** radio button and click **Next**.
5. If you are using Lightweight Directory Access Protocol (LDAP), select the radio button that corresponds to the location where you would like your DB2 directories to be maintained. Click **Next**.
6. Select the radio button that corresponds to the protocol that you want to use from the **Protocol** list.

If DB2 Connect is installed on your machine and you select TCP/IP or APPC, you have the option to select **The database physically resides on a host or OS/400 system**. If you select this check box, you will have the option of selecting the type of connection that you want to make to the host or OS/400 database:

- To make a connection through a DB2 Connect gateway, select the **Connect to the server via the gateway** radio button.
- To make a direct connection, select the **Connect directly to the server** radio button.

Click **Next**.

7. Enter the required communication protocol parameters and click **Next**.
8. Enter the database alias name of the remote database that you want to add in the **Database name** field and a local database alias name in the **Database alias** field.

If you are adding a host or OS/400 database, type the Location name for an OS/390 or z/OS database, the RDB name for an OS/400 database, or the DBNAME for a VSE or VM database in the **Database name** field. Optionally add a comment that describes this database in the **Comment** field.

Click **Next**.

9. If you are planning to use ODBC, register this database as an ODBC data source. ODBC must be installed to perform this operation.
10. Click **Finish**. You are now able to use this database. Select the **Exit** menu action to close the CA.

Related tasks:

- “Configuring a database connection using Discovery” on page 52
- “Configuring a database connection using a profile” on page 51
- “Testing a database connection” on page 53

Configuring a database connection using a profile

A server profile contains information about server instances on a system, and databases within each server instance. A client profile contains database information that was cataloged on another client system. Use the steps in the following task to connect to a database using a profile.

Prerequisites:

Before you connect to a database through the CA using a profile:

- Ensure that you have a valid DB2 user ID.
- If adding a database to a system that has a DB2 Server or DB2 Connect server product installed, ensure that you have a user ID with SYSADM or SYSCtrl authority for the instance.

Procedure:

To connect to a database using a profile:

1. Log on to the system with a valid DB2 user ID.
2. Start the CA. The CA can be started from the Start menu on Windows or using the **db2ca** command on both Windows and UNIX systems.
3. On the CA menu bar, under **Selected**, choose **Add a database using wizard**.

4. Select the **Use a profile** radio button and click **Next**.
5. Click the ... push button and select a profile. Select a remote database from the object tree that is displayed from the profile, and if the database selected is a gateway connection, select a connection route to the database. Click the **Next** push button.
6. Enter a local database alias name in the **Database alias** field and optionally enter a comment that describes this database in the **Comment** field. Click **Next**.
7. If you are planning to use ODBC, register this database as an ODBC data source. ODBC must be installed to perform this operation.
8. Click **Finish**. You are now able to use this database. Select the **Exit** menu action to exit the CA.

Related tasks:

- “Creating client profiles using the export function of the Configuration Assistant (CA)” on page 68
- “Testing a database connection” on page 53

Configuring a database connection using Discovery

You can use the Discovery feature of the Configuration Assistant to search a network for databases.

Prerequisites:

Before you configure a connection to a database using Discovery:

- Ensure that you have a valid DB2 user ID.
- If adding a database to a system that has a DB2 Server or DB2 Connect server product installed, ensure that you have a user ID with SYSADM or SYSCTRL authority for the instance.

Restrictions:

A DB2 Administration Server (DAS) must be running and enabled for the Discovery feature of the CA to return information about DB2 systems.

Procedure:

To add a database to your system using Discovery:

1. Log on to the system with a valid DB2 user ID.
2. Start the CA. The CA can be started from the Start menu on Windows or using the **db2ca** command on both Windows and UNIX systems.
3. On the CA menu bar, under **Selected**, choose **Add a database using wizard**.

4. Select the **Search the network** radio button and click **Next**.
5. Double-click on the folder beside **Known Systems** to list all the systems known to your client.
6. Click the [+] sign beside a system to get a list of the instances and databases on it. Select the database that you want to add, click the **Next** push button,
7. Enter a local database alias name in the **Database alias** field and optionally enter a comment that describes this database in the **Comment** field.
8. If you are planning to use ODBC, register this database as an ODBC data source. ODBC must be installed to perform this operation.
9. Click **Finish**. You are now able to use the database you added. Click **Close** to exit the CA.

Related tasks:

- “Configuring a database connection using the Configuration Assistant (CA)” on page 50
- “Configuring a database connection using a profile” on page 51
- “Testing a database connection” on page 53

Testing a database connection

After configuring the database, the database connection should be tested.

Procedure:

To test a database connection:

1. Start the **CA**.
2. Highlight the database in the details view and invoke the **Test Connection** menu action. The Test Connection window opens.
3. Select the type of connection that you would like to test (**CLI** is the default). Enter a valid user ID and password for the remote database and click **Test Connection**. If the connection is successful, a message confirming the connection appears on the Results page.

If the connection test failed, you will receive a help message. To change any settings you may have incorrectly specified, select the database in the details view and invoke the **Change Database** menu action.

Related tasks:

- “Configuring a database connection using Discovery” on page 52
- “Configuring a database connection using the Configuration Assistant (CA)” on page 50
- “Configuring a database connection using a profile” on page 51

Using Client and server profiles

Client profiles

Client profiles are used to configure database connections between DB2[®] clients and servers. A client profile is generated from a client using the export function of the Configuration Assistant (CA) or by using the **db2cfexp** command. The information contained in a client profile is determined during the export process. Depending on the settings chosen, it can contain information such as the following:

- Database connection information (including CLI or ODBC settings).
- Client settings (including database manager configuration parameters and DB2 registry variables).
- CLI or ODBC common parameters.
- Configuration data for the local APPC or NetBIOS communications subsystem.

Once the information in a client profile has been determined, it can be used to configure other clients by using either the import function of the CA, or by importing profiles using the **db2cfimp** command. Clients can import all or a subset of the configuration information in an existing profile.

Related tasks:

- “Configuring a database connection using a profile” on page 51
- “Exporting and importing a profile” on page 71
- “Creating client profiles using the export function of the Configuration Assistant (CA)” on page 68
- “Configuring client profiles using the import function of the Configuration Assistant (CA)” on page 69

Creating client profiles using the export function of the Configuration Assistant (CA)

Client profiles are used to create connections between DB2 clients and servers. The information contained in a client profile is determined during the export process. Once the information in a client profile has been determined, it can be used to configure other clients by using the import process.

Procedure:

To create client profiles using the export function of the CA, perform the following steps:

1. Start the CA.
2. Click **Export**. The Select Export Option window opens.

3. Select one of the following options:
 - If you want to create a profile that contains all of the databases cataloged on your system, and all of the configuration information for this client, select the **All** radio button, click **OK**, and go to Step 8.
 - If you want to create a profile that contains all of the databases cataloged on your system *without* any of the configuration information for this client, select the **Database connection information** radio button, click **OK**, and go to Step 8.
 - If you want to select a subset of the databases that are cataloged on your system, or a subset of the configuration information for this client, select the **Customize** radio button, click **OK**, and go to the next step.
4. Select the databases to be exported from the **Available databases** box and add them to the **Selected databases** box by clicking on the push button. To add all of the available databases to the **Databases to be exported** box, click the >> button.
5. Select the check boxes from the **Select custom export option** box that correspond to the options that you want to set up for the target client.
6. Click **OK**. The Export Client Profile window opens.
7. Enter a path and file name for this client profile and click **OK**. The DB2 Message window opens.
8. Click **OK**.

Once you have completed this task, you must then use the import function to configure other clients.

Related concepts:

- “Client profiles” on page 68

Related tasks:

- “Configuring a database connection using a profile” on page 51
- “Exporting and importing a profile” on page 71
- “Configuring client profiles using the import function of the Configuration Assistant (CA)” on page 69

Configuring client profiles using the import function of the Configuration Assistant (CA)

This task must be performed to configure client profiles after using the export function of the CA. Client profiles are used to create connections between DB2 clients and servers. The information contained in a client profile is determined during the export process. Once the information in a client profile has been determined, it can be used to configure other clients by using the import process.

Procedure:

To configure client profiles using the import function of the CA, perform the following steps:

1. Start the CA.
2. Click **Import**. The Select Profile window opens.
3. Select a client profile to import and click **OK**. The Import Profile window opens.
4. You can choose to import all or a subset of the information in a Client Profile. Select one of the following import options:
 - To import everything in a client profile, select the **All** radio button. If you choose this option, you are now ready to start using your DB2 product.
 - To import a specific database or settings that are defined in a Client Profile, select the **Customize** radio button. Select the check boxes that correspond to the options that you want to customize.
5. Click **OK**.
6. You are presented with a list of systems, instances, and databases. Select the database that you want to add and click **Next**.
7. Enter a local database alias name in the **Database alias** field and optionally enter a comment that describes this database in the **Comment** field. Click **Next**.
8. If you are planning to use ODBC, register this database as an ODBC data source.

Note: ODBC must be installed to perform this operation.

- a. Ensure that the **Register this database for ODBC** check box is selected.
- b. Select the radio button that describes how you would like to register this database:
 - If you would like all users on your system to have access to this data source, select the **As a system data source** radio button.
 - If you would like only the current user to have access to this data source, select the **As a user data source** radio button.
 - If you would like to create an ODBC data source file to share database access, select the **As a file data source** radio button and enter the path and file name for this file in the **File data source name** field.
- c. Click the **Optimize for application** drop down box and select the application for which you want to tune the ODBC settings.
- d. Click **Finish** to add the database that you selected. The Confirmation window opens.

9. Click the **Test Connection** push button to test the connection. The Connect to DB2 Database window opens.
10. In the Connect to DB2 Database window, enter a valid user ID and password for the remote database and click **OK**. If the connection is successful, a message confirming the connection appears.

If the connection test failed, you will receive a help message. To change any settings that you may have incorrectly specified, click the **Change** push button in the Confirmation window to return to the Add Database Wizard.
11. You are now able to use this database. Click **Add** to add more databases, or click **Close** to exit the Add Database Wizard. Click **Close** again to exit the CA.

