DB2®

DB2 Version 9
for Linux, UNIX, and Windows

IBM

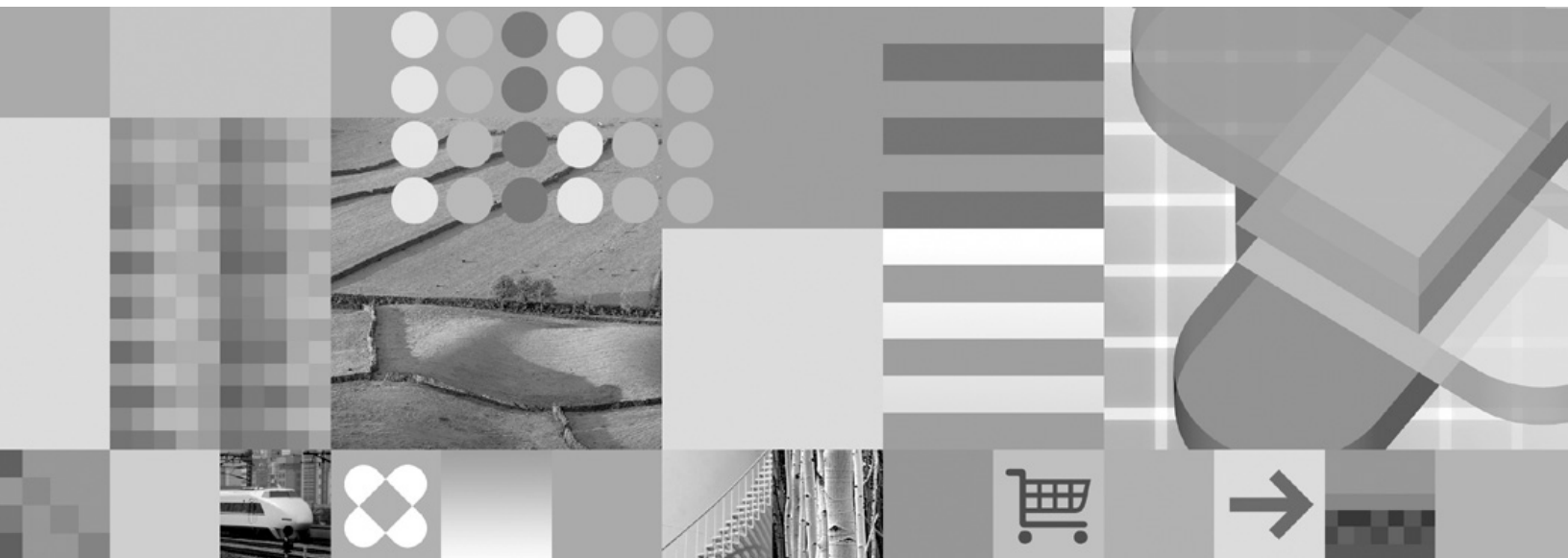**Quick Beginnings for DB2 Clients**

DB2®

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IBM

Quick Beginnings for DB2 Clients

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

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Contents

Who should read this book

Anyone interested in installing and configuring one of the DB2 clients should read this book.

Part 1. DB2 clients and connectivity considerations

Chapter 1. DB2 client setup overview

This topic outlines information available about clients and provides links to further details. Information is available to help you:

1. Choose the appropriate DB2® client or other means to enable connections between your system and remote DB2 databases.
2. Choose the most suitable method for installing your client.
3. Complete the steps and address the considerations needed to setup a client.

Options for connecting to a DB2 database:

Options for connecting a system to a remote DB2 database include various DB2 clients and non-client options. Applicable options depend on whether the system connecting to the remote database is:

- an application located on a business user's machine or an application server.
- an application development workstation.
- a database administrator workstation.

There are additional options to consider if you need to also connect to midrange or mainframe databases.

Types of clients:

DB2 provides the following clients:

- *DB2 Runtime Client.* This client is best suited for enabling applications to access DB2 servers.
- *DB2 Client.* This client includes all the functionality found in the DB2 Runtime Client plus functionality for client-server configuration, database administration and application development.

Of related interest, a separate product, DB2 Connect™ Personal Edition, includes all the functionality of the DB2 Client plus the capability to connect to midrange and mainframe databases.

Methods for installing a client:

The common method for installing a DB2 client is to run the install program provided on a product CD. However, other methods are available. Some methods are aimed at automating the deployment of large numbers of clients. Other methods exploit various Windows® operating system capabilities to provide alternatives to the common method.

Steps and considerations for setting up a client:

After you have chosen to use a particular type of client, setting up the client involves the following steps and considerations:

- ensuring system prerequisites are satisfied.
- performing the installation.
- cataloging databases and configuring connections to remote servers.

For systems where a DB2 UDB Version 8 client already exists, an additional consideration is whether to migrate (and replace) the existing client or to leave the DB2 UDB Version 8 client and install the DB2 Version 9 client as an additional client.

Related concepts:
- "Migration overview for DB2 clients" in *Migration Guide*
- "Client-to-server communications configuration overview" on page 39
- Chapter 3, "Methods for installing DB2 clients," on page 7
- Chapter 4, "Options for connecting to DB2 databases," on page 9
- Chapter 2, "Types of clients - DB2 Runtime Client and DB2 Client," on page 5

Related tasks:
- "Installing DB2 clients (UNIX and Linux)" on page 33
- "Installing DB2 clients (Windows)" on page 31

Related reference:
- "Communication protocols supported" on page 42
- "Supported combinations of client and server versions" on page 42

Chapter 2. Types of clients - DB2 Runtime Client and DB2 Client

DB2 provides the following clients:

- *DB2 Runtime Client.* This client is best suited for enabling applications to access DB2 servers.
- *DB2 Client.* This client includes all the functionality found in the DB2 Runtime Client plus functionality for client-server configuration, database administration and application development.

Of related interest, a separate product, DB2 Connect Personal Edition, includes all the functionality of the DB2 Client plus the capability to connect to midrange and mainframe databases.

DB2 Runtime Client:

The DB2 Runtime Client provides a means for applications to connect to remote DB2 databases. Features and capabilities include:

- Support for common database access interfaces: JDBC, ADO.NET, OLE DB, ODBC, and DB2 Command Line Interface (CLI). This includes drivers and capabilities to define data sources. For example, for ODBC, installing a DB2 client installs the DB2 ODBC driver and registers the driver. Application developers and other users can use the Windows ODBC Data Source Administrator tool to define data sources.
- Base client support to handle database connections, SQL statements, XQuery statements and DB2 commands.
- LDAP exploitation.
- Support for common network communication protocols: TCP/IP, Named Pipe.
- Versions that run on 32-bit and 64-bit operating systems.
- Support for installing multiple copies of a client on the same computer. These copies can be the same or different versions.
- License terms that allow free redistribution of DB2 Runtime Client with your application.
- Smaller deployment footprint compared to the full DB2 Client in terms of install image size and disk space required.

This client includes the following components or tools:

- A catalog that stores information for connecting to DB2 databases and servers.
- The Command Line Processor (CLP) for issuing DB2 commands. The CLP provides a basic means to perform remote administration of DB2 servers.

DB2 Runtime Client details specific to the Windows version:

There are features and characteristics specific to the Windows version that make the DB2 Runtime Client particularly suitable for deployment with applications. The DB2 Runtime Client on Windows:

- Can be packaged with your application to provide connectivity for that application.

- Is available in the form of Windows Installer merge modules that enable you to include the DB2 Runtime Client DLL files in your application install package. This approach also enables you to include only the parts of the client that you need with your application.

DB2 Client:

The DB2 Client includes all the functionality of the DB2 Runtime Client plus functionality for client-server configuration, database administration and application development. Capabilities include:

- Configuration Assistant to assist with cataloging databases and configuring the database server.
- First Steps for new users.
- Control Center and other graphical tools for database implementation and for database administration. These tools are available for versions of Windows on x86 (32-bit only), Windows on x64 (x86_64, AMD64/EM64T), Linux™ on x86, Linux on AMD64/EM64T (x86_64, x64).

In addition, this client provides capabilities for application development, including:
- application header files.
- precompilers for various programming languages.
- bind support.
- samples and tutorials.

Related concepts:
- Chapter 1, "DB2 client setup overview," on page 3
- Chapter 3, "Methods for installing DB2 clients," on page 7

Related tasks:
- "Configuring a DB2 client for database application development" in *Getting Started with Database Application Development*

Related reference:
- "DB2 Client support for database application development" in *Getting Started with Database Application Development*

Chapter 3. Methods for installing DB2 clients

This section outlines common and alternate methods for installing all types of DB2 clients, namely the DB2 Client and the DB2 Runtime Client. For more details on any method see the links to other topics.

Clients are commonly installed on machines where there is no DB2 server present. There is no need to install a client if a DB2 server product is already installed because the DB2 server includes all the functionality present in a DB2 client.

Method for common situations:

The common method for installing a DB2 client is to run the install program provided on a product CD. The client install images are included both on DB2 server install images and on a client-only CD.

Methods for automating large scale deployments:

One group of methods is geared to automating the deployment of large numbers of clients. These methods are:
- **Response file.** Client installation can be automated by using the response file install method.
- **Third-party deployment tools.** Clients can be installed using deployment tools or methods such as Windows Active Directory, Windows Systems Management Server (SMS) or Tivoli products®.

Methods that exploit Windows operating system capabilities:

Another group of options are those that exploit Windows operating system capabilities:
- **Windows thin client topology.** This option is supported for the DB2 Client but not the DB2 Runtime Client. The DB2 Client can be deployed on Windows in a *thin client topology*. A thin client topology is where client code is installed in a shared Windows directory on a single code server rather than on the local hard disk of each client workstation. Individual client workstations connect to the shared Windows directory on the code server to execute the DB2 Client code.
- **Using a Windows non-administrator ID.** The common install method uses a Windows administrator user ID, that is, a user ID in the Administrators group. However, DB2 clients can also be installed using a user ID that is part of the Windows Power Users group or Users group. This method is suitable when the user ID performing the install does not have administrator privileges. The DB2 product also supports the Windows elevated privileges mechanism. However, for clients, setting up elevated privileges is not required for client installation.

Methods specific to Linux and UNIX®:

Alternate installation methods provided for DB2 servers are also applicable to clients, including the *db2_install* script and manual installation.

Related concepts:
- Chapter 1, "DB2 client setup overview," on page 3
- Chapter 10, "Thin client topology overview (Windows)," on page 63

- "Response file installation basics" in *Installation and Configuration Supplement*

Related tasks:
- "Installing DB2 clients (UNIX and Linux)" on page 33
- "Installing DB2 clients (Windows)" on page 31
- "Installing a DB2 product using the db2_install or doce_install command (Linux and UNIX)" in *Installation and Configuration Supplement*
- "Installing DB2 products using Microsoft Systems Management Server (SMS)" in *Installation and Configuration Supplement*

Related reference:
- Appendix B, "DB2 Runtime Client installation command line options (Windows)," on page 75
- Appendix A, "DB2 Runtime Client merge modules (Windows)," on page 73

Chapter 4. Options for connecting to DB2 databases

This section outlines the options for what you can install on a machine (the local system) to enable it to connect to a database on a different machine (the remote system). To select a suitable option, you first need to consider whether the local system is:

- a system that runs business applications on a business user's system or on an application server.
- an application development workstation.
- a database administrator workstation.

You also need to determine where the databases reside that you want to connect to. The databases could be located:

- on same machine, that is, on the local system. This includes databases located in a single DB2 instance or in various DB2 instances.
- on different machines, that is, on remote systems.
- on different machines that are midrange or mainframe servers.

Options for business user systems or application servers:

Typically, when a business application connects to a database, one of the following topologies is involved:

- An application connects to a DB2 database where both are located on the same machine. An example is an application used by a single user on their personal workstation.
- An application connects to a DB2 database on another machine.
- An application client connects to an application server which, in turn, connects to one or more DB2 databases located:
  - on the same machine only.
  - on one or more other machines only.
  - a combination of the above.

If a DB2 server is installed on the same machine as the application, there is no need to install a separate DB2 client. The DB2 server product includes functionality to enable applications to connect to local databases and to connect to databases on remote machines, as well.