Related concepts:

- “Client profiles” on page 68

Related tasks:

- “Configuring a database connection using a profile” on page 51
- “Exporting and importing a profile” on page 71
- “Creating client profiles using the export function of the Configuration Assistant (CA)” on page 68

Exporting and importing a profile

Procedure:

If you did not use a configuration profile when you installed your DB2 product using the response file that was created by the response file generator, you can enter the **db2cfexp** command to create a configuration profile. The **db2cfimp** command can then be used to import a configuration profile.

You can also use the CA to export and import a configuration profile.

Part 6. Using DB2 Connect

Chapter 10. Running your own applications

You can build and run DB2® applications with a DB2 Application Development Client installed. You can also run DB2 applications on the DB2 Run-Time Client and the DB2 Administration Client.

Various types of applications can access DB2 databases:

- Applications developed using the DB2 Application Development Client that include embedded SQL, APIs, stored procedures, user-defined functions or calls to the DB2 CLI.
- ODBC applications such as Lotus® Approach.
- JDBC applications and applets.
- Net.Data® macros containing HTML and SQL.

On Windows® operating systems, the following can also access DB2 databases:

- ActiveX Data Objects (ADO) implemented in Microsoft® Visual Basic and Microsoft Visual C++
- Remote Data Objects (RDO) implemented in Microsoft Visual Basic
- Object Linking and Embedding (OLE) Automation Routines (UDFs and Stored Procedures)
- Object Linking and Embedding Database (OLE DB) table functions

An application on a DB2 client can access a remote database without knowing its physical location. The DB2 client determines the location of the database, manages the transmission of the requests to the database server, and returns the results.

To run a database client application:

1. Ensure the server is configured and running.
2. Ensure that the database manager is started on the database server to which the application program is connecting. If it is not, you must issue the **db2start** command at the server before starting the application.
3. Ensure that you can connect to the database that the application uses.
4. Bind the utilities and the applications to the database.
5. Run the application program.

Related concepts:

- “DB2 Supported Programming Interfaces” in the *Application Development Guide: Programming Client Applications*

Related reference:

- “DB2 Application Development Client” in the *Application Development Guide: Building and Running Applications*

Chapter 11. DB2 Connect and the CLI environment

Setting Up the CLI Environment

Runtime support for DB2 CLI applications is contained in all DB2 clients. Support for building and running DB2 CLI applications is contained in the DB2 Application Development (DB2 AD) Client. This section describes the general setup required for DB2 CLI runtime support.

The CLI/ODBC driver will autobind on the first connection to the database, provided the user has the appropriate privilege or authorization. The administrator may want to perform the first connect or explicitly bind the required files.

Prerequisites:

Before you set up your CLI environment, ensure you have set up the application development environment.

Procedure:

In order for a DB2 CLI application to successfully access a DB2 database:

1. Ensure the DB2 CLI/ODBC driver was installed during the DB2 client install.
2. Catalog the DB2 database and node if the database is being accessed from a remote client.

On the Windows platform, you can use the CLI/ODBC Settings GUI to catalog the DB2 database.

3. Optional: Explicitly bind the DB2 CLI/ODBC bind files to the database with the command:

```
db2 bind ~/sqllib/bnd/@db2cli.lst blocking all sqlerror continue \  
        messages cli.msg grant public
```

On the Windows platform, you can use the CLI/ODBC Settings GUI to bind the DB2 CLI/ODBC bind files to the database.

4. Optional: Change the DB2 CLI/ODBC configuration keywords by editing the `db2cli.ini` file, located in the `sqllib` directory on Windows, and in the `sqllib/cfg` directory on UNIX platforms.

On the Windows platform, you can use the CLI/ODBC Settings GUI to set the DB2 CLI/ODBC configuration keywords.

Once you have completed the above steps, proceed to setting up your Windows CLI environment, or setting up your UNIX ODBC environment if you are running ODBC applications on UNIX.

Related concepts:

- “Initialization and Termination in CLI Overview” in the *CLI Guide and Reference, Volume 1*

Related tasks:

- “Initializing CLI Applications” in the *CLI Guide and Reference, Volume 1*
- “Setting Up the UNIX ODBC Environment” on page 80
- “Setting Up the Windows CLI Environment” on page 78

Related reference:

- “BIND” in the *Command Reference*
- “CATALOG DATABASE” in the *Command Reference*

Setting Up the Windows CLI Environment

This task tells you how to perform Windows client access to DB2 using CLI or ODBC.

Prerequisites:

Before setting up the Windows CLI environment, ensure that the CLI environment has been set up.

Restrictions:

When using the Configuration Assistant on Windows 64-bit platforms, ODBC Data Sources can be configured *only* for 64-bit applications. ODBC Data Sources for 32-bit applications need to be configured using the Microsoft 32-bit ODBC Data Source Administrator (32-bit `odbcad32.exe`) that is included with the Windows 64-bit operating system.

Procedure:

Before DB2 CLI and ODBC applications can successfully access a DB2 database from a Windows client, perform the following steps on the client system:

1. Verify that the Microsoft ODBC Driver Manager and the DB2 CLI/ODBC driver are installed. On Windows operating systems they are both installed with DB2 unless the ODBC component is manually unselected during the

install. DB2 will not overwrite a newer version of the Microsoft ODBC Driver Manager if one is found. To verify that they both exist on the machine:

- a. Start the Microsoft ODBC Data Sources icon in the Control Panel, or run the `odbcad32.exe` command from the command line.
- b. Click on the "Drivers" tab.
- c. Verify that IBM DB2 ODBC DRIVER is shown in the list.

If either the Microsoft ODBC Driver Manager or the IBM DB2 CLI/ODBC driver is not installed, then rerun the DB2 install and select the ODBC component on Windows operating systems.

Note: The latest version of the Microsoft ODBC Driver Manager is included as part of the Microsoft Data Access Components (MDAC) and is available for download from <http://www.microsoft.com/data/>.

2. Register the DB2 database with the ODBC driver manager as a data source. On Windows operating systems you can make the data source available to all users of the system (a system data source), or only the current user (a user data source). Use either of these methods to add the data source:
 - Using the Configuration Assistant:
 - a. Select the DB2 database alias that you want to add as a data source.
 - b. Click on the "Properties" push button. The Database Properties window opens.
 - c. Select the "Register this database for ODBC" check box.
 - d. Use the radio buttons to add the data source as either a user, system, or file data source.
 - Using the Microsoft ODBC Administration tool, which you can access from the icon in the Control Panel or by running `odbcad32.exe` from the command line:
 - a. The list of user data sources appears by default. If you want to add a system data source click on the "System DSN" button, or the "System DSN" tab (depending on the platform).
 - b. Click on the "Add" push button.
 - c. Double-click on the IBM DB2 ODBC Driver in the list.
 - d. Select the DB2 database to add and click on OK.
 - Use the CATALOG command to register the DB2 database with the ODBC driver manager as a data source:

```
CATALOG [ user | system ] ODBC DATA SOURCE
```

Using this command, an administrator could create a command line processor script to register the required databases. This script could then be run on all machines that require access to DB2 databases through ODBC.

3. Optional: Configure the DB2 CLI/ODBC driver using the Configuration Assistant:
 - a. Select the DB2 database alias you want to configure.
 - b. Click on the "Properties" push button. The Database Properties window opens.
 - c. Click on the "Settings" push button. The CLI/ODBC Settings window opens.
 - d. Click on the "Advanced" push button. You can set the configuration keywords in the window that opens. These keywords are associated with the database alias name, and affect all DB2 CLI/ODBC applications that access the database.
4. If you have installed ODBC access (as described above), you can now access DB2 data using ODBC applications.

Related concepts:

- "db2cli.ini Initialization File" in the *CLI Guide and Reference, Volume 1*
- "Initialization and Termination in CLI Overview" in the *CLI Guide and Reference, Volume 1*

Related tasks:

- "Initializing CLI Applications" in the *CLI Guide and Reference, Volume 1*
- "Setting Up the CLI Environment" on page 77
- "Building CLI Applications on Windows" in the *CLI Guide and Reference, Volume 1*
- "Building CLI Routines on Windows" in the *CLI Guide and Reference, Volume 1*

Setting Up the UNIX ODBC Environment

This topic explains how to set up UNIX client access to DB2 for ODBC applications. (If your application is a DB2 CLI application, your CLI environmental setup will be complete once the task in the Prerequisites section is performed.)

Prerequisites:

Before setting up the UNIX ODBC environment, ensure you have set up the CLI environment.

Procedure:

For ODBC applications on UNIX that need to access a DB2 database, follow the steps described below.

1. Ensure that an ODBC Driver Manager is installed and that each user that will use ODBC has access to it. DB2 does not install an ODBC Driver Manager, so you must use the ODBC Driver Manager that was supplied with your ODBC client application or ODBC SDK in order to access DB2 data using that application.
2. Set up `.odbc.ini`, the end-user's data source configuration. Each user ID has a separate copy of this file in their home directory. Note that the file starts with a dot. Although necessary files are usually updated automatically by the tools on most platforms, users of ODBC on UNIX platforms will have to edit them manually.

Using an ASCII editor, update the file to reflect the appropriate data source configuration information. To register a DB2 database as an ODBC data source there must be one stanza (section) for each DB2 database.

The `.odbc.ini` file must contain the following lines:

- in the `[ODBC Data Source]` stanza:

```
SAMPLE=IBM DB2 ODBC DRIVER
```

which indicates that there is a data source called `SAMPLE` that used the `IBM DB2 ODBC DRIVER`;

- in the `[SAMPLE]` stanza:

on AIX, for example,

```
[SAMPLE]
Driver=/u/thisuser/sql1lib/lib/libdb2.a
Description=Sample DB2 ODBC Database
```

on Solaris, for example,

```
[SAMPLE]
Driver=/u/thisuser/sql1lib/lib/libdb2.so
Description=Sample DB2 ODBC Database
```

which indicates that the `SAMPLE` database is part of the DB2 instance located in the directory `/u/thisuser`.

3. Ensure that the application execution environment has reference to the ODBC Driver Manager by including `libodbc.a` (for AIX) or `libodbc.so` (for UNIX) in the `LIBPATH` (for AIX) or `LD_LIBRARY_PATH` (for UNIX) environment variables.
4. Enable a system-wide `.odbc.ini` file to be used by setting the `ODBCINI` environment variable to the fully qualified pathname of the `.ini` file. Some ODBC driver managers support this feature which allows for centralized control. The following examples show how to set `ODBCINI`:

in the C shell,

```
setenv ODBCINI /opt/odbc/system_odbc.ini
```

in the Bourne or Korn shell,

```
ODBCINI=/opt/odbc/system_odbc.ini;export ODBCINI
```

5. Once the `.odbc.ini` file is set up, you can run your ODBC application and access DB2 databases. Refer to the documentation that comes with your ODBC application for additional help and information.

Related concepts:

- “Comparison of DB2 CLI and Microsoft ODBC” in the *CLI Guide and Reference, Volume 1*
- “Initialization and Termination in CLI Overview” in the *CLI Guide and Reference, Volume 1*

Related tasks:

- “Initializing CLI Applications” in the *CLI Guide and Reference, Volume 1*
- “Setting Up the CLI Environment” on page 77
- “Building CLI Applications on UNIX” in the *CLI Guide and Reference, Volume 1*
- “Building CLI Routines on UNIX” in the *CLI Guide and Reference, Volume 1*

Part 7. Appendixes

Appendix A. Language Support

Changing the DB2 interface language (Windows)

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

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

Prerequisites:

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

Procedure:

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

To change the DB2 interface language on Windows:

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

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

Related reference:

- “Supported territory codes and code pages” in the *Administration Guide: Planning*
- “Supported DB2 interface languages, locales, and code pages” on page 86

Changing the DB2 interface language (UNIX)

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

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

Prerequisites:

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

Procedure:

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

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

Related reference:

- “Supported territory codes and code pages” in the *Administration Guide: Planning*
- “Supported DB2 interface languages, locales, and code pages” on page 86

Supported DB2 interface languages, locales, and code pages

The following two tables list the languages (by operating system) supported by the DB2 interface, the language locale, and the code page for each locale. The DB2 interface includes messages, help, and graphical tool interfaces.

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

Language

Languages supported by the DB2 interface (messages, help, and graphical tool interfaces).

Locale/code page

The locale is used with the LANG environment variable on UNIX systems to set the language for the DB2 interface. A locale is not required for setting the DB2 interface language on Windows systems. On Windows systems, the DB2 interface language is determined by the system default language setting. The associated code page for each locale is listed as well.

Table 12. AIX, HP-UX, and Solaris Operating Environment locales and code pages

Language	AIX locale/code page	HP-UX locale/code page	Solaris locale/code page
French	fr_FR/819 Fr_FR/850 FR_FR/1208	fr_FR.iso88591/819 fr_FR.roman8/1051 fr_FR.utf8/1208	fr/819 fr_FR.UTF-8/1208
German	de_DE/819 De_DE/850 DE_DE/1208	de_DE.iso88591/819 de_DE.roman8/1051 de_DE.utf8/1208	de/819 de_DE.UTF-8/1208
Italian	it_IT/819 It_IT/850 IT_IT/1208	it_IT.iso88591/819 it_IT.roman8/1051 it_IT.utf8/1208	it/819 it_IT.UTF-8/1208
Spanish	es_ES/819 Es_ES/850 ES_ES/1208	es_ES.iso88591/819 es_ES.roman8/1051 es_ES.utf8/1208	es/819 es_ES.UTF-8/1208
Brazil. Portuguese	pt_BR/819 PT_BR/1208	pt_BR.iso88591/819 pt_BR.utf8/1208	pt_BR/819 pt_BR.UTF-8/1208
Japanese	ja_JP/954 Ja_JP/932 JA_JP/1208	ja_JP.eucJP/954 ja_JP.utf8/1208	ja/954 ja_JP.UTF-8/1208
Korean	Ko_KR/970 kO_KR1208	ko_KR.eucKR/970 ko_KR.utf8/1208	ko/970 ko_KR.UTF-81208
Simplified Chinese	zh_CN/1383 Zh_CN.GBK/1386 ZH_CN/1208	zh_CN.hp15CN/1383 zh_CN.utf8/1208	zh/1383 zh_CN.UTF-8/1208
Traditional Chinese	zh_TW/964 Zh_CN.GBK/950 ZH_CN/1208	zh_CN.hp15CN/1283 zh_CN.utf8/1208	zh/1383 zh_CN.UTF-8/1208

Table 12. AIX, HP-UX, and Solaris Operating Environment locales and code pages (continued)

Language	AIX locale/code page	HP-UX locale/code page	Solaris locale/code page
Danish	da_DK/819 Da_DK/850 DA_DK/1208	da_DK.iso88591/819 da_DK.roman8/1051 da_DK.utf8/1208	da/819 da_DK.UTF-8/1208
Dutch	n1_NL/819 NL_NL/	N/A	N/A
Finnish	fi_FI/819 Fi_FI/850 FI_FI/1208	fi_FI.iso88591/819 fi_FI.roman8/1051 fi_FI.utf8/1208	fi/819 fi_FI.UTF-8/1208
Norwegian	no_NO/819 No_NO/850 NO_NO/1208	no_NO.iso88591/819 no_NO.roman8/850 no_NO.utf8/1208	no/819 no_NO.UTF-8/1208
Swedish	Sv_SE/819 sv_SE/850 SV_SE/1208	sv_SE.iso88591/819 sv_SE.roman8/1051 sv_SE.utf8/1208	sv/819 sv_SE.UTF-8/1208
Czech	cs_CZ/912 CS_CZ/1208	cs_CZ.utf8/1208	cs_CZ.UTF-8/1208
Hungarian	hu_HU/912 HU_HU/1208	hu_HU.utf8/1208	hu_HU.UTF-8/1208
Polish	pl_PL/912 PL_PL/1208	pl_PL.utf8/1208	n1_NL.UTF-8/1208
Turkish	tr_TR/920 TR_TR/1208	tr_TR.utf8/1208	tr_TR.UTF-8/1208
Russian	ru_RU/915 RU_RU/1208	ru_RU.utf8/1208	ru_RU.UTF-8/1208
Bulgarian	bg_BG/915 BG_BG/1208	bg_BG.iso88595/915 bg_BG.utf8/1208	bg_BG.UTF-8/1208
Slovenian	sl_SI/912 SL_SI/1208	sl_SI.iso88592/912 sl_SI.utf8/1208	sl_SI/912 sl_SI.UTF-8/1208

Table 12. AIX, HP-UX, and Solaris Operating Environment locales and code pages (continued)

Language	AIX locale/code page	HP-UX locale/code page	Solaris locale/code page
Croatian	hr_HR/912 HR_HR/1208	hr_HR.iso88592/912 hr_HR.utf8/1204	hr_HR/912 hr_HR.UTF-8/1204
Slovak	sk_SK/912 SK_SK/1204	sk_SK.iso88592/912 sk_SK.utf8/1204	sk_SK/912 sk_SK.UTF-8/1204
Romanian	ro_RU/912 RO_RO/1204	ro_RO.iso88592/912 ro_RO.utf8/1204	N/A

Table 13. Linux and Linux/390 locales and codepages

Language	Linux locale/code page	Linux/390 locale/code page
French	fr/819 fr_FR.utf8/1208	fr/819 fr_FR.utf8/1208
German	de/819 de_DE.utf8/1208	de/819 de_DE.utf8/1208
Italian	de_DE.utf8/1208	it_IT.utf8/1208
Spanish	es_ES.utf8/1208	es_ES.utf8/1208
Brazil. Portuguese	pt_BR/819 pt_BR.utf8/1208	pt_BR/819 pt_BR.utf8/1208
Japanese	ja_JP.ujis/954 ja_JP.utf8/1208	ja_JP.ujis/954 ja_JP.utf8/1208
Korean	ko/970 ko_KR.utf8/1208	ko/970 ko_KR.utf8/1208
Simplified Chinese	zh_zh_CN.GBKz/1386 h_CN.utf8/1208	zh_zh_CN.GBK/1386 zh_CN.utf8/1208
Traditional Chinese	zh_TW.Big5/950 zh_TW.utf8/1208	zh_TW.Big5/950 zh_TW.utf8/1208

Table 13. Linux and Linux/390 locales and codepages (continued)

Language	Linux locale/code page	Linux/390 locale/code page
Russian	ru_RU/915 ru_RU.utf8/1208	ru_RU/915 ru_RU.utf8/1208
Arabic	ar/1089 ar_AA.utf8/1208	ar/1089 ar_AA.utf8/1208
Polish	pl_PL/912 pl_PL.utf8/1208	pl_PL/912 pl_PL.utf8/1208
Czech	cs_CZ/912 cs_CZ.utf8/1208	pl_PL/912 pl_PL.utf8/1208
Hungarian	hu_HU/912 hu_HU.utf8/1208	hu_HU/912 hu_HU.utf8/1208
Bulgarian	bg_BG/915 bg_BG.utf8/1208	bg_BG/915 bg_BG.utf8/1208
Slovanian	sl_SI/912 sl_SI.utf8/1208	sl_SI/912 sl_SI.utf8/1208
Croatian	hr_HR/912 hr_HR.utf8/1208	hr_HR/912 hr_HR.utf8/1208
Slovak	sk_SK/912 sk_SK.utf8/1208	sk_SK/912 sk_SK.utf8/1208
Romanian	ro_RO/912 ro_RO.utf8/1208	ro_RO/912 ro_RO.utf8/ /1208

Related tasks:

- “Changing the diagnostic error level before DB2 migration” in the *Quick Beginnings for DB2 Servers*
- “Changing the DB2 interface language (Windows)” on page 85
- “Changing the DB2 interface language (UNIX)” on page 86

Related reference:

- “National language versions” in the *Administration Guide: Planning*

- “Supported territory codes and code pages” in the *Administration Guide: Planning*

Language identifiers (for running the DB2 Setup wizard in another language)

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

Table 14. Language identifiers

Language	Language identifier
Arabic	ar
Bulgarian	bg
Brazilian Portuguese	br
Simplified Chinese	zh
Croatian	hr
Czech	cs
German	de
Danish	da
English	en
Slovenian	sl
Slovak	sk
Spanish	es
Finnish	fi
French	fr
Greek	gr
Hungarian	hu
Hebrew	il
Italian	it
Japanese	ja
Korean	ko
Dutch	nl
Norwegian	no
Polish	pl
Portuguese	pt
Russian	ru

Table 14. Language identifiers (continued)

Language	Language identifier
Romanian	ro
Swedish	sv
Slovenian	si
Turkish	tr
Traditional Chinese	zh

Bidirectional CCSID support

The following BiDi attributes are required for correct handling of Bidirectional data on different platforms:

- Text type (LOGICAL vs VISUAL)
- Shaping (SHAPED vs UNSHAPED)
- Orientation (RIGHT-TO-LEFT vs LEFT-TO-RIGHT)
- Numeral shape (ARABIC vs HINDI)
- Symmetric swapping (YES or NO)

Since defaults on different platforms are not the same, problems appear when DB2 data is sent from one platform to another. For example, Windows platforms use LOGICAL UNSHAPED data, while data on OS/390 is usually in SHAPED VISUAL format. Therefore, without any support for these attributes data sent from DB2 Universal Database for OS/390 and z/OS to DB2 UDB on a Windows 32-bit operating systems workstation displays incorrectly.