If the machine with the application does not also have a DB2 server, you have the following options to enable applications to connect to remote DB2 databases:

- **DB2 client.** This option involves installing and configuring one of the clients included with the DB2 product. The DB2 Runtime Client is best suited for this purpose. The DB2 client is installed on any machine that connects directly to the DB2 database. Depending on the application topology, the client is installed on each business user workstation or on an application server. A single DB2 client can enable all applications on the machine to connect to one or more DB2 databases on other machines.
- **Windows Installer merge modules for the DB2 Runtime Client.** This approach provides a way to deploy the DB2 Runtime Client by including the client DLL files in the application deployment package. This approach is targeted for use

with Windows Installer and other install tools that support Windows Installer merge modules. With this approach, a single installation program installs both the application and the DB2 Runtime Client.

- **DB2 application driver.** With a DB2 application driver, the information needed to connect to a database is included in the application or the application prompts the user to provide it. This approach differs from a DB2 client which maintains this information in its catalog. The application driver is deployed as a file in the application directory so no separate DB2-specific installation or setup is required. Typically, an application driver is packaged with an application in a manner that provides connectivity only for that application. A DB2 application driver can coexist on the same machine with other DB2 application drivers or with a DB2 client. DB2 provides drivers for Java™ (JDBC and SQLJ) and for ODBC and CLI applications. Drivers can be obtained by copying driver files from a DB2 installation image or by downloading the driver files from developerWorks®.

Options for application development workstations:

The DB2 Client provides all the functionality of the DB2 Runtime Client plus tools used for client-server configuration, database administration and application development. The points below describe the role and setup of the DB2 Client in light of the other tools and products used by application developers.

There are several tools and products typically used by application developers who write code to access a DB2 database. Each developer workstation typically includes the following components:

- An integrated development environment (IDE) such as Rational® Application Developer or Microsoft® Visual Studio.
- A DB2-specific development tool related to the IDE such as:
  - IBM® Database Developer Add-ins for Visual Studio .NET.
  - IBM DB2 Developer Workbench.
- Access to a database server to host the database they are developing. This database server can reside in one or both of the following locations:
  - On each developer's workstation, so each developer has their own local copy of the database.
  - On a workgroup server, so multiple developers work on the same copy of the database.

With the foregoing as context, the value of the DB2 Client is that it provides headers and libraries required to compile applications and provides tools for database administration. However, it is not always necessary to install the DB2 Client to obtain these tools. Any time a DB2 server is installed on a machine, there is no need to install a separate DB2 client. The DB2 server product includes all functionality available in a standalone DB2 Client.

Options for administrator workstations:

A database administrator can perform administration tasks on remote databases in one of two major ways. They use a tool, such as telnet, to connect to an individual database server machine and run DB2 administrator commands locally. Alternatively, they can run tools and commands from their workstation that make connections to the remote databases. This section focuses on the second case which involves choices about which DB2 client to use and where to install it.

DB2 provides various means to perform administration activities on one or more DB2 servers remotely from an administrator workstation. The options and considerations are the following:

- **Install the DB2 Runtime Client.** This option is suitable if you only use the Command Line Processor (CLP) for administration.
- **Install the DB2 Client.** This client includes all the functionality of the DB2 Runtime Client plus tools used for client-server configuration, database administration and application development. Functionality includes the graphical administration tools such as the Configuration Assistant and Control Center (available on supported platforms). These tools use the DB2 Administration Server (DAS) on the DB2 server, which is setup by default during DB2 server installation.
- **Install a DB2 server product.** Any time a DB2 server is installed on a machine, there is no need to install a separate DB2 client. The DB2 server product includes all the functionality available in any standalone DB2 client.
- **Install Web Tools on a web server.** Two of the graphical administration tools are available in a Web version: Health Center and Command Center. These web applications are setup on a web server. Once this is done, these tools can be accessed from any machine that has a suitable web browser client. No other set up is required on individual administrators' workstations.

Options for connecting to midrange and mainframe databases:

With DB2 Connect products, you can connect to DB2 databases on mainframe and midrange platforms, namely 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®). With DB2 Connect, you can connect from a user's workstation or from a DB2 for Linux, Unix, or Windows server.

The options and considerations are the following:

- **DB2 Connect Personal Edition.** This product is installed on a workstation and provides connectivity from that workstation. This option is targeted for situations where there is a need to connect from a workstation directly to one or more hosts. This product is available for Linux and Windows operating systems.
- **DB2 Connect server editions.** A server edition of the DB2 Connect product is usually installed on a connectivity server and serves as a gateway to supported mainframe or midrange database servers. A server edition of the DB2 Connect product enables workstations with DB2 clients to set-up access to host systems via the DB2 Connect gateway as if they were databases on DB2 on Windows, and UNIX.

Both options can be used concurrently. For example, a workstation can connect to a midrange or mainframe database in the following ways:

- Install DB2 Connect Personal Edition locally and use it to connect directly to a host.
- Connect to the same or different host through an intermediate DB2 Connect server gateway.

Related concepts:

- "IBM DB2 Driver for ODBC and CLI overview" in *Call Level Interface Guide and Reference, Volume 1*
- Chapter 1, "DB2 client setup overview," on page 3
- "DB2 Connect" in *DB2 Connect User's Guide*

- "DB2 Connect scenarios" in *DB2 Connect User's Guide*

Related tasks:
- "Configuring a DB2 client for database application development" in *Getting Started with Database Application Development*

Part 2. Installing DB2 clients

Chapter 5. DB2 client installation requirements

Disk and memory requirements

Disk requirements:

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

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

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

Memory requirements:

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

When determining memory requirements, be aware of the following:
- DB2 products that run on HP-UX Version 11i v2 (B.11.23) for Itanium-based systems require 512 MB of RAM at a minimum.
- For DB2 client support, these memory requirements are for a base of five concurrent client connections. You will need an additional 16 MB of RAM per five client connections.
- Memory requirements are affected by the size and complexity of your database system, as well as by the extent of database activity and the number of clients accessing your system.

  In DB2 Version 9, the new self-tuning memory feature simplifies the task of memory configuration by automatically setting values for several memory configuration parameters. When enabled, the memory tuner dynamically distributes available memory resources among several memory consumers including sort, the package cache, the lock list and buffer pools.
- On Linux, SWAP space at least twice as large as RAM is recommended.

Related concepts:
- "Self tuning memory" in *Performance Guide*

Installation requirements for DB2 clients and servers (AIX)

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

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

Table 1. AIX installation prerequisites

AIX® Version	Operating System	Hardware
AIX Version 5.2.0	DB2 client is available using the 64-bit AIX kernel. DB2 Enterprise Server Edition, for either single-partition or partitioned database environment, is available with the required 64-bit AIX kernel.	One of: • IBM RISC/6000 • eServer™ pSeries®
AIX Version 5.3.0	DB2 client is available using the 64-bit AIX kernel. DB2 Enterprise Server Edition, for either single-partition or partitioned database environment, is available with the required 64-bit AIX kernel.	One of: • IBM RISC/6000 • eServer pSeries

Software considerations:

- (Clients only:) If you plan to use Kerberos Authentication, you require IBM Network Authentication Service client v1.3 or later. The NAS client is provided with the AIX Bonus CD.
- Use the **bosboot** command to switch to the 64-bit kernel.

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

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

- DB2 Version 9 requires the "IBM C++ Runtime Environment Components for AIX" which includes xlC.rte 8.0.0.4. This is available from the IBM AIX support web site.
- One of the following browsers is required to view online help and to run First Steps (db2fs):
  - Mozilla 1.4 and up
  - Firefox 1.0 and up
  - Netscape 7.0 and up

DB2 product installation on NFS (Network File System):

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting /opt/IBM/db2/V9.1 and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for DB2. These include possible problems that involve:

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

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

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

For detailed instructions, look for the "Setting Up DB2 on NFS Mounted File System" white paper which will be available soon after DB2 Version 9 is made available.

Related tasks:
- "An overview of installing your DB2 product (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*

Related reference:
- "IBM Software Development Kit for Java levels for DB2 products" in *Quick Beginnings for DB2 Servers*
- "Communication protocols supported" on page 42

Installation requirements for DB2 clients and servers (Windows)

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

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

Table 2. Windows installation prerequisites

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

Additional client considerations

> DB2 products continue to be supported on Windows 98, Windows ME, Windows NT®, and Windows 2000 until DB2 Universal Database Version 8.1 goes out of service. For existing installations and new installations of DB2 products, upgrading to a more current operating system version of Windows (such as Windows 2003) is recommended. Version 9 clients

cannot be installed on Windows 98, Windows ME, or Windows NT Server 4 operating systems. If you wish to continue running DB2 products on back level releases of Windows, you require the following maintenance levels:
- Windows NT Version 4 with Service Pack 6a or later
- Windows 2000 with Service Pack 4 or later
- Internet Explorer 4.01 Service Pack 2

Windows XP Service Pack 1 is required for running DB2 applications in either of the following environments:
- Applications that have COM+ objects using ODBC; or
- Applications that use OLE DB Provider for ODBC with OLE DB resource pooling disabled

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

For more information about this COM+ issue, see the following Microsoft Knowledge Base article:
- http://support.microsoft.com/default.aspx?scid=KB;EN-US;306414

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

    Note: If a previous version of MDAC (for example, 2.7) is already installed, DB2 install will upgrade MDAC to 2.8. For a typical install, MDAC 2.8 is installed. For a compact install, MDAC 2.8 is not installed. For a custom install, MDAC 2.8 is installed but only if you have not deselected the default which is to install it. If you deselect MDAC as part of a custom install, it will not be installed.
- If you plan to use LDAP (Lightweight Directory Access Protocol), you should use either a Microsoft LDAP client or the IBM Tivoli Directory Server v6 client (also known as the IBM LDAP client which is included with DB2). Prior to installation of the Microsoft Active Directory, you will need to extend your directory schema using the db2schex utility, which can be found on the installation media.

    The Microsoft LDAP client is included with the operating system for Windows XP, and Windows Server 2003.
- If you plan to use the Tivoli Storage Manager facilities for the backup and restoration of your databases, you need the Tivoli Storage Manager Client Version 4.2.0 or later.
    - For Windows 64-bit operating systems, you require the TSM client API Version 5.1.
- If you have the IBM Antivirus program installed on your operating system, it must be disabled or uninstalled to complete a DB2 installation.
- TCP/IP support must be enabled to view online help.
- One of the following browsers is required to view online help, run the DB2 install launchpad (setup.exe), and to run First Steps (db2fs):
    - Internet Explorer 5.5 and up
    - Mozilla 1.4 and up

– Firefox 1.0 and up
– Netscape 7.0 and up

Related concepts:
- "Support changes for 32-bit and 64-bit DB2 servers" in *Migration Guide*

Related tasks:
- "An overview of installing your DB2 product (Windows)" in *Quick Beginnings for DB2 Servers*

Related reference:
- "IBM Software Development Kit for Java levels for DB2 products" in *Quick Beginnings for DB2 Servers*
- "Communication protocols supported" on page 42

Installation requirements for DB2 clients and servers (Linux)

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

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

The supported operating systems for Linux include:
- Red Hat Enterprise Linux 4 (RHEL4) Update 2
- SUSE Linux Enterprise Server 9 (SLES9) Service Pack 2

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

Table 3. Linux prerequisites

Distribution Requirements	Hardware
You should update your kernel configuration parameters in preparation for your Linux distribution. The default values for particular kernel parameters are not sufficient when running a DB2 database system. You may also have other products or applications that require Linux system resources. You should set the kernel configuration parameters based on the needs of your Linux system working environment. The kernel configuration parameters are set in /etc/sysctl.conf. See the Modifying kernel parameters (Linux) section of the DB2 Information Center. Refer to your operating system manual for information on setting and activating these parameters using the **sysctl** command.	DB2 server products are supported on: • x86 (Intel Pentium®, Intel Xeon®, and AMD Athlon) • x86–64 (Intel EM64T and AMD64) • IA64 (Intel Itanium® 2 or higher) • POWER™ (any iSeries or pSeries that support Linux) • (Server only)eServer zSeries®. – The Database Partitioning Feature (DPF) is not supported. • (Client only)64-bit zSeries or System z9™ boxes.

Package requirements (server only):
The following tables list the package requirements for SUSE Linux and Red Hat distributions for DB2 Version 9 partitioned servers.
- The pdksh Korn Shell package is required for all DB2 systems.