Bidirectional-specific CCSIDs:

Table 15. Bidirectional Coded Character Set Identifiers (CCSID) defined and implemented with DB2

CCSID	Code Page	String Type
00420	420	4
00424	424	4
08612	420	5
08616	424	6
12708	420	7
X'3F00'	856	4
X'3F01'	862	4
X'3F02'	916	4

Table 15. Bidirectional Coded Character Set Identifiers (CCSID) defined and implemented with DB2 (continued)

X'3F03'	424	5
X'3F04'	856	5
X'3F05'	862	5
X'3F06'	916	5
X'3F07'	1255	5
X'3F08	1046	5
X'3F09'	864	5
X'3F0A'	1089	5
X'3F0B'	1256	5
X'3F0C'	856	6
X'3F0D'	862	6
X'3F0E'	916	6
X'3F0F'	1255	6
X'3F10'	420	6
X'3F11'	864	6
X'3F12'	1046	6
X'3F13'	1089	6
X'3F14'	1256	6
X'3F15'	424	8
X'3F16'	856	8
X'3F17'	862	8
X'3F18'	916	8
X'3F19'	420	8
X'3F1A'	420	9
X'3F1B'	424	10
X'3F1C'	856	10
X'3F1D'	862	10
X'3F1E'	916	10
X'3F1F'	1255	10
X'3F20'	424	11
X'3F21'	856	11
X'3F22'	862	11

Table 15. Bidirectional Coded Character Set Identifiers (CCSID) defined and implemented with DB2 (continued)

X'3F23'	916	11
X'3F24'	1255	11

Table 16. Where CDRA String Types are defined

String Type	Text Type	Numerical Shape	Orientation	Shaping	Symmetrical Swapping
4	Visual	Arabic	LTR	Shaped	OFF
5	Implicit	Arabic	LTR	Unshaped	ON
6	Implicit	Arabic	RTL	Unshaped	ON
7(*)	Visual	Arabic	Contextual(*)	Unshaped-Lig	OFF
8	Visual	Arabic	RTL	Shaped	OFF
9	Visual	Passthru	RTL	Shaped	ON
10	Implicit		Contextual-L		ON
11	Implicit		Contextual-R		ON

Field orientation is left-to-right (LTR) when the first alphabetic character is a Latin one, and right-to-left (RTL) when it is a bidirectional (RTL) character. Characters are unshaped, but LamAlef ligatures are kept, and not broken into constituents.

Conversion of character data

When character data is transferred between machines, it must be converted to a form that the receiving machine can use.

For example, when data is transferred between the DB2 Connect server and a host or iSeries™ database server, it is usually converted from a server code page to a host CCSID, and vice versa. If the two machines use different code pages or CCSIDs, code points are mapped from one code page or CCSID to the other. This conversion is always performed at the receiver.

Character data sent *to* a database consists of SQL statements and input data. Character data sent *from* a database consists of output data. Output data that is interpreted as bit data is not converted. For example, data from a column declared with the FOR BIT DATA clause. Otherwise all input and output character data is converted if the two machines have different code pages or CCSIDs.

For example, if DB2 Connect is used to access DB2 Universal Database for OS/390 and z/OS data, the following happens:

1. DB2[®] Connect sends an SQL statement and input data to OS/390[®] or z/OS.
2. DB2 Universal Database for OS/390 and z/OS converts the data to an EBCDIC CCSID and processes it.
3. DB2 Universal Database for OS/390 and z/OS sends the result back to the DB2 Connect server.
4. DB2 Connect[™] converts the result to an ASCII or ISO code page and returns it to the user.

The table that follows shows the conversions that are supported between code pages (on the DB2 Connect Server) and CCSIDs (on the host or iSeries server).

Table 17. Server Code Page to host or iSeries CCSID Conversion

Host CCSIDs	Code Page	Territory
037, 273, 277, 278, 280, 284, 285, 297, 500, 871, 1140-1149	437, 819, 850, 858, 860, 863, 1004, 1051, 1252, 1275	Albania, Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Latin America, Netherlands, New Zealand, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, UK, USA
423, 875	737, 813, 869, 1253, 1280	Greece
870	852, 912, 920 ⁴ , 1250, 1282	Croatia, Czech Republic, Hungary, Poland, Romania, Serbia/Montenegro (Latin), Slovakia, Slovenia
1025	855, 866, 915, 1251, 1283	Bulgaria, FYR Macedonia, Russia, Serbia/Montenegro (Cyrillic)
1026	857, 920, 1254, 1281	Turkey
424	862, 916, 1255	Israel ³
420	864, 1046, 1089, 1256	Arabic countries ³
838	874	Thailand
930, 939, 5026, 5035	932, 942, 943, 954, 5039	Japan
937	938, 948, 950, 964	Taiwan
933, 1364	949, 970, 1363	Korea
935, 1388	1381, 1383, 1386	People's Republic of China

Table 17. Server Code Page to host or iSeriesCCSID Conversion (continued)

Host CCSIDs	Code Page	Territory
1112, 1122	921, 922	Estonia, Latvia, Lithuania
1025	915, 1131, 1251, 1283	Belarus
1123	1124, 1125, 1251	Ukraine

Notes:

1. Code page 1004 is supported as code page 1252.
2. In general, data can be converted from a code page to a CCSID and back again to the same code page with no change. The following are the only exceptions to that rule:
 - In double-byte character set (DBCS) code pages, some data containing user-defined characters may be lost.
 - For single-byte code pages defined within mixed-byte code pages, and for some newer single-byte code pages, characters that do not exist in both the source and the target may be mapped to substitution characters and then lost when the data is converted back to the original code page.
3. For bidirectional languages, a number of special "BiDi CCSIDs" have been defined by IBM® and are supported by DB2 Connect.

If the bidirectional attributes of the database server are different from those of the client you can use these special CCSIDs to manage the difference.

See the DB2 Connect Release Notes for detailed information about how to set them up for host or iSeries connections.
4. This code page is not supported by VM systems.

Related concepts:

- "Guidelines for character conversion" in the *Administration Guide: Performance*

Appendix B. Naming Rules

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)

Names cannot begin with a number or with the underscore character.

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

There are other special characters that might work separately depending on your operating system and where you are working with DB2. However, while they might work, there is no guarantee that they will work. It is not recommended that you use these other special characters when naming objects in your database.

You also need to consider object naming rules, workstation naming rules, naming rules in an NLS environment, and naming rules in a Unicode environment.

Related concepts:

- “General rules for naming objects and users” in the *Administration Guide: Implementation*
- “DB2 object naming rules” on page 97
- “Workstation naming rules” on page 101
- “User, userID and group naming rules” on page 99
- “Federated database object naming rules” on page 100

DB2 object naming rules

All objects follow the General Naming Rules. In addition, some objects have additional restrictions shown below.

Table 18. Database, database alias and instance naming Rules

Objects	Guidelines
<ul style="list-style-type: none"> • Databases • Database aliases • Instances 	<ul style="list-style-type: none"> • Database names must be unique within the location in which they are cataloged. On UNIX-based implementations of DB2, this location is a directory path, while on Windows® implementations, it is a logical disk. • Database alias names must be unique within the system database directory. When a new database is created, the alias defaults to the database name. As a result, you cannot create a database using a name that exists as a database alias, even if there is no database with that name. • Database, database alias and instance names can have up to 8 bytes. • On Windows NT, Windows 2000, Windows XP and Windows .NET systems, no instance can have the same name as a service name. <p>Note: To avoid potential problems, do not use the special characters @, #, and \$ in a database name if you intend to use the database in a communications environment. Also, because these characters are not common to all keyboards, do not use them if you plan to use the database in another language.</p>

Table 19. Database Object Naming Rules

Objects	Guidelines
<ul style="list-style-type: none"> • Aliases • Buffer pools • Columns • Event monitors • Indexes • Methods • Nodegroups • Packages • Package versions • Schemas • Stored procedures • Tables • Table spaces • Triggers • UDFs • UDTs • Views 	<p>Can contain up to 18 bytes <i>except</i> for the following:</p> <ul style="list-style-type: none"> • Table names (including view names, summary table names, alias names, and correlation names), which can contain up to 128 bytes • Package names, which can contain up to 8 bytes • Schema names, which can contain up to 30 bytes • Package versions, which can contain up to 64 bytes • Object names can also include: <ul style="list-style-type: none"> – valid accented characters (such as ö) – multibyte characters, except multibyte spaces (for multibyte environments) • Package names and package versions can also include periods (.), hyphens (-), and colons (:).

Related concepts:

- “Naming rules” on page 97

Naming Rules subtopics

Delimited identifiers and object names

Keywords can be used. If a keyword is used in a context where it could also be interpreted as an SQL keyword, it must be specified as a delimited identifier.

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.