- A remote shell utility is required for partitioned database systems. DB2 supports the following remote shell utilities:
  - rsh
  - ssh

  By default, DB2 uses rsh when executing commands on remote DB2 nodes, for example, when starting a remote DB2 database partition. To use the DB2 default, the rsh-server package must be installed (see table below). For a comparison between rsh and ssh, see the "Security issues when installing DB2" section of the *Administration Guide: Implementation*.

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

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

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

Package requirements for SUSE Linux

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

Package requirements for Red Hat

Directory	Package name	Description
/System Environment/Shell	pdksh	Korn Shell. This package is required for partitioned database environments.
/Applications/Internet	openssh	This package contains a set of client programs which allow users to run commands on a remote computer via a secure shell. This package is not required if you use the default configuration of DB2 with rsh.

Package requirements for Red Hat

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

Software considerations:
- One of the following browsers is required to view online help and to run First Steps (db2fs):
  - Mozilla 1.4 and up
  - Firefox 1.0 and up
  - Netscape 7.0 and up
- An X Window System software capable of rendering a graphical user interface is required if you want to use the DB2 Setup wizard to install DB2 or if you want to use any DB2 graphical tools. (Available only on Linux for x86 and Linux on AMD 64/EM64T.)

DB2 product installation on NFS (Network File System):

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting /opt/IBM/db2/V9.1 and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for DB2. These include possible problems that involve:
- Performance (impacted by network performance)
- Availability (you are allowing a single point of failure)
- Licensing (there is no checking done across machines)
- Diagnosing NFS errors can be difficult

As mentioned, the setup for NFS will require several manual actions including:
- Ensuring that the mount point preserve the install path
- Permission must be controlled (for example, write permission should not be given to the mounting machine)
- DB2 registries have to be set up manually and maintained across all mounting machines
- The list installed DB2 products and features command (db2ls) must be set up and maintained properly if you need to detect DB2 products and features
- More care is required when updating your DB2 product environment

- More steps are required when cleaning up on the exporting machine and the mounting machine

For detailed instructions, look for the "Setting Up DB2 on NFS Mounted File System" white paper which will be available soon after DB2 Version 9 is made available.

Related concepts:
- "Security issues when installing the DB2 database manager" in *Administration Guide: Implementation*

Related tasks:
- "Modifying kernel parameters (Linux)" on page 22
- "Preparing to install DB2 for Linux on zSeries" in *Quick Beginnings for DB2 Servers*

Related reference:
- "Communication protocols supported" on page 42
- "IBM Software Development Kit for Java levels for DB2 products" in *Quick Beginnings for DB2 Servers*
- "Communications variables" in *Performance Guide*

Modifying kernel parameters (Linux)

Before installing a DB2 database system, you should update your Linux kernel parameters. The default values for particular kernel parameters on Linux are not sufficient when running a DB2 database system. DB2 automatically raises the IPC limits where necessary based on the needs of the DB2 database system. However, it may be more practical to set the limits permanently on your Linux system if you have products or applications other than a DB2 database system.

Prerequisites:

You must have root authority to modify kernel parameters.

Procedure:

To update kernel parameters:

Red Hat and SUSE Linux

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

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

```
# ipcs -l

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

------ Semaphore Limits --------
max number of arrays = 1024                // SEMMNI
max semaphores per array = 250             // SEMMSL
```

```
max semaphores system wide = 256000        // SEMMNS
max ops per semop call = 32                // SEMOPM
semaphore max value = 32767

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

Beginning with the first section on Shared Memory Limits, SHMMAX and SHMALL are the parameters that need to be looked at. SHMMAX is the maximum size of a shared memory segment on a Linux system whereas SHMALL is the maximum allocation of shared memory pages on a system.

For SHMMAX, the minimum required on x86 systems would be 268435456 (256 MB) and for 64-bit systems, it would be 1073741824 (1 GB).

SHMALL is set to 8 GB by default (8388608 KB = 8 GB). If you have more physical memory than this, and it is to be used for DB2, then this parameter should be increased to approximately 90% of the physical memory on the box. For instance, if you have a computer system with 16 GB of memory to be used primarily for DB2, then 90% of 16 GB is 14.4 GB divided by 4 KB (the base page size) is 3774873. The ipcs output has converted SHMALL into kilobytes. The kernel requires this value as a number of pages.

The next section covers the amount of semaphores available to the operating system. The kernel parameter sem consists of 4 tokens, SEMMSL, SEMMNS, SEMOPM and SEMMNI. SEMMNS is the result of SEMMSL multiplied by SEMMNI. The database manager requires that the number of arrays (SEMMNI) be increased as necessary. Typically, SEMMNI should be twice the maximum number of connections allowed (MAXAGENTS) multiplied by the number of logical partitions on the database server computer plus the number of local application connections on the database server computer.

The third section covers messages on the system.

MSGMNI affects the number of agents that can be started, MSGMAX affects the size of the message that can be sent in a queue, and MSGMNB affects the size of the queue.

MSGMAX should be change to 64 KB (that is, 65535 bytes), and MSGMNB should be increased to 65535 on Server systems.

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

```
kernel.sem=250 256000 32 1024
#Example shmmax for a 64-bit system
kernel.shmmax=1073741824
#Example shmall for 90 percent of 16 GB memory
kernel.shmall=3774873
kernel.msgmax=65535
kernel.msgmnb=65535
```

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

```
sysctl -p
```

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

Related tasks:

- "Installing DB2 servers (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*

Related reference:

- "Installation requirements for DB2 clients and servers (Linux)" on page 19

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

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

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

Table 4. HP-UX installation prerequisites for HP-UX 11iv2

Operating System	Hardware
DB2 products can run on HP-UX 11iv2 (11.23.0505) for PA-RISC 2.x-based (PA-8x00) and Itanium-based systems with: - May 2005 Base Quality (QPKBASE) bundle - May 2005 Applications Quality (QPAPPS) bundle and the PHNE_32606 patch. (64-bit HP-UX kernel is required; server only)	One of: - HP 9000 Series 700 or 800 system - HP Integrity Series server

Kernel configuration considerations:

A system restart is required if you update the kernel configuration parameters. The kernel configuration parameters are set in `/etc/system`. Depending on the values of your kernel configuration parameters, you might need to modify some of them before you install the DB2 Version 9 client or server products. If the kernel configuration parameters are modified, a reboot is necessary to make the changes to `/etc/system` effective.

Software considerations:

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

DB2 product installation on NFS (Network File System):

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting `/opt/IBM/db2/V9.1` and then running off code that was physically installed on a

remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for DB2. These include possible problems that involve:

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

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

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

For detailed instructions, look for the "Setting Up DB2 on NFS Mounted File System" white paper which will be available soon after DB2 Version 9 is made available.

Related tasks:

- "Modifying kernel parameters (HP-UX)" on page 25

Related reference:

- "Communication protocols supported" on page 42
- "IBM Software Development Kit for Java levels for DB2 products" in *Quick Beginnings for DB2 Servers*

Modifying kernel parameters (HP-UX)

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

Prerequisites:

You must have root authority to modify kernel parameters.

Procedure:

To modify kernel parameters:
1. Enter the **sam** command to start the System Administration Manager (SAM) program.
2. Double-click the **Kernel Configuration** icon.
3. Double-click the **Configurable Parameters** icon.
4. Double-click the parameter that you want to change and type the new value in the **Formula/Value** field.

5. Click **OK**.

6. Repeat these steps for all of the kernel configuration parameters that you want to change.

7. When you are finished setting all of the kernel configuration parameters, select **Action --> Process New Kernel** from the action menu bar.

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

Related reference:
- "db2osconf - Utility for kernel parameter values command" in *Command Reference*

Recommended kernel configuration parameters (HP-UX)

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

Related tasks:
- "Modifying kernel parameters (HP-UX)" on page 25

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

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

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

Table 5. Solaris Operating System installation prerequisites

Operating System	Hardware

DB2 client and server products are supported on the following Solaris Operating System versions:
 • Solaris 9
    The following patches are also required:
     – 111711-12
     – 111712-12
 • Solaris 10
	Solaris UltraSPARC-based computer

Kernel configuration considerations:

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

Software considerations:

- (Clients only:) If you plan to use Kerberos Authentication, you require Solaris Operating System 9 or higher with IBM Network Authentication Service (NAS)

client v1.4 or higher. The NAS client can be downloaded from Web site: https://www6.software.ibm.com/dl/dm/dm-nas-p.
- If you are installing the Application Development Client, you must have a C compiler to build SQL Stored Procedures.
- One of the following browsers is required to view online help and to run First Steps (db2fs):
    - Mozilla 1.4 and up
    - Firefox 1.0 and up
    - Netscape 7.0 and up

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

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

For DB2 on 64-bit Fujitsu PRIMEPOWER systems, you require the following:
- Solaris 9 Kernel Update Patch 112233-01 or later to get the fix for patch 912041-01.

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

DB2 product installation on NFS (Network File System):

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting `/opt/IBM/db2/V9.1` and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for DB2. These include possible problems that involve:
- Performance (impacted by network performance)
- Availability (you are allowing a single point of failure)
- Licensing (there is no checking done across machines)
- Diagnosing NFS errors can be difficult

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

For detailed instructions, look for the "Setting Up DB2 on NFS Mounted File System" white paper which will be available soon after DB2 Version 9 is made available.

Related tasks:
- "Modifying kernel parameters (Solaris Operating Environment)" on page 28

Related reference:
- "Communication protocols supported" on page 42
- "IBM Software Development Kit for Java levels for DB2 products" in *Quick Beginnings for DB2 Servers*

Modifying kernel parameters (Solaris Operating Environment)

For the DB2 database system to operate properly, it is recommended that you update your system's kernel configuration parameters. You can use the **db2osconf** utility to suggest recommended kernel parameters.

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

You must restart your system after modifying kernel parameters.

Prerequisites:

You must have root authority to modify kernel parameters.

Procedure:

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

    set parameter_name = value

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

    set msgsys:msginfo_msgmax = 65535

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

Related reference:
- "db2osconf - Utility for kernel parameter values command" in *Command Reference*

DB2 Connect product installation requirements for host and midrange systems

DB2 Connect products enable workstations to connect to databases on supported host and midrange platforms (for example, DB2 on z/OS). In some cases, DB2 Connect customers might need to apply patches to the host or midrange database product to enable this functionality. See the related links for information on supported versions and patches.

Related tasks:

- "Installing DB2 clients (Windows)" on page 31
- "Installing DB2 clients (UNIX and Linux)" on page 33

Related reference:

- "Host and iSeries support for DB2 Connect" in *Quick Beginnings for DB2 Connect Servers*

Chapter 6. Installing DB2 clients

Installing DB2 clients (Windows)

This task describes how to install a DB2 client on the Windows operating system. The instructions apply to any DB2 client type, namely the DB2 Client and the DB2 Runtime Client. The main procedure covers a simple, but common, case where no DB2 product is already installed. Note that:

- If the machine already has a prior version of a client installed, you should first review topics that cover migration.
- If the machine already has a DB2 server product installed, it is not necessary to install a client because the DB2 server provides all the capability found in DB2 clients.

Following the main procedure, additional considerations for the following special cases are covered:

- installing on a machine that has an existing DB2 Version 9 client or a DB2 UDB Version 8 client.
- installing a national language (non-English) version.
- installing using a Windows user account that is not part of the Administrators group.

Related links are provided for information such as alternate methods for installing DB2 clients.

Prerequisites:

A summary of the prerequisites is presented below. If you need more detailed information, see the links at the end of this section.

- You have determined which client best suits your need: the DB2 Client or the DB2 Runtime Client.
- You have located a CD or other install image that you need. Ensure you have the appropriate 32-bit or 64-bit version, depending on your machine.
- You have a Windows user account that is part of the Administrators group.
- Your system meets all memory, disk space, and installation requirements. The installation program will check these and notify you if there is a problem.

Procedure:

This procedure covers the simple case. Information for other cases is covered elsewhere in this topic. To install any DB2 client on Windows:

1. Log on to the system with the user account that you want to use to perform the installation.
2. Optional: Shut down any other programs.
3. Insert the CD into the drive. The auto-run feature starts the DB2 Setup wizard which determines the system language and starts the setup program for that language.

4. If you are installing a DB2 Client, choose **Install a Product** when the DB2 Launchpad opens. This step does not apply to the DB2 Runtime Client because it does not have a launchpad.

5. Follow the DB2 Setup wizard's prompts. Help is available in the wizard to guide you through the remaining steps.

After completing this procedure, the product is now installed at the location you specified during the installation. The default installation path is `Program Files\IBM\sqllib`.

This installation does not include product documentation. See the related links for options for installing or accessing the DB2 Information Center.

After installing your DB2 client, the next step is to configure it to access remote DB2 servers.

Notes on national language installations:

For the DB2 Client, you can run the DB2 Setup wizard in a language other than the default system language by manually invoking the DB2 Setup wizard and specifying a language code. For example, the **setup -i fr** command runs the DB2 Setup wizard in French. For the DB2 Runtime Client, there are separate install images for each language.

Notes on installing on a machine that has an existing DB2 Version 9 product:

The default installation path for the first copy installed of a DB2 product is `Program Files\IBM\sqllib`. If a second copy is installed in the same path, the default directory name is `Program Files\IBM\sqllib_01`. In general, the default directory name is `sqllib_nn` where *nn* is the number of copies installed in that path minus one.

If you are installing a second copy of the DB2 Runtime Client, the command is:

```
setup /v" TRANSFORMS=:InstanceId1.mst MSINEWINSTANCE=1 /qb
```

To install each subsequent copy of the DB2 Runtime Client (up to a maximum of 16 copies), modify the command by incrementing `InstanceId`*n*, for example:

```
setup /v" TRANSFORMS=:InstanceId2.mst MSINEWINSTANCE=1 /qb
```

Notes on installing on a machine that has an existing DB2 UDB Version 8 client:

When installing a DB2 Client on a machine that already has a DB2 UDB Version 8 copy installed, users will be presented with the option to install a new copy or to migrate the DB2 UDB Version 8 copy. Installing a new copy preserves the DB2 UDB Version 8 copy and installs an additional DB2 Version 9 copy. Choosing to migrate will copy the DB2 UDB Version 8 client instance settings to the DB2 Version 9 copy then remove the DB2 UDB Version 8 copy.

It is recommended to shut down the DB2 UDB Version 8 client before beginning the installation.

When installing a DB2 Runtime Client, the installation program always installs a new copy. To migrate a DB2 UDB Version 8 client instance, as a subsequent step, see topics on migration.

Notes on installing using a user account that is not a member of the Administrators group:

Members of the Power Users group can install DB2 clients. Members of the Users group can also install DB2 clients after they have been given enabled to do so. To enable members of the Users group to install a DB2 client, a member of the Administrators group must ensure the installing user has **write** permission for the following:

- HKEY_LOCAL_MACHINE\SOFTWARE registry branch.
- the system directory (for example, c:\WINNT).
- the default install path (c:\Program Files) or another install path.

Of related interest, a non-administrator can also install fix packs if a non-administrator performed the original installation. However, a non-administrator cannot install fix packs if the original installation was performed by an Administrator user account.

Related concepts:
- "About the Release Notes" in *Release notes*
- "Client-to-server communications configuration overview" on page 39
- Chapter 1, "DB2 client setup overview," on page 3
- Chapter 3, "Methods for installing DB2 clients," on page 7
- Chapter 2, "Types of clients - DB2 Runtime Client and DB2 Client," on page 5
- "Migration overview for DB2 clients" in *Migration Guide*
- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*

Related tasks:
- "Installing DB2 servers (Windows)" in *Quick Beginnings for DB2 Servers*

Related reference:
- "setup - Install DB2 command" in *Command Reference*
- "Installation requirements for DB2 clients and servers (Windows)" on page 17
- "Language identifiers for running the DB2 Setup wizard in another language" in *Quick Beginnings for DB2 Servers*

Installing DB2 clients (UNIX and Linux)

This task describes how to install a DB2 client on Linux or UNIX. The instructions apply to any DB2 client type, namely the DB2 Client and the DB2 Runtime Client. The main procedure covers a simple, but common, case where no DB2 product is already installed. Note that:

- If the machine already has a prior version of a client installed, you should first review topics that cover migration.
- If the machine already has a DB2 server product installed, it is not necessary to install a client because the DB2 server provides all the capability found in DB2 clients.

Following the main procedure, additional considerations for special cases are covered. Special cases include:

- installing a national language (non-English) version.
- installing on a machine that has an existing DB2 Version 9 client.

- installing on a machine that has an existing pre-DB2 Version 9 client.

Prerequisites:

A summary of the prerequisites is presented below. If you need more detailed information, see the related links at the end of this section.

- You have determined which client best suits your needs: the DB2 Client or the DB2 Runtime Client.
- You have located a CD or other install image that you need.
- You have a user account with root authority to perform the installation.
- Your system meets all memory, disk space, and installation requirements. The installation program will check these and notify you if there is a problem.
- Installing a DB2 client on the Solaris operating system or on HP-UX requires that you update your kernel configuration parameters. This is also recommended for Linux.

Procedure:

To install any DB2 client on Linux or UNIX:

1. Log in as a user with root authority.
2. Insert and mount the appropriate CD.
3. Change to the directory where the CD is mounted by entering the **cd** /*cdrom* command where /*cdrom* is the CD mount point.
4. Enter the **./db2setup** command to start the DB2 Setup Wizard.
5. Choose **Install a Product** when the DB2 Launchpad opens.
6. Select the client you want to install.
7. Follow the DB2 Setup wizard's prompts. Help is available in the wizard to guide you through the remaining steps.

When installation is complete, the DB2 client is installed by default in the following directories:

Linux /opt/ibm/db2/V9.1

UNIX /opt/IBM/db2/V9.1

This installation does not include product documentation. See the related links for options for installing or accessing the DB2 Information Center.

After installing your DB2 client, the next step is to configure it to access a remote DB2 server.

Notes on national language installations:

Customers installing a non-English version of a DB2 product will need to use an additional CD that contains national language support files. This is because product files that are specific to a language are grouped on one or more CDs called a National Language Package. The installation program will prompt you to provide this CD.

You can run the DB2 Setup wizard in a language other than the default system language by manually invoking the DB2 Setup wizard and specifying a language code. For example, the **./db2setup -i fr** runs the DB2 Setup wizard in French.

Notes on installing on a machine that has an existing DB2 Version 9 client:

The default directory name for the first copy is V9.1. If a second copy is installed in the same path, the default directory name is V9.1_01. In general, the default directory name is V9.1_*nn* where *nn* refers to the number of copies installed minus one.

Notes on installing on a machine that has an existing pre-DB2 Version 9 client:

Installing a DB2 Client or DB2 Runtime Client on a system that already has a DB2 UDB Version 8 client preserves the DB2 UDB Version 8 copy and installs an additional DB2 Version 9 copy. For information on migrating the DB2 UDB Version 8 client instance(s) to DB2 Version 9, see the migration topics.

Related concepts:
- "About the Release Notes" in *Release notes*
- "Client-to-server communications configuration overview" on page 39
- Chapter 1, "DB2 client setup overview," on page 3
- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*
- "Migration overview for DB2 clients" in *Migration Guide*

Related tasks:
- "Uninstalling your DB2 product (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*

Related reference:
- "db2setup - Install DB2 command" in *Command Reference*
- "Disk and memory requirements" on page 15
- "Installation requirements for DB2 clients and servers (AIX)" on page 15
- "Installation requirements for DB2 clients and servers (HP-UX)" on page 24
- "Installation requirements for DB2 clients and servers (Linux)" on page 19
- "Installation requirements for DB2 clients and servers (Solaris Operating System)" on page 26

Part 3. Configuring client-to-server communications

Chapter 7. Client-to-server communications configuration overview

Client-to-server communications configuration overview

This topic provides information for choosing a suitable method for configuring client-to-server communications. This topic applies to configuring DB2 client and server products rather than to database connectivity drivers like ODBC or JDBC drivers.

Understanding client-to-server communications: Components and scenarios:

The basic components involved in client-to-server communications are described below:

- **Client.** This refers to the initiator of the communications. This role can be filled by any of the following DB2 products or components:
  - DB2 Client or DB2 Runtime Client.
  - DB2 Connect Personal Edition: This product is a superset of the DB2 Client.
  - a DB2 server product: A DB2 server is a superset of the DB2 Client.
- **Server.** This refers to the receiver of the communications request from the client. This role is normally filled by a DB2 for Linux, UNIX, and Windows server product. When DB2 Connect products are present, the term *server* can also mean a DB2 server on a midrange or mainframe platform.
- **Communications protocol.** This refers to the protocol used to send data between the client and server. The DB2 product supports several protocols:
  - TCP/IP. A further distinction can be made between the version: TCP/IPv4 or TCP/IPv6.
  - Named Pipes. This option is available on Windows only.
  - IPC (interprocess communications). This protocol is used for local connections.

There are also some additional components encountered in some environments:

- **DB2 Connect gateway.** This refers to a DB2 Connect Server product that provides a gateway by which DB2 clients can connect to DB2 servers on midrange and mainframe products.
- **LDAP (Lightweight Directory Access Protocol).** In an LDAP-enabled environment, it is not necessary to configure client-to-server communications. When a client attempts to connect to a database, if the database does not exist in the database directory on the local machine then the LDAP directory is searched for information required to connect to the database.

The scenarios listed below illustrate examples of situations covered by client-to-server communications:

- DB2 Client establishes communications with a DB2 server using TCP/IP.
- DB2 Runtime Client establishes communications with a DB2 server using Named Pipes on a Windows network.
- DB2 server establishes communications with another DB2 server via some communications protocol.

- DB2 Client establishes communications with a mainframe DB2 server via a DB2 Connect server using TCP/IP.

Understanding client-to-server communications: Types of connections:

Generally speaking, references to setting up client-to-server communications refer to *remote connections*, rather than *local connections*.

A *local connection* is a connection between a database manager instance and a database managed by that instance. In other words, the CONNECT statement is issued from the database manager instance to itself. Local connections are distinctive because no communications setup is required and IPC (interprocess communications) is used.

A *remote connection* is one where the client issuing the CONNECT statement to a database is in a different location from the database server. Commonly, the client and server are on different machines. However, remote connections are possible within the same machine if the client and server are in different instances.

Another less common type of connection is a *loopback connection*. This is a type of remote connection where the connection is configured from a DB2 instance (the client) to the same DB2 instance (the server).

Comparison of methods for configuring client-to-server communications:

Several methods are available for configuring client-to-server communications. Choosing a suitable method involves answering two questions. This first is *Which tool will you use: Configuration Assistant or command line tools?*
- The Configuration Assistant is a graphical tool provided with versions of the DB2 Client and DB2 server products on Windows and Linux on Intel™ x86 32-bit platforms and AMD64/EM46T platforms. This tool is not provided with the DB2 Runtime Client.
- The command line tools consist of the Command Line Processor (CLP), and the commands **db2cfexp** (configuration export), and **db2cfimp** (configuration import).

The second question is: *What type of configuration task do you want to perform?* Options are:
- Configure a client by entering information manually.
- Configure a client by searching the network for server(s) to connect to.
- Make databases on a server accessible to one or more clients.
- Use the connection settings for one client as the basis for configuring additional clients.

With answers to these questions, you can use the table below to identify the appropriate configuration method. Links to each method are provided at the end of this topic. Notes follow the table that provide more details.

Table 6. Tools and methods for configuring a client-to-server connection

Type of configuration task	Configuration Assistant	Command line
Configure a client by entering information manually	Configure a database connection manually with the Configuration Assistant	Configure client-to-server connections using the command line processor

Table 6. Tools and methods for configuring a client-to-server connection (continued)

Type of configuration task	Configuration Assistant	Command line
Configure a client by searching the network for server(s) to connect to	Configure a database connection by searching the network with the Configuration Assistant	Not applicable
Use the connection settings for one client as the basis for configuring additional clients	1. Create a client profile using the Configuration Assistant 2. Configure database connections using a client profile with the Configuration Assistant	create and use a client profile using commands **db2cfexp** and **db2cfimp**

Note: *Profiles* are used in some methods for configuring client-to-server communications. A *client profile* is a file that contains settings for a client. Settings can include:

- Database connection information (including CLI or ODBC settings).
- Client settings (including database manager configuration parameters and DB2 registry variables).
- CLI or ODBC common parameters.

A *server profile* is similar to a client profile but contains settings for a server. Profiles can be created and used with the Configuration Assistant or by using the commands **db2cfexp** (configuration export), and **db2cfimp** (configuration import).

Note: Configuring a database connection by searching the network with the Configuration Assistant is not a recommended method for DB2 Connect customers connecting to databases on midrange or mainframe platforms.

Related concepts:
- Chapter 1, "DB2 client setup overview," on page 3
- "LDAP considerations for the Configuration Assistant" on page 50

Related tasks:
- "Configuring a database connection by searching the network using the Configuration Assistant" on page 46
- "Configuring a database connection manually using the Configuration Assistant" on page 45
- "Configuring client-to-server connections using the command line processor" on page 51
- "Configuring database connections using a client profile with the Configuration Assistant" on page 48
- "Creating a client profile using the Configuration Assistant" on page 47

Related reference:
- "db2cfexp - Connectivity configuration export tool command" in *Command Reference*
- "db2cfimp - Connectivity configuration import tool command" in *Command Reference*

Communication protocols supported

This topic identifies the supported protocols for connecting from a DB2 client to a DB2 server. This includes:

- connecting from DB2 clients to midrange or mainframe hosts using DB2 Connect products.
- connecting from mid range or mainframe platforms to databases on DB2 for Linux, UNIX, and Windows.

The TCP/IP protocol is supported on all platforms on which DB2 for Linux, UNIX, and Windows is available. Both TCP/IPv4 and TCP/IPv6 are supported. IPv4 addresses have a four-part structure, for example, 9.11.22.314. IPv6 addresses have an eight-part name, where each part consists of 4 hex digits delimited by a colon. Two colons (::) represents one or more sets of zeros. For example, 2001:0db8:4545:2::09ff:fef7:62dc.

In addition, the Windows Named Pipes protocol is supported on Windows networks. To administer a Version 9 DB2 database remotely, you must connect using TCP/IP.

Related concepts:
- "Client-to-server communications configuration overview" on page 39

Supported combinations of client and server versions

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

Combinations of DB2 UDB Version 8 and DB2 Version 9:

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

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

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

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

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

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

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

Additional restrictions that apply to 64-bit DB2 UDB Version 7 clients include:
- 64-bit DB2 UDB Version 7 clients support only connections to DB2 on operating systems other than Windows.

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

DB2 Version 9 for Linux, UNIX, and Windows *servers* support access from the following DB2 *clients* on midrange and mainframe platforms:
- DB2 for z/OS Version 7 and Version 8.
- DB2 for iSeries Version 5.
- DB2 for VM and VSE Version 7.

DB2 Version 9 for Linux, UNIX, and Windows clients can access the following earlier versions of DB2 Connect:
- DB2 Connect Version 8.

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

Related concepts:
- "About the Release Notes" in *Release notes*
- "Client-to-server communications configuration overview" on page 39
- Chapter 1, "DB2 client setup overview," on page 3
- Chapter 2, "Types of clients - DB2 Runtime Client and DB2 Client," on page 5
- "Version 9 incompatibilities with previous releases and changed behaviors" in *Administration Guide: Planning*

Chapter 8. Configuring client-to-server communications using the Configuration Assistant

Configuring a database connection

Configuring a database connection manually using the Configuration Assistant

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 using the command line processor, however, the parameters are presented graphically.

Prerequisites:

Before you configure a connection to a database manually using the Configuration Assistant (CA):
- Ensure that you have a valid DB2 user ID for the database you want to connect to.
- If you are configuring a connection from 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 database manager instance.

Procedure:

To configure a connection to a database 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.
3. On the CA menu bar, under **Selected**, choose **Add 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 want 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. (Note: While APPC, APPN, or NetBIOS might still appear as options, they are no longer supported.)

   If DB2 Connect is installed on your system and you select TCP/IP, you have the option to select **The database physically resides on a host or OS/400® system**. If you select this check box, you 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. Type the required communication protocol parameters and click **Next**.

8. Type 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, you can add a comment that describes this database in the **Comment**.

   Click **Next**.

9. If you are planning to use ODBC, register this database as an ODBC data source. Ensure that ODBC is installed before performing this operation. Click **Next**.