Related concepts:

- “Naming rules” on page 97

User, userID and group naming rules

Table 20. User, userID and group naming rules

Objects	Guidelines
<ul style="list-style-type: none">• Group names• User names• User IDs	<ul style="list-style-type: none">• Group names can contain up to 8 bytes.• User IDs on UNIX-based systems can contain up to 8 characters.• User names on Windows® can contain up to 30 characters. Windows NT, Windows 2000, Windows XP and Windows .NET currently have a practical limit of 20 characters.• When not Client authentication, non-Windows 32-bit clients connecting to Windows NT, Windows 2000, Windows XP and Windows .NET with user names longer than 8 characters are supported when the user name and password are specified explicitly.• Names and IDs cannot:<ul style="list-style-type: none">– Be USERS, ADMINS, GUESTS, PUBLIC, LOCAL or any SQL reserved word– Begin with IBM, SQL or SYS.– Include accented characters.

Notes:

1. Some operating systems allow case sensitive user IDs and passwords. You should check your operating system documentation to see if this is the case.
2. The authorization ID returned from a successful CONNECT or ATTACH is truncated to 8 characters. An ellipsis (...) is appended to the authorization ID and the SQLWARN fields contain warnings to indicate truncation.

Related concepts:

- “Naming rules” on page 97
- “Federated database object naming rules” on page 100

Federated database object naming rules*Table 21. Federated database object naming rules*

Objects	Guidelines
<ul style="list-style-type: none"> • Function mappings • Index specifications • Nicknames • Servers • Type mappings • User mappings • Wrappers 	<ul style="list-style-type: none"> • Nicknames, mappings, index specifications, servers, and wrapper names cannot exceed 128 bytes. • Server and nickname options and option settings are limited to 255 bytes. • Names for federated database objects can also include: <ul style="list-style-type: none"> – Valid accented letters (such as ö) – Multibyte characters, except multibyte spaces (for multibyte environments)

Related concepts:

- “Naming rules” on page 97

Additional schema names information

- User-defined types (UDTs) cannot have schema names longer than 8 bytes.
- The following schema names are reserved words and must not be used: SYSCAT, SYSFUN, SYSIBM, SYSSTAT.
- To avoid potential migration problems in the future, do not use schema names that begin with SYS. The database manager will not allow you to create triggers, user-defined types or user-defined functions using a schema name beginning with SYS.
- It is recommended that you not use SESSION as a schema name. Declared temporary tables must be qualified by SESSION. It is therefore possible to have an application declare a temporary table with a name identical to that of a persistent table, in which case the application logic can become overly complicated. Avoid the use of the schema SESSION, except when dealing with declared temporary tables.

Related concepts:

- “Naming rules” on page 97

Additional password information

You may be required to perform password maintenance tasks. Since such tasks are required at the server, and many users are not able or comfortable working with the server environment, performing these tasks can pose a significant challenge. DB2® UDB provides a way to update and verify passwords without having to be at the server. For example, DB2 for OS/390® Version 5 supports this method of changing a user’s password. If an error message SQL1404N “Password expired” is received, use the CONNECT statement to change the password as follows:

```
CONNECT TO <database> USER <userid> USING <password>  
NEW <new_password> CONFIRM <new_password>
```

The “Password change” dialog of the DB2 Configuration Assistant (CA) can also be used to change the password.

Related concepts:

- “Naming rules” on page 97
- “DB2 object naming rules” on page 97
- “Workstation naming rules” on page 101
- “User, userID and group naming rules” on page 99
- “Federated database object naming rules” on page 100
- “Delimited identifiers and object names” on page 99
- “Additional schema names information” on page 100

Workstation naming rules

A *workstation name* specifies the NetBIOS name for a database server, database client, or DB2® Personal Edition that resides on the local workstation. This name is stored in the database manager configuration file. The workstation name is known as the *workstation nname*.

In addition, the name you specify:

- Can contain 1 to 8 characters
- Cannot include &, #, or @
- Must be unique within the network

In a partitioned database system, there is still only one workstation *nname* that represents the entire partitioned database system, but each node has its own derived unique NetBIOS *nname*.

The workstation *nname* that represents the partitioned database system is stored in the database manager configuration file for the database partition server that owns the instance.

Each node's unique *nname* is a derived combination of the workstation *nname* and the node number.

If a node does not own an instance, its NetBIOS *nname* is derived as follows:

1. The first character of the instance-owning machine's workstation *nname* is used as the first character of the node's NetBIOS *nname*.
2. The next 1 to 3 characters represent the node number. The range is from 1 to 999.
3. The remaining characters are taken from the instance-owning machine's workstation *nname*. The number of remaining characters depends on the length of the instance-owning machine's workstation *nname*. This number can be from 0 to 4.

For example:

Instance-Owning Machine's Workstation <i>nname</i>	Node Number	Derived Node NetBIOS <i>nname</i>
GEORGE	3	G3ORGE
A	7	A7
B2	94	B942
N0076543	21	N216543
GEORGE5	1	G1RGE5

If you have changed the default workstation *nname* during the installation, the workstation *nname*'s last 4 characters should be unique across the NetBIOS network to minimize the chance of deriving a conflicting NetBIOS *nname*.

Related concepts:

- "Naming rules" on page 97

Naming rules in an NLS environment

The basic character set that can be used in database names consists of the single-byte uppercase and lowercase Latin letters (A...Z, a...z), the Arabic numerals (0...9) and the underscore character (_). This list is augmented with three special characters (#, @, and \$) to provide compatibility with host database products. Use special characters #, @, and \$ with care in an NLS environment because they are not included in the NLS host (EBCDIC) invariant character set. Characters from the extended character set can also be used, depending on the code page that is being used. If you are using the

database in a multiple code page environment, you must ensure that all code pages support any elements from the extended character set you plan to use.

When naming database objects (such as tables and views), program labels, host variables, cursors, and elements from the extended character set (for example, letters with diacritical marks) can also be used. Precisely which characters are available depends on the code page in use.

Extended Character Set Definition for DBCS Identifiers:

In DBCS environments, the extended character set consists of all the characters in the basic character set, plus the following:

- All double-byte characters in each DBCS code page, except the double-byte space, are valid letters.
- The double-byte space is a special character.
- The single-byte characters available in each mixed code page are assigned to various categories as follows:

Category	Valid Code Points within each Mixed Code Page
Digits	x30-39
Letters	x23-24, x40-5A, x61-7A, xA6-DF (A6-DF for code pages 932 and 942 only)
Special Characters	All other valid single-byte character code points

Related concepts:

- “Naming rules” on page 97
- “DB2 object naming rules” on page 97
- “Workstation naming rules” on page 101

Naming rules in a Unicode environment

In a UCS-2 database, all identifiers are in multibyte UTF-8. Therefore, it is possible to use any UCS-2 character in identifiers where the use of a character in the extended character set (for example, an accented character, or a multibyte character) is allowed by DB2[®] UDB.

Clients can enter any character that is supported by their environment, and all the characters in the identifiers will be converted to UTF-8 by the database manager. Two points must be taken into account when specifying national language characters in identifiers for a UCS-2 database:

- Each non-ASCII character requires two to four bytes. Therefore, an n -byte identifier can only hold somewhere between $n/4$ and n characters,

depending on the ratio of ASCII to non-ASCII characters. If you have only one or two non-ASCII (for example, accented) characters, the limit is closer to n characters, while for an identifier that is completely non-ASCII (for example, in Japanese), only $n/4$ to $n/3$ characters can be used.

- If identifiers are to be entered from different client environments, they should be defined using the common subset of characters available to those clients. For example, if a UCS-2 database is to be accessed from Latin-1, Arabic, and Japanese environments, all identifiers should realistically be limited to ASCII.

Related concepts:

- “Naming rules” on page 97
- “DB2 object naming rules” on page 97
- “Workstation naming rules” on page 101

Appendix C. DB2 Universal Database technical information

Overview of DB2 Universal Database technical information

DB2 Universal Database technical information can be obtained in the following formats:

- Books (PDF and hard-copy formats)
- A topic tree (HTML format)
- Help for DB2 tools (HTML format)
- Sample programs (HTML format)
- Command line help
- Tutorials

This section is an overview of the technical information that is provided and how you can access it.

Categories of DB2 technical information

The DB2 technical information is categorized by the following headings:

- Core DB2 information
- Administration information
- Application development information
- Business intelligence information
- DB2 Connect information
- Getting started information
- Tutorial information
- Optional component information
- Release notes

The following tables describe, for each book in the DB2 library, the information needed to order the hard copy, print or view the PDF, or locate the HTML directory for that book. A full description of each of the books in the DB2 library is available from the IBM Publications Center at www.ibm.com/shop/publications/order

The installation directory for the HTML documentation CD differs for each category of information:

htmlcdpath/doc/htmlcd/%L/category

where:

- *htmlcdpath* is the directory where the HTML CD is installed.
- *%L* is the language identifier. For example, en_US.
- *category* is the category identifier. For example, core for the core DB2 information.

In the PDF file name column in the following tables, the character in the sixth position of the file name indicates the language version of a book. For example, the file name db2d1e80 identifies the English version of the *Administration Guide: Planning* and the file name db2d1g80 identifies the German version of the same book. The following letters are used in the sixth position of the file name to indicate the language version:

Language	Identifier
Arabic	w
Brazilian Portuguese	b
Bulgarian	u
Croatian	9
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
Romanian	8
Russian	r
Simp. Chinese	c
Slovakian	7
Slovenian	l
Spanish	z
Swedish	s
Trad. Chinese	t
Turkish	m

No form number indicates that the book is only available online and does not have a printed version.

Core DB2 information

The information in this category cover DB2 topics that are fundamental to all DB2 users. You will find the information in this category useful whether you are a programmer, a database administrator, or you work with DB2 Connect, DB2 Warehouse Manager, or other DB2 products.

The installation directory for this category is `doc/htmlcd/%L/core`.

Table 22. Core DB2 information

Name	Form Number	PDF File Name
<i>IBM DB2 Universal Database Command Reference</i>	SC09-4828	db2n0x80
<i>IBM DB2 Universal Database Glossary</i>	No form number	db2t0x80
<i>IBM DB2 Universal Database Master Index</i>	SC09-4839	db2w0x80
<i>IBM DB2 Universal Database Message Reference, Volume 1</i>	GC09-4840	db2m1x80
<i>IBM DB2 Universal Database Message Reference, Volume 2</i>	GC09-4841	db2m2x80
<i>IBM DB2 Universal Database What's New</i>	SC09-4848	db2q0x80

Administration information

The information in this category covers those topics required to effectively design, implement, and maintain DB2 databases, data warehouses, and federated systems.

The installation directory for this category is `doc/htmlcd/%L/admin`.

Table 23. Administration information

Name	Form number	PDF file name
<i>IBM DB2 Universal Database Administration Guide: Planning</i>	SC09-4822	db2d1x80
<i>IBM DB2 Universal Database Administration Guide: Implementation</i>	SC09-4820	db2d2x80
<i>IBM DB2 Universal Database Administration Guide: Performance</i>	SC09-4821	db2d3x80
<i>IBM DB2 Universal Database Administrative API Reference</i>	SC09-4824	db2b0x80

Table 23. Administration information (continued)

Name	Form number	PDF file name
<i>IBM DB2 Universal Database Data Movement Utilities Guide and Reference</i>	SC09-4830	db2dmx80
<i>IBM DB2 Universal Database Data Recovery and High Availability Guide and Reference</i>	SC09-4831	db2hax80
<i>IBM DB2 Universal Database Data Warehouse Center Administration Guide</i>	SC27-1123	db2ddx80
<i>IBM DB2 Universal Database Federated Systems Guide</i>	GC27-1224	db2fpx80
<i>IBM DB2 Universal Database Guide to GUI Tools for Administration and Development</i>	SC09-4851	db2atx80
<i>IBM DB2 Universal Database Replication Guide and Reference</i>	SC27-1121	db2e0x80
<i>IBM DB2 Installing and Administering a Satellite Environment</i>	GC09-4823	db2dsx80
<i>IBM DB2 Universal Database SQL Reference, Volume 1</i>	SC09-4844	db2s1x80
<i>IBM DB2 Universal Database SQL Reference, Volume 2</i>	SC09-4845	db2s2x80
<i>IBM DB2 Universal Database System Monitor Guide and Reference</i>	SC09-4847	db2f0x80

Application development information

The information in this category is of special interest to application developers or programmers working with DB2. You will find information about supported languages and compilers, as well as the documentation required to access DB2 using the various supported programming interfaces, such as embedded SQL, ODBC, JDBC, SQLj, and CLI. If you view this information online in HTML you can also access a set of DB2 sample programs in HTML.

The installation directory for this category is doc/htmlcd/%L/ad.

Table 24. Application development information

Name	Form number	PDF file name
<i>IBM DB2 Universal Database Application Development Guide: Building and Running Applications</i>	SC09-4825	db2axx80
<i>IBM DB2 Universal Database Application Development Guide: Programming Client Applications</i>	SC09-4826	db2a1x80
<i>IBM DB2 Universal Database Application Development Guide: Programming Server Applications</i>	SC09-4827	db2a2x80
<i>IBM DB2 Universal Database Call Level Interface Guide and Reference, Volume 1</i>	SC09-4849	db2l1x80
<i>IBM DB2 Universal Database Call Level Interface Guide and Reference, Volume 2</i>	SC09-4850	db2l2x80
<i>IBM DB2 Universal Database Data Warehouse Center Application Integration Guide</i>	SC27-1124	db2adx80
<i>IBM DB2 XML Extender Administration and Programming</i>	SC27-1234	db2sxx80

Business intelligence information

The information in this category describes how to use components that enhance the data warehousing and analytical capabilities of DB2 Universal Database.

The installation directory for this category is doc/htmlcd/%L/wareh.

Table 25. Business intelligence information

Name	Form number	PDF file name
<i>IBM DB2 Warehouse Manager Information Catalog Center Administration Guide</i>	SC27-1125	db2dix80
<i>IBM DB2 Warehouse Manager Installation Guide</i>	GC27-1122	db2idx80

DB2 Connect information

The information in this category describes how to access host or iSeries data using DB2 Connect Enterprise Edition or DB2 Connect Personal Edition.

The installation directory for this category is `doc/htmlcd/%L/conn`.

Table 26. DB2 Connect information

Name	Form number	PDF file name
<i>APPC, CPI-C, and SNA Sense Codes</i>	No form number	db2apx80
<i>IBM Connectivity Supplement</i>	No form number	db2h1x80
<i>IBM DB2 Connect Quick Beginnings for DB2 Connect Enterprise Edition</i>	GC09-4833	db2c6x80
<i>IBM DB2 Connect Quick Beginnings for DB2 Connect Personal Edition</i>	GC09-4834	db2c1x80
<i>IBM DB2 Connect User's Guide</i>	SC09-4835	db2c0x80

Getting started information

The information in this category is useful when you are installing and configuring servers, clients, and other DB2 products.

The installation directory for this category is `doc/htmlcd/%L/start`.

Table 27. Getting started information

Name	Form number	PDF file name
<i>IBM DB2 Universal Database Quick Beginnings for DB2 Clients</i>	GC09-4832	db2itx80
<i>IBM DB2 Universal Database Quick Beginnings for DB2 Servers</i>	GC09-4836	db2isx80
<i>IBM DB2 Universal Database Quick Beginnings for DB2 Personal Edition</i>	GC09-4838	db2i1x80
<i>IBM DB2 Universal Database Installation and Configuration Supplement</i>	GC09-4837	db2iyx80
<i>IBM DB2 Universal Database Quick Beginnings for DB2 Data Links Manager</i>	GC09-4829	db2z6x80

Tutorial information

Tutorial information introduces DB2 features and teaches how to perform various tasks.

The installation directory for this category is `doc/htmlcd/%L/tutr`.

Table 28. Tutorial information

Name	Form number	PDF file name
<i>Business Intelligence Tutorial: Introduction to the Data Warehouse</i>	No form number	db2tux80
<i>Business Intelligence Tutorial: Extended Lessons in Data Warehousing</i>	No form number	db2tax80
<i>Development Center Tutorial for Video Online using Microsoft Visual Basic</i>	No form number	db2tdx80
<i>Information Catalog Center Tutorial</i>	No form number	db2aix80
<i>Video Central for e-business Tutorial</i>	No form number	db2twx80
<i>Visual Explain Tutorial</i>	No form number	db2tvx80

Optional component information

The information in this category describes how to work with optional DB2 components.

The installation directory for this category is `doc/htmlcd/%L/opt`.

Table 29. Optional component information

Name	Form number	PDF file name
<i>IBM DB2 Life Sciences Data Connect Planning, Installation, and Configuration Guide</i>	GC27-1235	db2lsx80
<i>IBM DB2 Spatial Extender User's Guide and Reference</i>	SC27-1226	db2sbx80
<i>IBM DB2 Universal Database Data Links Manager Administration Guide and Reference</i>	SC27-1221	db2z0x80

Table 29. Optional component information (continued)

Name	Form number	PDF file name
IBM DB2 Universal Database Net Search Extender Administration and Programming Guide	SH12-6740	N/A
Note: HTML for this document is not installed from the HTML documentation CD.		

Release notes

The release notes provide additional information specific to your product's release and FixPak level. They also provides summaries of the documentation updates incorporated in each release and FixPak.

Table 30. Release notes

Name	Form number	PDF file name	HTML directory
DB2 Release Notes	See note.	See note.	doc/prodcd/%L/db2ir where %L is the language identifier.
DB2 Connect Release Notes	See note.	See note.	doc/prodcd/%L/db2cr where %L is the language identifier.
DB2 Installation Notes	Available on product CD-ROM only.	Available on product CD-ROM only.	

Note: The HTML version of the release notes is available from the Information Center and on the product CD-ROMs. To view the ASCII file:

- On UNIX-based platforms, see the Release.Notes file. This file is located in the DB2DIR/Readme/%L directory, where %L represents the locale name and DB2DIR represents:
 - /usr/opt/db2_08_01 on AIX
 - /opt/IBM/db2/V8.1 on all other UNIX operating systems
- On other platforms, see the RELEASE.TXT file. This file is located in the directory where the product is installed.

Related tasks:

- “Printing DB2 books from PDF files” on page 113

- “Ordering printed DB2 books” on page 114
- “Accessing online help” on page 114
- “Finding product information by accessing the DB2 Information Center from the administration tools” on page 118
- “Viewing technical documentation online directly from the DB2 HTML Documentation CD” on page 119

Printing DB2 books from PDF files

You can print DB2 books from the PDF files on the *DB2 PDF Documentation* CD. Using Adobe Acrobat Reader, you can print either the entire book or a specific range of pages.

Prerequisites:

Ensure that you have Adobe Acrobat Reader. It is available from the Adobe Web site at www.adobe.com

Procedure:

To print a DB2 book from a PDF file:

1. Insert the *DB2 PDF Documentation* CD. On UNIX operating systems, mount the DB2 PDF Documentation CD. Refer to your *Quick Beginnings* book for details on how to mount a CD on UNIX operating systems.
2. Start Adobe Acrobat Reader.
3. Open the PDF file from one of the following locations:
 - On Windows operating systems:
x:\doc\language directory, where *x* represents the CD-ROM drive letter and *language* represents the two-character territory code that represents your language (for example, EN for English).
 - On UNIX operating systems:
/cdrom/doc/%L directory on the CD-ROM, where */cdrom* represents the mount point of the CD-ROM and *%L* represents the name of the desired locale.

Related tasks:

- “Ordering printed DB2 books” on page 114
- “Finding product information by accessing the DB2 Information Center from the administration tools” on page 118
- “Viewing technical documentation online directly from the DB2 HTML Documentation CD” on page 119

Related reference:

- “Overview of DB2 Universal Database technical information” on page 105
-

Ordering printed DB2 books

Procedure:

To order printed books:

- Contact your IBM authorized dealer or marketing representative. To find a local IBM representative, check the IBM Worldwide Directory of Contacts at www.ibm.com/shop/planetwide
- Phone 1-800-879-2755 in the United States or 1-800-IBM-4YOU in Canada.
- Visit the IBM Publications Center at www.ibm.com/shop/publications/order

Related tasks:

- “Printing DB2 books from PDF files” on page 113
- “Finding topics by accessing the DB2 Information Center from a browser” on page 116
- “Viewing technical documentation online directly from the DB2 HTML Documentation CD” on page 119

Related reference:

- “Overview of DB2 Universal Database technical information” on page 105
-

Accessing online help

The online help that comes with all DB2 components is available in three types:

- Window and notebook help
- Command line help
- SQL statement help

Window and notebook help explain the tasks that you can perform in a window or notebook and describe the controls. This help has two types:

- Help accessible from the **Help** button
- Infopops

The **Help** button gives you access to overview and prerequisite information. The infopops describe the controls in the window or notebook. Window and notebook help are available from DB2 centers and components that have user interfaces.