10. In the **Specify the node options** window, select the operating system, and type the remote instance name for the database system you want to connect to.

11. In the **Specify the system options** window, ensure that system name, host name, and operating system are correct. The information on this panel is used to configure the administration node. You can optionally enter a comment. Click **Next**.

12. In the **Specify the security options** window, specify the security option that will be used for authentication.

13. Click **Finish**. You can now use this database. Select the **Exit** menu action to close the CA.

Related concepts:
- "Client-to-server communications configuration overview" on page 39

Related tasks:
- "Testing a database connection using the Configuration Assistant" on page 49

Configuring a database connection by searching the network using the Configuration Assistant

You can use the Configuration Assistant (CA) to search a network for databases.

Prerequisites:

Before you configure a database connection by searching the network:
- Ensure that you have a valid DB2 user ID.
- If you are configuring a connection from 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:

The search method feature may be unable to detect a remote system if:
- The DB2 Administration Server (DAS) is not running on the remote system.
- The search times out. By default, the search will scan the network for 1 second; this may not be long enough to detect the remote system. You can set the DB2DISCOVERYTIME registry variable to specify a longer period of time.
- The network that the search is running on is configured so that the search does not reach the remote system desired.

The following points apply to cases where you want to explicitly configure an IPv6 address on a network that supports IPv6:

- The system must be listed under **Known Systems**.
- Only the Configuration Assistant Advanced View supports explicitly configure an IPv6 connection.

Procedure:

To configure a database connection by searching the network:

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 Database Using Wizard**. The **Add Database** Wizard opens.
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 or double-click on the folder beside **Other Systems** to list all the systems on the network.

   If no systems are listed, you can click **Add System** to specify one. Once you add a system, it will appear in the **Known Systems** list.
6. Expand the entries for the system you are interested in until you see the database you want to add. Select the database. Click **Next**.
7. Type a local database alias name in the **Database alias** field and optionally type 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 can now use the database you added. Click **Close** to exit the CA.

Related concepts:

- "Client-to-server communications configuration overview" on page 39

Related tasks:

- "Configuring a database connection manually using the Configuration Assistant" on page 45
- "Testing a database connection using the Configuration Assistant" on page 49

Creating and using a client profile to configure database connections

Creating a client profile using the Configuration Assistant

This task involves exporting settings from an existing client into a *client profile* using the Configuration Assistant (CA). This task is part of a larger task of setting up one or more clients using the settings from an existing client.

Procedure:

To create a client profile 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.

3. From the **Configure** menu, select **Export Profile**.
4. Select one of the following options:

All   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. Type a name for your client profile and click **Save**.

Database Connections
          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. Type a name for your client profile and click **Save**.

Customize
          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. In the **Customize Export Profile** window:

          a. Type a name for your client profile.
          b. Select the **Database connections** checkbox to include database connections in the client profile.
          c. From the **Available database aliases** box, select the databases to be exported and click **>** to add them to the **Selected database aliases** box. To add all of the available databases to the **Selected database aliases** box, click **>>**.
          d. Select the check boxes that correspond to the options that you want to set up for the target client. Database manager configuration parameters can be updated and customized for a target machine.
          e. Click **Export** to complete this task.
          f. Check your results displayed in the Results tab.

Once you have completed this task, you can configure other clients using the client profile you have created.

Related concepts:
- "Client-to-server communications configuration overview" on page 39

Related tasks:
- "Configuring database connections using a client profile with the Configuration Assistant" on page 48

Configuring database connections using a client profile with the Configuration Assistant

This task involves configuring a client by using a *client profile* that you have created or obtained previously. This task is part of a larger task of setting up one or more clients using the settings from an existing client. These steps can be repeated for each client you want to configure.

Procedure:
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.
3. From the **Configure** menu, select **Import Profile**.
4. Select one of the following import options. You can choose to import all or a subset of the information in a client profile.

All Select this option to import everything in a client profile. Open the client profile you want to import.

Customize
Select this option to import a subset of the client profile, such as a specific database. From the **Customize Import Profile** window:

    a. Select the client profile you want to import and click **Load**.

    b. Select the databases to be imported from the **Available database aliases** box and click **>** to add them to the **Selected database aliases** box. Click **>>** to add all of the available databases to the **Selected database aliases** box.

    c. Select the check boxes that correspond to the options that you want to customize.

    d. Click **Import** to complete this task.

    e. Check your results displayed in the Results tab.

Related concepts:
- "Client-to-server communications configuration overview" on page 39

Related tasks:
- "Creating a client profile using the Configuration Assistant" on page 47

Testing a database connection using the Configuration Assistant

Your database connection should be tested after you configure it.

Procedure:

To test a database connection:

1. Start the **Configuration Assistant**.
2. Highlight the database in the details view and select **Test Connection** from the **Selected** menu. The Test Connection window opens.
3. Select one or more types of connection that you would like to test (**CLI** is the default). You can test more than one type at the same time. 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 select **Change Database** from the **Selected** menu item.

Related concepts:
- "Client-to-server communications configuration overview" on page 39

Related tasks:
- "Configuring a database connection by searching the network using the Configuration Assistant" on page 46
- "Configuring a database connection manually using the Configuration Assistant" on page 45

LDAP considerations for the Configuration Assistant

In an LDAP-enabled environment, the directory information about DB2 servers and databases is stored in the LDAP directory. When a new database is created, the database is automatically registered in the LDAP directory. During a database connection, the DB2 client accesses the LDAP directory to retrieve the required database and protocol information and uses this information to connect to the database.

However, you can still use the CA in the LDAP environment to:
- Manually catalog a database in the LDAP directory.
- Register a database cataloged in LDAP as an ODBC data source.
- Configure CLI/ODBC information on the LDAP server.
- Remove a database cataloged in the LDAP directory.

Related concepts:
- "Client-to-server communications configuration overview" on page 39

Chapter 9. Configuring client-to-server communications using the command line processor

Configuring client-to-server connections using the command line processor

This task describes how to configure a connection from a DB2 client to a remote database server using the command line processor (CLP).

Prerequisites:

Before you configure a client to server connection:
- Network communications is set up between the machine with the DB2 client and the machine with the DB2 server. One way to verify this for the TCP/IP protocol is to use the **ping** command.
- The DB2 server is configured to work on the network. This is normally done as part of installing and configuring the DB2 server product.

Overview of the procedure:

Separate topics are provided to guide you through each of the steps below. Some steps have a version for each supported protocol:
1. Identify the communication parameter values for the remote database server. Worksheets are provided:

   TCP/IP worksheet.

   Named Pipes worksheet.
2. If you are using TCP/IP, you have the option to update the client's hosts file and services file with communication parameter values for the remote database server. This step does not apply to Named Pipes.
3. Catalog the server node from the client. Instructions are provided for each communications protocol:
   - Catalog the TCP/IP node from the client.
   - Catalog the Named Pipes node from the client.
4. Catalog the database that you want to connect to on the client.
5. Test the client-to-server connection.

Related concepts:
- "Client-to-server communications configuration overview" on page 39

Related tasks:
- "Updating hosts and services files for TCP/IP connections" on page 53
- "Cataloging a TCP/IP node from a client using the CLP" on page 55
- "Cataloging a Named Pipes node from a client using the CLP" on page 56
- "Cataloging a database from a client using the CLP" on page 57
- "Testing the client-to-server connection using the CLP" on page 59

Related reference:

- "TCP/IP worksheet for configuring a client to server connection" on page 52
- "Named Pipes worksheet for configuring Named Pipes on the client" on page 53
- "Parameter values worksheet for cataloging a database" on page 59

Identifying the communication parameter values

TCP/IP worksheet for configuring a client to server connection

As you proceed through the configuration steps, use the *Your Value* column in the following table to record the required values.

Table 7. TCP/IP parameter values worksheet

Parameter	Description	Sample Value	Your Value
Version of the IP protocol	Options are: • IPv4: addresses look like this `9.21.15.235` • IPv6: addresses look like this: `2001:0db8:4545:2::09ff:fef7:62dc`	`IPv4`	

Host name
• Hostname (*hostname*) or
• IP address (*ip_address*)
	To resolve the hostname of the remote system, enter the **hostname** command at the server.
	
	To resolve the IP address, enter the **ping** *hostname* command.
		`myserver`
		
		or
		
		`9.21.15.235`
		
		or an IPv6 address	

Service Name
• Connection Service name (*svcename*) or
• Port number/Protocol (*port_number/tcp*)
	Values Required in the `services` file.
	
	The Connection Service name is an arbitrary name that represents the connection port number (*port_number*) on the client.
	
	The port number must be the same as the port number that the *svcename* parameter maps to in the services file on the server system. (The *svcename* parameter is located in the database manager configuration file on the server instance.) This value must not be in use by any other applications, and must be unique within the services file.
	
	On UNIX platforms, this value generally must be 1024 or higher.
	
	Contact your database administrator for the values used to configure the server.
		`server1`
		
		or
		
		`3700/tcp`	

Node name (*node_name*)	A local alias, or nickname, that describes the node to which you are trying to connect. You can choose any name you want; however, all node name values within your local node directory must be unique.	`db2node`	

Related tasks:

- "Cataloging a TCP/IP node from a client using the CLP" on page 55
- "Configuring client-to-server connections using the command line processor" on page 51
- "Updating hosts and services files for TCP/IP connections" on page 53

Named Pipes worksheet for configuring Named Pipes on the client

Use the following worksheet to help identify the required parameter values for configuring Named Pipes communications.

Table 8. Named Pipes parameter values worksheet

Parameter	Description	Sample Value	Your Value
Computer name (*computer_name*)	The computer name of the server machine. On the server machine, to locate the value for this parameter, click on **Start** and select **Settings, Control Panel**. Double-click on the **Network** folder and select the **Identification** tab. Record the computer name.	server1	
Instance name (*instance_name*)	The name of the instance on the server to which you are connecting.	db2	
Node name (*node_name*)	A local alias, or nickname, that describes the node to which you are trying to connect. You can choose any name you want; however, all node name values within your local node directory must be unique.	db2node	

Related tasks:

- "Cataloging a Named Pipes node from a client using the CLP" on page 56
- "Configuring client-to-server connections using the command line processor" on page 51

Updating files on the client

Updating hosts and services files for TCP/IP connections

This task explains when and how to update the hosts file and services file on the client with communication parameter values for the remote database server. This task is optional for connections using TCP/IP and does not apply to connections using Named Pipes. This task is part of the larger task of configuring client-to-server connection using the CLP.

When to update the hosts file or services file:

You need to update the hosts file if you want to establish a connection to the remote database server using its hostname and your network does not contain a DNS (domain name server) that can be used to resolve that hostname to an IP address. This step is not required if you want to refer to the remote database server using its IP address.

You need to update the services file if you want to specify a *connection service* name when establishing a connection to the remote database server. A *connection service* is an arbitrary name that represents the connection port number. This step is not required if you want to refer to the remote database server's port number.

Note the additional considerations for UNIX clients in an environment that uses Network Information Services (NIS):

- If you are not using a domain name server on your network, you must update the `hosts` file and `services` file located on your NIS master server.

Procedure for updating the hosts file:

Use this procedure to update the `hosts` file on the client to resolve the remote server's hostname to its IP address.

1. Use a text editor to add an entry to the `hosts` file for the server's IP address.

   For example:

   ```
   9.21.15.235     myserver   # IP address for myserver
   ```

   where:

   9.21.15.235
   > represents the *ip_address*

   myserver
   > represents the *hostname*

   #
   > represents a comment describing the entry

   If the server is not in the same domain as the DB2 client, you must provide a fully qualified domain name such as `myserver.spifnet.ibm.com`, where `spifnet.ibm.com` represents the domain name.

Procedure for updating the services file:

Use this procedure to update the `services` file on the client to resolve a service name to the remote server's port number.

1. Using a text editor, add the Connection Service name and port number to the `services` file.

   For example:

   ```
   server1  50000/tcp  # DB2 connection service port
   ```

   where:

   server1 represents the Connection Service name

   50000 represents the connection port number (50000 is the default)

   tcp represents the communication protocol that you are using

   # represents the beginning of a comment that describes the entry

Location of the local hosts file and services file

The following table lists the location of the `hosts` file and `services` file referred to in the preceding procedures.

Table 9. Location of the hosts file and services file

Operating System	Directory
Windows 2000/Windows XP/Windows Server 2003	%SystemRoot%\system32\drivers\etc where *%SystemRoot%* is a system defined environment variable
UNIX	/etc

Related tasks:

Cataloging a server node from a client

Cataloging a TCP/IP node from a client using the CLP

Cataloging a TCP/IP node adds an entry to the DB2 client's node directory that describes the remote node. This entry specifies the chosen alias (*node_name*), the *hostname* (or *ip_address*), and the *svcename* (or *port_number*) that the client uses to access the remote host.

Prerequisites:
- You must have System Administrative (SYSADM) or System Controller (SYSCTRL) authority, or have the `catalog_noauth` option set to `ON`. You cannot catalog a node using root authority.

Procedure:

To catalog a TCP/IP node:
1. Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.
2. If you are using a UNIX client, set up the instance environment. Run the start-up script:

    For bash, Bourne or Korn shell
    > `. INSTHOME/sqllib/db2profile`

    For C shell
    > `source INSTHOME/sqllib/db2cshrc`

    where *INSTHOME* represents the home directory of the instance.
3. Start the DB2 command line processor. On Windows, issue the **db2cmd** command from a command prompt. On UNIX, issue the **db2** command from a command prompt.
4. Catalog the node by entering the following commands in the command line processor:
    ```
    db2 => catalog tcpip node node_name remote hostname|ip_address
      server service_name|port_number [remote_instance instance_name]
      [system system_name] [ostype  os_type]

    db2 => terminate
    ```

    where:
    - `node_name` represents a local nickname you can set for the computer that has the database you want to catalog.
    - `remote_instance` represents the name of the server instance on which the database resides.
    - `system` represents the DB2 system name that is used to identify the server.
    - `ostype` represents the operating system type of the server.

    Notes:
    a. The **terminate** command is needed to refresh the directory cache.

b. Although `remote_instance`, `system`, and `ostype` are optional, they are required for users who want to use the DB2 tools.

c. The *service_name* used on the client does not have to be the same as the one on the server. However, the port numbers that they map to *must* match

d. While not shown here, the **catalog tcpip node** command provides the option to explicitly specify the version of IP, namely IPv4 or IPv6.

Example:

To catalog a node that you want to call *db2node* on a remote server *myserver.ibm.com* that is using port number *50000*, you would enter the following from a **db2** prompt:

```
db2 => catalog tcpip node db2node remote myserver server 50000
DB20000I  The CATALOG TCPIP NODE command completed successfully.
DB21056W  Directory changes may not be effective until the directory cache is
refreshed.

db2 => terminate
DB20000I  The TERMINATE command completed successfully.
```

Related tasks:
- "Cataloging a database from a client using the CLP" on page 57
- "Configuring client-to-server connections using the command line processor" on page 51

Related reference:
- "CATALOG TCPIP/TCPIP4/TCPIP6 NODE command" in *Command Reference*
- "TCP/IP worksheet for configuring a client to server connection" on page 52

Cataloging a Named Pipes node from a client using the CLP

Cataloging a Named Pipes node adds an entry to the client's node directory to describe the remote node. This entry specifies the chosen alias (*node_name*), the remote *server's* workstation name (*computer_name*), and the instance (*instance_name*) that the client will use to access the remote DB2 server.

Procedure:

To catalog a Named Pipes node on a DB2 client, type the following command in the command line processor (CLP):

```
db2 => catalog npipe node node_name
db2 => remote computer_name instance instance_name

db2 => terminate
```

Example:

To catalog a remote node called *db2node* that is located on a server called *server1* in the *db2* instance, use:

```
db2 => db2 catalog npipe node db2node remote server1 instance db2

db2 => terminate
```

Related tasks:
- "Cataloging a database from a client using the CLP" on page 57

- "Configuring client-to-server connections using the command line processor" on page 51

Related reference:
- "CATALOG NAMED PIPE NODE command" in *Command Reference*
- "Named Pipes worksheet for configuring Named Pipes on the client" on page 53

Cataloging a database from a client

Cataloging a database from a client using the CLP

This task describes how to catalog a database from a client using the command line processor (CLP).

Before a client application can access a remote database, the database must be cataloged on the client. When you create a database, the database is automatically cataloged on the server with a database alias that is the same as the database name, unless a different database alias was specified.

The information in the database directory, along with the information in the node directory (unless you are cataloging a local database where a node is not needed), is used on the DB2 client to establish a connection to the remote database.

Prerequisites:
- You require a valid DB2 user ID. DB2 does not support using root authority to catalog a database.
- You must have System Administrative (SYSADM) or System Controller (SYSCTRL) authority, or have the catalog_noauth option set to ON
- You will need the following information when cataloging a *remote* database:
  - Database name
  - Database alias
  - Node name
  - Authentication type (optional)
  - Comment (optional)

  Refer to the parameter values worksheet for cataloging a database for more information about these parameters and to record the values that you use.
- The following parameter values are applicable when cataloging a *local* database:
  - Database name
  - Drive
  - Database alias
  - Authentication type (optional)
  - Comment (optional)

  Local databases can be uncataloged and recataloged at any time.

Procedure:

To catalog a database on the client:
1. Log on to the system with a valid DB2 user ID.

2. Optional. Update the Your Value column in the Parameter values worksheet for cataloging a database.

3. If you are using the DB2 database on a UNIX platform, set up the instance environment. Run the start-up script:

   For bash, Bourne or Korn shell

   ```
   . INSTHOME/sqllib/db2profile
   ```

   For C shell

   ```
   source INSTHOME/sqllib/db2cshrc
   ```

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

4. Start the DB2 command line processor. On Windows, issue the **db2cmd** command from a command prompt. On UNIX, issue the **db2** command from a command prompt.

5. Catalog the database by entering the following commands in the command line processor:

   ```
   db2 => catalog database database_name as database_alias at
      node node_name [ authentication auth_value ]
   ```

   where:

   - `database_name` represents the name of the database you want to catalog.
   - `database_alias` represents a local nickname for the database you want to catalog.
   - `node_name` represents a nickname you can set for the computer that has the database you want to catalog.
   - `auth_value` specifies the type of authentication that will take place when connecting to the database. This parameter defaults to the authentication type specified on the server. Specifying an authentication type can result in a performance benefit. Examples of valid values include: SERVER, CLIENT, SERVER_ENCRYPT, and KERBEROS.

   Example:

   To catalog a remote database called *sample* so that it has the local database alias *mysample*, on the node *db2node* using authentication *server*, enter the following commands:

   ```
   db2 => catalog database sample as mysample at node db2node
         authentication server