Command line help includes Command help and Message help. Command help explains the syntax of commands in the command line processor. Message help describes the cause of an error message and describes any action you should take in response to the error.

SQL statement help includes SQL help and SQLSTATE help. DB2 returns an SQLSTATE value for conditions that could be the result of an SQL statement. SQLSTATE help explains the syntax of SQL statements (SQL states and class codes).

Note: SQL help is not available for UNIX operating systems.

Procedure:

To access online help:

- For window and notebook help, click **Help** or click that control, then click **F1**. If the **Automatically display infopops** check box on the **General** page of the **Tool Settings** notebook is selected, you can also see the infopop for a particular control by holding the mouse cursor over the control.
- For command line help, open the command line processor and enter:

- For Command help:

? command

where *command* represents 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.

- For Message help:

? XXXnnnnn

where *XXXnnnnn* represents a valid message identifier.

For example, *? SQL30081* displays help about the SQL30081 message.

- For SQL statement help, open the command line processor and enter:

- For SQL help:

? sqlstate or *? class code*

where *sqlstate* represents a valid five-digit SQL state and *class code* represents the first two digits of the SQL state.

For example, *? 08003* displays help for the 08003 SQL state, while *? 08* displays help for the 08 class code.

- For SQLSTATE help:

`help statement`

where *statement* represents an SQL statement.

For example, `help SELECT` displays help about the `SELECT` statement.

Related tasks:

- “Finding topics by accessing the DB2 Information Center from a browser” on page 116
- “Viewing technical documentation online directly from the DB2 HTML Documentation CD” on page 119

Finding topics by accessing the DB2 Information Center from a browser

The DB2 Information Center accessed from a browser enables you to access the information you need to take full advantage of DB2 Universal Database and DB2 Connect. The DB2 Information Center also documents major DB2 features and components including replication, data warehousing, metadata, Life Sciences Data Connect, and DB2 extenders.

The DB2 Information Center accessed from a browser is composed of the following major elements:

Navigation tree

The navigation tree is located in the left frame of the browser window. The tree expands and collapses to show and hide topics, the glossary, and the master index in the DB2 Information Center.

Navigation toolbar

The navigation toolbar is located in the top right frame of the browser window. The navigation toolbar contains buttons that enable you to search the DB2 Information Center, hide the navigation tree, and find the currently displayed topic in the navigation tree.

Content frame

The content frame is located in the bottom right frame of the browser window. The content frame displays topics from the DB2 Information Center when you click on a link in the navigation tree, click on a search result, or follow a link from another topic or from the master index.

Prerequisites:

To access the DB2 Information Center from a browser, you must use one of the following browsers:

- Microsoft Explorer, version 5 or later
- Netscape Navigator, version 6.1 or later

Restrictions:

The DB2 Information Center contains only those sets of topics that you chose to install from the *DB2 HTML Documentation CD*. If your Web browser returns a File not found error when you try to follow a link to a topic, you must install one or more additional sets of topics *DB2 HTML Documentation CD*.

Procedure:

To find a topic by searching with keywords:

1. In the navigation toolbar, click **Search**.
2. In the top text entry field of the Search window, enter two or more terms related to your area of interest and click **Search**. A list of topics ranked by accuracy displays in the **Results** field.

Entering more terms increases the precision of your query while reducing the number of topics returned from your query.

3. In the **Results** field, click the title of the topic you want to read. The topic displays in the content frame.

To find a topic in the navigation tree:

1. In the navigation tree, click the book icon of the category of topics related to your area of interest. A list of subcategories displays underneath the icon.
2. Continue to click the book icons until you find the category containing the topics in which you are interested. Categories that link to topics display the category title as an underscored link when you move the cursor over the category title. The navigation tree identifies topics with a page icon.
3. Click the topic link. The topic displays in the content frame.

To find a topic or term in the master index:

1. In the navigation tree, click the "Index" category. The category expands to display a list of links arranged in alphabetical order in the navigation tree.
2. In the navigation tree, click the link corresponding to the first character of the term relating to the topic in which you are interested. A list of terms with that initial character displays in the content frame. Terms that have multiple index entries are identified by a book icon.
3. Click the book icon corresponding to the term in which you are interested. A list of subterms and topics displays below the term you clicked. Topics are identified by page icons with an underscored title.
4. Click on the title of the topic that meets your needs. The topic displays in the content frame.

Related concepts:

- “Accessibility” on page 125
- “DB2 Information Center for topics” on page 127

Related tasks:

- “Finding product information by accessing the DB2 Information Center from the administration tools” on page 118
- “Updating the HTML documentation installed on your machine” on page 120
- “Troubleshooting DB2 documentation search with Netscape 4.x” on page 122
- “Searching the DB2 documentation” on page 123

Related reference:

- “Overview of DB2 Universal Database technical information” on page 105

Finding product information by accessing the DB2 Information Center from the administration tools

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

The DB2 Information Center accessed from the tools provides six types of information.

Tasks Key tasks you can perform using DB2.

Concepts

Key concepts for DB2.

Reference

DB2 reference information, such as keywords, commands, and APIs.

Troubleshooting

Error messages and information to help you with common DB2 problems.

Samples

Links to HTML listings of the sample programs provided with DB2.

Tutorials

Instructional aid designed to help you learn a DB2 feature.

Prerequisites:

Some links in the DB2 Information Center point to Web sites on the Internet. To display the content for these links, you will first have to connect to the Internet.

Procedure:

To find product information by accessing the DB2 Information Center from the tools:

1. Start the DB2 Information Center in one of the following ways:
 - From the graphical administration tools, click on the **Information Center** icon in the toolbar. You can also select it from the **Help** menu.
 - At the command line, enter **db2ic**.
2. Click the tab of the information type related to the information you are attempting to find.
3. Navigate through the tree and click on the topic in which you are interested. The Information Center will then launch a Web browser to display the information.
4. To find information without browsing the lists, click the **Search** icon to the right of the list.

Once the Information Center has launched a browser to display the information, you can perform a full-text search by clicking the **Search** icon in the navigation toolbar.

Related concepts:

- “Accessibility” on page 125
- “DB2 Information Center for topics” on page 127

Related tasks:

- “Finding topics by accessing the DB2 Information Center from a browser” on page 116
- “Searching the DB2 documentation” on page 123

Viewing technical documentation online directly from the DB2 HTML Documentation CD

All of the HTML topics that you can install from the *DB2 HTML Documentation CD* can also be read directly from the CD. Therefore, you can view the documentation without having to install it.

Restrictions:

Because the following items are installed from the DB2 product CD and not the *DB2 HTML Documentation CD*, you must install the DB2 product to view these items:

- Tools help
- DB2 Quick Tour
- Release notes

Procedure:

1. Insert the *DB2 HTML Documentation CD*. On UNIX operating systems, mount the *DB2 HTML Documentation CD*. Refer to your *Quick Beginnings* book for details on how to mount a CD on UNIX operating systems.
2. Start your HTML browser and open the appropriate file:

- For Windows operating systems:

```
e:\Program Files\sql11ib\doc\htmlcd\%L\index.htm
```

where *e* represents the CD-ROM drive, and %L is the locale of the documentation that you wish to use, for example, **en_US** for English.

- For UNIX operating systems:

```
/cdrom/Program Files/sql11ib/doc/htmlcd/%L/index.htm
```

where */cdrom/* represents where the CD is mounted, and %L is the locale of the documentation that you wish to use, for example, **en_US** for English.

Related tasks:

- “Finding topics by accessing the DB2 Information Center from a browser” on page 116
- “Copying files from the DB2 HTML Documentation CD to a Web Server” on page 122

Related reference:

- “Overview of DB2 Universal Database technical information” on page 105

Updating the HTML documentation installed on your machine

It is now possible to update the HTML installed from the *DB2 HTML Documentation CD* when updates are made available from IBM. This can be done in one of two ways:

- Using the Information Center (if you have the DB2 administration GUI tools installed).
- By downloading and applying a DB2 HTML documentation FixPak .

Note: This will NOT update the DB2 code; it will only update the HTML documentation installed from the *DB2 HTML Documentation CD*.

Procedure:

To use the Information Center to update your local documentation:

1. Start the DB2 Information Center in one of the following ways:
 - From the graphical administration tools, click on the **Information Center** icon in the toolbar. You can also select it from the **Help** menu.
 - At the command line, enter **db2ic**.
2. Ensure your machine has access to the external Internet; the updater will download the latest documentation FixPak from the IBM server if required.
3. Select **Information Center** —> **Update Local Documentation** from the menu to start the update.
4. Supply your proxy information (if required) to connect to the external Internet.

The Information Center will download and apply the latest documentation FixPak, if one is available.

To manually download and apply the documentation FixPak :

1. Ensure your machine is connected to the Internet.
2. Open the DB2 support page in your Web browser at:
www.ibm.com/software/data/db2/udb/winos2unix/support
3. Follow the link for version 8 and look for the "Documentation FixPaks" link.
4. Determine if the version of your local documentation is out of date by comparing the documentation FixPak level to the documentation level you have installed. This current documentation on your machine is at the following level: **DB2 v8.1 GA**.
5. If there is a more recent version of the documentation available then download the FixPak applicable to your operating system. There is one FixPak for all Windows platforms, and one FixPak for all UNIX platforms.
6. Apply the FixPak:
 - For Windows operating systems: The documentation FixPak is a self extracting zip file. Place the downloaded documentation FixPak in an empty directory, and run it. It will create a **setup** command which you can run to install the documentation FixPak.
 - For UNIX operating systems: The documentation FixPak is a compressed tar.Z file. Uncompress and untar the file. It will create a directory named `delta_install` with a script called **installdocfix**. Run this script to install the documentation FixPak.

Related tasks:

- “Copying files from the DB2 HTML Documentation CD to a Web Server” on page 122

Related reference:

- “Overview of DB2 Universal Database technical information” on page 105

Copying files from the DB2 HTML Documentation CD to a Web Server

The entire DB2 information library is delivered to you on the *DB2 HTML Documentation CD*, so you can install the library on a Web server for easier access. Simply copy to your Web server the documentation for the languages that you want.

Procedure:

To copy files from the *DB2 HTML Documentation CD* to a Web server, use the appropriate path:

- For Windows operating systems:

```
E:\Program Files\sql11b\doc\htmlcd\%L\*.*
```

where *E* represents the CD-ROM drive and *%L* represents the language identifier.

- For UNIX operating systems:

```
/cdrom:Program Files/sql11b/doc/htmlcd/%L/*.*
```

where *cdrom* represents the CD-ROM drive and *%L* represents the language identifier.

Related tasks:

- “Searching the DB2 documentation” on page 123

Related reference:

- “Supported DB2 interface languages, locales, and code pages” on page 86
- “Overview of DB2 Universal Database technical information” on page 105

Troubleshooting DB2 documentation search with Netscape 4.x

Most search problems are related to the Java support provided by web browsers. This task describes possible workarounds.

Procedure:

A common problem with Netscape 4.x involves a missing or misplaced security class. Try the following workaround, especially if you see the following line in the browser Java console:

```
Cannot find class java/security/InvalidParameterException
```

- On Windows operating systems:

From the *DB2 HTML Documentation CD*, copy the supplied `x:Program Files\sql1lib\doc\htmlcd\locale\InvalidParameterException.class` file to the `java\classes\java\security\` directory relative to your Netscape browser installation, where *x* represents the CD-ROM drive letter and *locale* represents the name of the desired locale.

Note: You may have to create the `java\security\` subdirectory structure.

- On UNIX operating systems:

From the *DB2 HTML Documentation CD*, copy the supplied `/cdrom/Program Files/sql1lib/doc/htmlcd/locale/InvalidParameterException.class` file to the `java/classes/java/security/` directory relative to your Netscape browser installation, where *cdrom* represents the mount point of the CD-ROM and *locale* represents the name of the desired locale.

Note: You may have to create the `java/security/` subdirectory structure.

If your Netscape browser still fails to display the search input window, try the following:

- Stop all instances of Netscape browsers to ensure that there is no Netscape code running on the machine. Then open a new instance of the Netscape browser and try to start the search again.
- Purge the browser's cache.
- Try a different version of Netscape, or a different browser.

Related tasks:

- "Searching the DB2 documentation" on page 123

Searching the DB2 documentation

To search DB2's documentation, you need Netscape 6.1 or higher, or Microsoft's Internet Explorer 5 or higher. Ensure that your browser's Java support is enabled.

A pop-up search window opens when you click the search icon in the navigation toolbar of the Information Center accessed from a browser. If you are using the search for the first time it may take a minute or so to load into the search window.

Restrictions:

The following restrictions apply when you use the documentation search:

- Boolean searches are not supported. The boolean search qualifiers *and* and *or* will be ignored in a search. For example, the following searches would produce the same results:
 - servlets *and* beans
 - servlets *or* beans
- Wildcard searches are not supported. A search on *java** will only look for the literal string *java** and would not, for example, find *javadoc*.

In general, you will get better search results if you search for phrases instead of single words.

Procedure:

To search the DB2 documentation:

1. In the navigation toolbar, click **Search**.
2. In the top text entry field of the Search window, enter two or more terms related to your area of interest and click **Search**. A list of topics ranked by accuracy displays in the **Results** field.

Entering more terms increases the precision of your query while reducing the number of topics returned from your query.
3. In the **Results** field, click the title of the topic you want to read. The topic displays in the content frame.

Note: When you perform a search, the first result is automatically loaded into your browser frame. To view the contents of other search results, click on the result in results lists.

Related tasks:

- “Troubleshooting DB2 documentation search with Netscape 4.x” on page 122

Online DB2 troubleshooting information

With the release of DB2[®] UDB Version 8, there will no longer be a *Troubleshooting Guide*. The troubleshooting information once contained in this guide has been integrated into the DB2 publications. By doing this, we are able to deliver the most up-to-date information possible. To find information on the troubleshooting utilities and functions of DB2, access the DB2 Information Center from any of the tools.

Refer to the DB2 Online Support site if you are experiencing problems and want help finding possible causes and solutions. The support site contains a

large, constantly updated database of DB2 publications, TechNotes, APAR (product problem) records, FixPaks, and other resources. You can use the support site to search through this knowledge base and find possible solutions to your problems.

Access the Online Support site at www.ibm.com/software/data/db2/udb/winos2unix/support, or by clicking the **Online Support** button in the DB2 Information Center. Frequently changing information, such as the listing of internal DB2 error codes, is now also available from this site.

Related concepts:

- “DB2 Information Center for topics” on page 127

Related tasks:

- “Finding product information by accessing the DB2 Information Center from the administration tools” on page 118

Accessibility

Accessibility features help users with physical disabilities, such as restricted mobility or limited vision, to use software products successfully. These are the major accessibility features in DB2[®] Universal Database Version 8:

- DB2 allows you to operate all features using the keyboard instead of the mouse. See “Keyboard Input and Navigation”.
- DB2 enables you to customize the size and color of your fonts. See “Accessible Display” on page 126.
- DB2 allows you to receive either visual or audio alert cues. See “Alternative Alert Cues” on page 126.
- DB2 supports accessibility applications that use the Java[™] Accessibility API. See “Compatibility with Assistive Technologies” on page 126.
- DB2 comes with documentation that is provided in an accessible format. See “Accessible Documentation” on page 126.

Keyboard Input and Navigation

Keyboard Input

You can operate the DB2 Tools using only the keyboard. You can use keys or key combinations to perform most operations that can also be done using a mouse.

Keyboard Focus

In UNIX-based systems, the position of the keyboard focus is highlighted, indicating which area of the window is active and where your keystrokes will have an effect.

Accessible Display

The DB2 Tools have features that enhance the user interface and improve accessibility for users with low vision. These accessibility enhancements include support for customizable font properties.

Font Settings

The DB2 Tools allow you to select the color, size, and font for the text in menus and dialog windows, using the Tools Settings notebook.

Non-dependence on Color

You do not need to distinguish between colors in order to use any of the functions in this product.

Alternative Alert Cues

You can specify whether you want to receive alerts through audio or visual cues, using the Tools Settings notebook.

Compatibility with Assistive Technologies

The DB2 Tools interface supports the Java Accessibility API enabling use by screen readers and other assistive technologies used by people with disabilities.

Accessible Documentation

Documentation for the DB2 family of products is available in HTML format. This allows you to view documentation according to the display preferences set in your browser. It also allows you to use screen readers and other assistive technologies.

DB2 tutorials

The DB2® tutorials help you learn about various aspects of DB2 Universal Database. The tutorials provide lessons with step-by-step instructions in the areas of developing applications, tuning SQL query performance, working with data warehouses, managing metadata, and developing Web services using DB2.

Before you begin:

Before you can access these tutorials using the links below, you must install the tutorials from the *DB2 HTML Documentation* CD-ROM.

If you do not want to install the tutorials, you can view the HTML versions of the tutorials directly from the *DB2 HTML Documentation CD*. PDF versions of these tutorials are also available on the *DB2 PDF Documentation CD*.

Some tutorial lessons use sample data or code. See each individual tutorial for a description of any prerequisites for its specific tasks.

DB2 Universal Database tutorials:

If you installed the tutorials from the *DB2 HTML Documentation CD-ROM*, you can click on a tutorial title in the following list to view that tutorial.

Business Intelligence Tutorial: Introduction to the Data Warehouse Center
Perform introductory data warehousing tasks using the Data Warehouse Center.

Business Intelligence Tutorial: Extended Lessons in Data Warehousing
Perform advanced data warehousing tasks using the Data Warehouse Center. (Not provided on CD. You can download this tutorial from the Downloads section of the Business Intelligence Solutions Web site at <http://www.ibm.com/software/data/bi/>.)

Development Center Tutorial for Video Online using Microsoft® Visual Basic
Build various components of an application using the Development Center Add-in for Microsoft Visual Basic.

Information Catalog Center Tutorial
Create and manage an information catalog to locate and use metadata using the Information Catalog Center.

Video Central for e-business Tutorial
Develop and deploy an advanced DB2 Web Services application using WebSphere® products.

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

DB2 Information Center for topics

The DB2® Information Center gives you access to all of the information you need to take full advantage of DB2 Universal Database™ and DB2 Connect™ in your business. The DB2 Information Center also documents major DB2 features and components including replication, data warehousing, the Information Catalog Center, Life Sciences Data Connect, and DB2 extenders.

The DB2 Information Center accessed from a browser has the following features:

Regularly updated documentation

Keep your topics up-to-date by downloading updated HTML.

Search

Search all of the topics installed on your workstation by clicking **Search** in the navigation toolbar.

Integrated navigation tree

Locate any topic in the DB2 library from a single navigation tree. The navigation tree is organized by information type as follows:

- Tasks provide step-by-step instructions on how to complete a goal.
- Concepts provide an overview of a subject.
- Reference topics provide detailed information about a subject, including statement and command syntax, message help, requirements.

Master index

Access the information in topics and tools help from one master index. The index is organized in alphabetical order by index term.

Master glossary

The master glossary defines terms used in the DB2 Information Center. The glossary is organized in alphabetical order by glossary term.

Related tasks:

- “Finding topics by accessing the DB2 Information Center from a browser” on page 116
- “Finding product information by accessing the DB2 Information Center from the administration tools” on page 118
- “Updating the HTML documentation installed on your machine” on page 120

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DB2	SP
DB2 Connect	SQL/400
DB2 Extenders	SQL/DS
DB2 OLAP Server	System/370
DB2 Universal Database	System/390
Distributed Relational Database Architecture	SystemView
DRDA	Tivoli
eServer	VisualAge
Extended Services	VM/ESA
FFST	VSE/ESA
First Failure Support Technology	VTAM
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