   db2 => terminate
   ```

   Related tasks:
   - "Configuring client-to-server connections using the command line processor" on page 51
   - "Testing the client-to-server connection using the CLP" on page 59

   Related reference:
   - "Parameter values worksheet for cataloging a database" on page 59
   - "CATALOG DATABASE command" in *Command Reference*

Parameter values worksheet for cataloging a database

Use the following worksheet to record the parameter values required to catalog a database.

Table 10. Catalog database parameter values worksheet

Parameter	Description	Sample Value	Your Value
Database name (*database_name*)	When a database is created, the database alias is set to the database name unless otherwise specified. For example, when the `sample` database is created on the server, a database alias of `sample` is also created. The database name represents the remote database alias (on the server).	`sample`	
Database alias (*database_alias*)	An arbitrary local nickname that represents the remote database. If you do not provide one, the default is the same as the database name (*database_name*). Use this name when you connect to the database from a client.	`mysample`	
Authentication (*auth_value*)	The type of authentication required in your environment.	Server	
Node name (*node_name*)	The name of the node directory entry that describes where the database resides. Use the same value for node name (*node_name*) that you used to catalog the node.	`db2node`	

Related tasks:

- "Cataloging a database from a client using the CLP" on page 57
- "Configuring client-to-server connections using the command line processor" on page 51

Testing the client-to-server connection using the CLP

After cataloging the node and the database, you should connect to the database to test the connection.

Prerequisites:

- The database node and database must be cataloged.
- The values for *userid* and *password* must be valid for the system on which they are authenticated. The authentication parameter on the client should be set to match the value on the server or it should be left unspecified. If an authentication parameter is not specified, the client will default to SERVER_ENCRYPT. If the server does not accept SERVER_ENCRYPT, then the client retries using the value returned from the server. If the client specifies an authentication parameter value that doesn't match what is configured on the server, you will receive an error.

- The database manager must be started with the correct protocol defined in the DB2COMM registry variable. If it isn't started, then you can start the database manager by entering the **db2start** command on the database server.

Procedure:

To test the client to server connection:

1. If you are using DB2 on a UNIX platform, set up the instance environment. Run the start-up script:

   For bash, Bourne or Korn shell
   ```
   . INSTHOME/sqllib/db2profile
   ```

   For C shell
   ```
   source INSTHOME/sqllib/db2cshrc
   ```

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

2. Start the DB2 command line processor. On Windows, issue the **db2cmd** command from a command prompt. On UNIX, issue the **db2** command from a command prompt.

3. Type the following command on the client to connect to the remote database:
   ```
   db2 => connect to database_alias user userid
   ```
   For example, enter the following command:
   ```
   connect to mysample user jtris
   ```

   You will prompted to enter your password.

If the connection is successful, you receive a message showing the name of the database to which you have connected. A message similar to the following is given:
```
Database Connection Information
Database server    = DB2 9.1.0
SQL authorization ID = JTRIS
Local database alias = mysample
```

You can now work with the database. For example, to retrieve a list of all the table names listed in the system catalog table, enter the following SQL statement:
```
select tabname from syscat.tables
```

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

Related tasks:
- "Configuring client-to-server connections using the command line processor" on page 51

Part 4. DB2 client deployment in a thin client topology (Windows)

Chapter 10. Thin client topology overview (Windows)

This section describes an alternate method for installing DB2 clients that leverages the Windows support for thin client topologies. This method can be used to install the DB2 Client or DB2 Connect Personal Edition on Windows. This method does not apply to the DB2 Runtime Client.

A *thin client topology* or *thin client topology environment* consists of one thin client *code server* and one or more *thin clients*. The DB2 client code is installed on the code server, rather than on each client workstation. On each thin client workstation, only minimal amount of code and configuration is required. When a thin client initiates a database connection, DB2 client code is dynamically loaded from the code server as required. The thin client then connects to the database in the usual fashion. The figures below illustrate the thin client topology. In the first case, the DB2 Client is installed on the code server which serves the DB2 Client code to the thin client workstations. These client workstations then connect to one or more DB2 servers. In the second figure, DB2 Connect Personal Edition is used instead of the DB2 Client. DB2 Connect Personal Edition provides the additional capability of enabling clients to connect directly to DB2 on midrange and mainframe platforms.
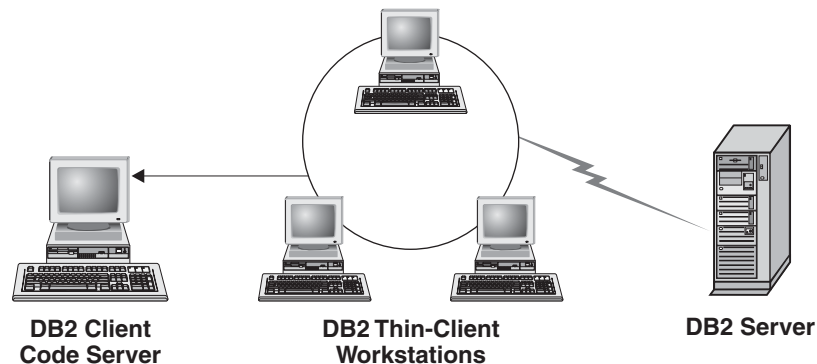

**DB2 Client
Code Server**   **DB2 Thin-Client
Workstations**   **DB2 Server**

Figure 1. A typical thin client topology using the DB2 Client

**DB2 Connect
Code Server**   **Thin-Connect
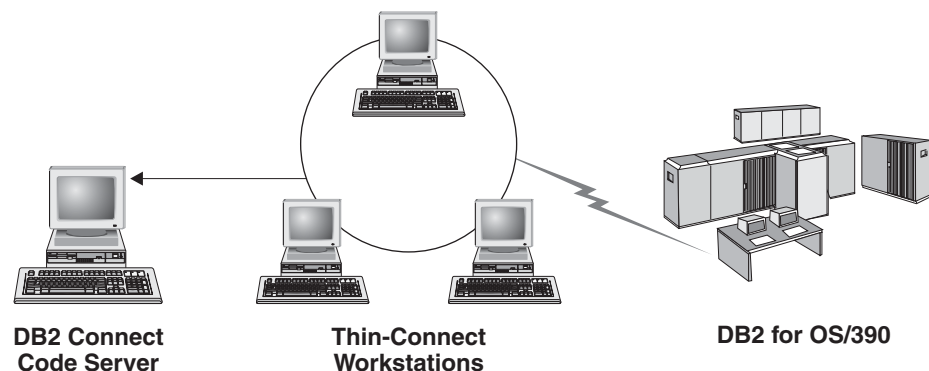Workstations**   **DB2 for OS/390**

Figure 2. A typical thin client topology using DB2 Connect Personal Edition

A client installed in a thin topology functions like a client installed in the normal fashion. This method of installing a client is targeted for use when client workstations need only occasional access to a database or when it would be difficult to set up the DB2 client on each client workstation. By implementing this

type of environment, disk space requirements for each thin workstation are reduced and the code only needs to be installed, updated, or migrated on one machine, that is the code server. DB2 programs must load from a code server across a LAN connection. The extent of performance loss at program initialization time will depend on variables such as the load and speed of both the network and the code server.

Notes:

1. Catalog information must be maintained on each thin-client workstation, just as if it were a regular DB2 client. The catalog files contain all of the information needed for a workstation to connect to a database.

2. The steps to configure database connections for each thin-client workstation can be automated by using the profile export and import options provided by the Configuration Assistant (CA). After setting up an initial client to server connection, export a profile of the configuration settings to all other clients.

3. The steps to configure database connections for each thin-client workstation can be avoided by using Lightweight Directory Access Protocol (LDAP) in your environment. Once you have registered the database with an LDAP server from the DB2 server, any LDAP enabled client will retrieve the connection information automatically during connect.

4. The **db2rspgn** command is not supported on the thin client.

5. If you are setting up a thin client environment for DB2 Connect Personal Edition, each thin client workstation should have the license for this product..

Related concepts:

- Chapter 3, "Methods for installing DB2 clients," on page 7
- Chapter 2, "Types of clients - DB2 Runtime Client and DB2 Client," on page 5

Related tasks:

- "Thin client setup overview (Windows)" on page 65

Chapter 11. Thin client setup steps (Windows)

Thin client setup overview (Windows)

Setting up a thin client environment involves setup on both the code server and each thin client workstation. The steps are listed below with links to additional details.

Procedure:

Steps 1 to 3 are performed on the code server machine and the remaining steps are performed on each thin client workstation.

1. Installing a DB2 Client or DB2 Connect Personal Edition on the code server.
2. Making the code directory on the code server available to all thin workstations.
3. Creating a thin client response file.
4. Mapping a network drive from each thin client workstation to the code server.
5. Running the **thnsetup** command to setup each thin client.

This installation does not include product documentation. See the related link for details on DB2 Information Center installation options.

Related concepts:
- Chapter 10, "Thin client topology overview (Windows)," on page 63
- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*

Related tasks:
- "Installing a DB2 Client or DB2 Connect Personal Edition on the code server (Windows)" on page 65
- "Making the code directory available to all thin workstations (Windows)" on page 66
- "Creating a thin client response file (Windows)" on page 67
- "Mapping a network drive from each thin client to the code server (Windows)" on page 68
- "Running the thnsetup command to set up thin clients (Windows)" on page 68

Installing a DB2 Client or DB2 Connect Personal Edition on the code server (Windows)

This task is part of the larger task of setting up a thin client environment. This task installs the DB2 Client (or DB2 Connect Personal Edition) along with product code applicable to the code server. A DB2 thin-client workstation can only load code from a DB2 thin-client code server and a DB2 Connect thin workstation can only load code from a DB2 Connect thin code server.

Procedure:

To install a DB2 Client or DB2 Connect Personal Edition on the code server:

1. Locate the appropriate CD and launch the installation wizard.
2. Select a **Custom** installation from the installation wizard.

3. From the *Select the Features to Install* window, select **Server Support** then select **Thin Client Code Server**.
4. Complete the remaining install wizard steps.

Your next step is to make the code directory on the code server available to all thin workstations

Related tasks:
- "Making the code directory available to all thin workstations (Windows)" on page 66
- "Thin client setup overview (Windows)" on page 65

Making the code directory available to all thin workstations (Windows)

Making the code directory available to all thin workstations is part of the larger task of setting up a thin-client environment. To load the required code from the code server, each of the target thin workstations must be able to read the directory where the DB2 client or DB2 Connect Personal Edition source code is installed.

Procedure:

The steps to make the code directory available to all thin workstations (in read mode) are provided using Windows XP as an example:

1. On the code server, launch **Windows Explorer**.
2. Select the directory on the code server that will be used to serve thin workstations. For this example, select the d:\sqllib directory to set up the share.
3. Select **File —> Properties** from the menu bar.
4. Select the **Sharing** tab.
5. Select the **Shared This Folder** radio button.
6. In the **Share Name** field, enter a share name that is eight characters or less. For example, enter NTCODESV.
7. All thin client users need to have read access to this directory. For example, jsmith must have access to this directory if he is to log onto a thin client machine and access the thin client code on the code server. Specify read access as follows:
   a. Click **Permissions**. The Share Permissions window opens.
   b. In the **Group or User sName** box, highlight the **Everyone** group.

      Note: Access can be given to the **Everyone** group, a group that you have specifically defined for thin client users, or to individual thin client users.
   c. Select **Read**.
   d. Click **OK** until all windows are closed.

Your next step is to create a thin client response file.

Related tasks:
- "Creating a thin client response file (Windows)" on page 67
- "Thin client setup overview (Windows)" on page 65

Creating a thin client response file (Windows)

This task is part of the larger task of setting up a thin client environment. This task involves creating a *response file* that is used in a subsequent task to set up each thin client workstation. A response file is a text file that contains the setup and configuration data to automate an installation. The file consists of a list of keywords and corresponding values. You can create a response file for thin client installation by editing the sample response file provided with the DB2 product.

Procedure:

Locate the sample response file `db2thin.rsp` in the `c:\sqllib\thnsetup` directory, where *c:\sqllib* represents the drive where you installed your thin client code server.

In a response file, the asterisk (*) acts like a comment. Any line that is prefixed by an asterisk will be ignored during the installation. To enable a parameter, remove the asterisk. If you do not specify a keyword, or if it is commented out, a default value will be used.

For example, to install support for ODBC, the default entry for this keyword in the response file is:

```
*COMP   =ODBC_SUPPORT
```

To install this component, you would remove the asterisk from the line as shown in this example:

```
COMP   =ODBC_SUPPORT
```

For some keywords, values *must* be set. To enable these keywords, remove the asterisk. However, ensure that you also replace the contents to the right of the equal sign with the value that you want for that parameter.

For example,

```
*DB2.DIAGLEVEL = 0 - 4
```

would be:

```
DB2.DIAGLEVEL = 4
```

to set this parameter to 4.

After you have finished editing the response file, save it using a different name to maintain the original sample. For example, call the edited file `test.rsp` and save it in the same directory in which you set up the shared permissions in the previous step (for example, `d:\sqllib`).

You will use this response file in a subsequent step with the **thnsetup** command on each thin client workstation to set up each thin client.

Related tasks:
- "Mapping a network drive from each thin client to the code server (Windows)" on page 68
- "Thin client setup overview (Windows)" on page 65

Mapping a network drive from each thin client to the code server (Windows)

This task is part of the larger task of setting up a thin client environment.

Prerequisites:

You must be logged on to the workstation as a valid user with shared directory access to the code server. You have access to the code server because a locally defined user account was created on the code server.

Procedure:

You can access the `thnsetup` directory under the shared directory that you created on the code server by mapping a network drive from the thin client as follows:

1. Launch Windows Explorer.
2. From the **Tools** menu, select **Map Network Drive**.
3. In the **Drive** drop down list, select the drive you want to map the location of the code server to.
4. Specify the location of the share in the Folder field as follows:

   `\\computer_name\share_name`

   where:

   computer_name
   represents the computer name of the code server.

   share_name
   represents the share name of the shared directory on the code server.
5. Select the **Reconnect at Logon** check box to make the share persistent.

The next step is enabling each thin client.

Related tasks:
- "Running the thnsetup command to set up thin clients (Windows)" on page 68
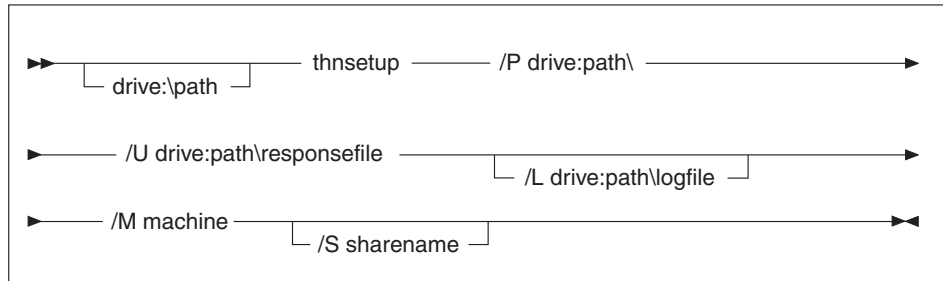- "Thin client setup overview (Windows)" on page 65

Running the thnsetup command to set up thin clients (Windows)

Running the **thnsetup** command to set up thin clients is the final part of the larger task of setting up a thin client environment. This command will set up the thin client workstation and make the required links to the code server.

Procedure:

Perform these steps on each workstation that you want to set up as a thin client.

1. Run the **thnsetup** command. The **thnsetup** command can be entered with the following parameters:

```
                              thnsetup ──────── /P drive:path\
►►─┬──────────────┬──
   └─ drive:\path ─┘

►──────── /U drive:path\responsefile ──────────────────────────────►
                              └─ /L drive:path\logfile ─┘

►──────── /M machine ──────────────────────────────────────────►◄
              └─ /S sharename ─┘
```

where:

/P   specifies the path where the DB2 code is installed on the code server. This parameter is required. If you have not already mapped a persistent network drive to the code server, then this parameter should be the drive letter used to represent the network drive.

/U   specifies the fully qualified response file name. This parameter is required. Normally the file is located on the code server in the directory `c:\sqllib\thnsetup`, where `c:\sqllib` represents the drive where you installed your thin client code server.

/L   specifies the fully qualified log file name, where setup information and any errors occurring during setup are logged. If you do not specify the log file's name, the default `db2.log` file name is used. This file will be created in a directory called `db2log`, on the drive where your operating system is installed. This parameter is optional.

/M   specifies the computer name of the code server. This parameter is required.

/S   specifies the share name of the code server where the DB2 product was installed. This parameter is only necessary if you did not map a persistent network drive.

For example, to create a thin workstation where:
- the shared directory with the share name *NTCODESV* on a code server is mapped locally to the *x:* drive;
- the response file is called *test.rsp*; and
- the response file is located in the same directory as the code server:

enter the following command from a DOS prompt from the thin workstation:

```
x:\thnsetup\thnsetup /P x: /U x:\thnsetup\test.rsp /M machineName
```

When the **thnsetup** command completes, check the messages in the log file (`db2.log` in the *y:*`\db2log` directory, where *y* is the drive on which DB2 is installed).

The error messages in the log file will vary, depending on the error that was encountered during the attempted installation. The log file should state the reason for failure, as well as a message stating that the setup did not complete.

Related tasks:
- "Thin client setup overview (Windows)" on page 65

Part 5. Appendixes

Appendix A. DB2 Runtime Client merge modules (Windows)

Using Windows Installer merge modules, you can easily add DB2 Runtime Client functionality to any product that uses the Windows Installer.

When you merge the modules, you will be prompted to supply the DB2 copy name. Multiple copies of DB2 products can be installed on the same machine; so each copy is known by its unique name. This name will be used when the installation is performed on each target machine. Choose a name that is unlikely to be already used for another DB2 copy. Suitable names include the name of your application, for example, myapp_db2copy_1. If the name is not unique, the installation will fail.

For more information on merge module technology, see the documentation included with your installation authoring product or at http://msdn.microsoft.com.

The following merge modules are available for your use:

DB2 Base Client Merge Module.msm
> This module provides the functionality required for database connection, SQL, and DB2 command functionality. This module also allows you to create a response file which can be used to configure DB2 within your installation. The configurable option specifies the location of a response file used to configure DB2. Types of configuration include creating instances, setting database manager configuration parameters or DB2 profile registry variables.
>
> For information about the sequence of various custom actions and the proposed sequences, view the merge module with a tool like Orca.

DB2 Bind Files Merge Module.msm
> This module contains the system bind files which are used by DB2 for such tasks as creating databases or accessing remote host databases.

DB2 Client Administration Tools Merge Module.msm
> This module provides various tools used to administer local and remote databases.

DB2 JDBC and SQLJ Support.msm
> This module contains JDBC and SQLJ support allowing Java samples to be built and run using the JDBC driver.

DB2 LDAP Exploitation Merge Module.msm
> This module allows DB2 to use an LDAP directory to store database directory and configuration information.

DB2 Named Pipes Support Merge Module.msm
> This module allows you to use the Named Pipes communication protocol to transfer data in a client-server environment.

DB2 ODBC Support Merge Module.msm
> This module provides support for applications that use Open Database Connectivity (ODBC) to access data.

DB2 OLE DB Support Merge Module.msm
> This module provides a set of interfaces that allows applications to uniformly access data stored in different data sources.

DB2 .NET Data Provider Merge Module.msm
> This module enables your application to use the DB2 .NET Data Provider.
> The DB2 .NET Data Provider is an extension of the ADO.NET interface
> that enables your .NET applications to quickly and securely access data
> from DB2 databases.

The following merge modules contain DB2 client messages used by DB2.
Depending on the language(s) of your product, include and install the components
in the appropriate merge module.

DB2 Client Messages - Arabic.msm
DB2 Client Messages - Bulgarian.msm
DB2 Client Messages - Chinese(Simplified).msm
DB2 Client Messages - Chinese(Traditional).msm
DB2 Client Messages - Croatian.msm
DB2 Client Messages - Czech.msm
DB2 Client Messages - Danish.msm
DB2 Client Messages - Dutch.msm
DB2 Client Messages - English.msm
DB2 Client Messages - Finnish.msm
DB2 Client Messages - French.msm
DB2 Client Messages - German.msm
DB2 Client Messages - Greek.msm
DB2 Client Messages - Hebrew.msm
DB2 Client Messages - Hungarian.msm
DB2 Client Messages - Italian.msm
DB2 Client Messages - Japanese.msm
DB2 Client Messages - Korean.msm
DB2 Client Messages - Norwegian.msm
DB2 Client Messages - Polish.msm
DB2 Client Messages - Portuguese(Brazilian).msm
DB2 Client Messages - Portuguese(Standard).msm
DB2 Client Messages - Romanian.msm
DB2 Client Messages - Russian.msm
DB2 Client Messages - Slovak.msm
DB2 Client Messages - Slovenian.msm
DB2 Client Messages - Spanish.msm
DB2 Client Messages - Swedish.msm

Related concepts:
- "Response file installation basics" in *Installation and Configuration Supplement*
- Chapter 3, "Methods for installing DB2 clients," on page 7
- Chapter 4, "Options for connecting to DB2 databases," on page 9
- Chapter 2, "Types of clients - DB2 Runtime Client and DB2 Client," on page 5

Related tasks:
- "Installing a DB2 product using a response file (Windows)" in *Installation and Configuration Supplement*
- "Response file installation of DB2 overview (Windows)" in *Installation and Configuration Supplement*
- "Installing DB2 clients (Windows)" on page 31

Appendix B. DB2 Runtime Client installation command line options (Windows)

The following list describes selected popular standard Windows Installer command line options available when executing setup.exe for installing the DB2 Runtime Client on Windows.

/w This option forces `setup.exe` to wait until the installation is complete before exiting.

/l*v[log file name]
This option allows you to create a log of the installation. The log can be used to troubleshoot any problems encountered during the installation.

/v This option allows you to pass additional command line options and public properties to the Windows Installer. You must specify this options to perform a silent installation. For more information on the available Windows Installer options, see http://www.msdn.microsoft.com/

/qn This option allows you to perform a silent installation.

/L This option allow you to specify the setup language. For example, to specify French as the setup language, type the **setup.exe /L1036** command.

Table 11. Language Identifiers

Language	Identifier
Arabic (Saudi Arabia)	1025
Bulgarian	1026
Chinese (Simplified)	2052
Chinese (Traditional)	1028
Croatian	1050
Czech	1029
Danish	1030
Dutch (Standard)	1043
English	1033
Finnish	1035
French (Standard)	1036
German	1031
Greek	1032
Hebrew	1037
Hungarian	1038
Italian (Standard)	1040
Japanese	1041
Korean	1042
Norwegian (Bokmal)	1044
Polish	1045
Portuguese (Brazilian)	1046
Portuguese (Standard)	2070

Table 11. Language Identifiers (continued)

Language	Identifier
Romanian	1048
Russian	1049
Slovak	1051
Slovenian	1060
Spanish (Traditional Sort)	1034
Swedish	1053
Turkish	1055

Here are public properties which can be specified to control the installation of a DB2 Runtime Client:

- These parameters must be the last parameters in the command line.
- RSP_FILE_PATH - this should contain the full path to the response file that will be used to drive the installation of the DB2 Runtime Client. This is valid only when /qn is specified.

To perform a response file installation, the following command line parameter should be used:

```
setup /v"/qn RSP_FILE_PATH=[Full path to the response file]"
```

The example assumes that no copy of the client is already installed. If one or more copies exist, the command is different. To install a second copy use:

```
setup /v" TRANSFORMS=:InstanceId1.mst MSINEWINSTANCE=1
        /qn RSP_FILE_PATH=[Full path to the response file]"
```

Related concepts:

- Chapter 3, "Methods for installing DB2 clients," on page 7
- Chapter 4, "Options for connecting to DB2 databases," on page 9
- Chapter 2, "Types of clients - DB2 Runtime Client and DB2 Client," on page 5

Related tasks:

- "Installing DB2 clients (Windows)" on page 31

Appendix C. DB2 Database technical information

Overview of the DB2 technical information

DB2 technical information is available through the following tools and methods:
- DB2 Information Center
  - Topics
  - Help for DB2 tools
  - Sample programs
  - Tutorials
- DB2 books
  - PDF files (downloadable)
  - PDF files (from the DB2 PDF CD)
  - printed books
- Command line help
  - Command help
  - Message help
- Sample programs

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

Note: The DB2 Information Center topics are updated more frequently than either the PDF or the hard-copy books. To get the most current information, install the documentation updates as they become available, or refer to the DB2 Information Center at ibm.com.

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

Documentation feedback

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

Do not use this e-mail address to contact DB2 Customer Support. If you have a DB2 technical issue that the documentation does not resolve, contact your local IBM service center for assistance.

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Related concepts:
- "Features of the DB2 Information Center" in *Online DB2 Information Center*
- "Sample files" in *Samples Topics*

Related tasks:
- "Invoking command help from the command line processor" in *Command Reference*
- "Invoking message help from the command line processor" in *Command Reference*
- "Updating the DB2 Information Center installed on your computer or intranet server" on page 83

Related reference:
- "DB2 technical library in hardcopy or PDF format" on page 78

DB2 technical library in hardcopy or PDF format

The following tables describe the DB2 library available from the IBM Publications Center at www.ibm.com/shop/publications/order. DB2 Version 9 manuals in PDF format can be downloaded from www.ibm.com/software/data/db2/udb/support/manualsv9.html.

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

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

Table 12. DB2 technical information

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

Table 12. DB2 technical information (continued)

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

Table 13. DB2 Connect-specific technical information

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

Table 13. DB2 Connect-specific technical information (continued)

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

Table 14. WebSphere® Information Integration technical information

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

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

Related concepts:
- "Overview of the DB2 technical information" on page 77
- "About the Release Notes" in *Release notes*

Related tasks:
- "Ordering printed DB2 books" on page 80

Ordering printed DB2 books

If you require printed DB2 books, you can buy them online in many but not all countries or regions. You can always order printed DB2 books from your local IBM representative. Keep in mind that some softcopy books on the *DB2 PDF Documentation* CD are unavailable in print. For example, neither volume of the *DB2 Message Reference* is available as a printed book.

Printed versions of many of the DB2 books available on the DB2 PDF Documentation CD can be ordered for a fee from IBM. Depending on where you are placing your order from, you may be able to order books online, from the IBM Publications Center. If online ordering is not available in your country or region, you can always order printed DB2 books from your local IBM representative. Note that not all books on the DB2 PDF Documentation CD are available in print.

Note: The most up-to-date and complete DB2 documentation is maintained in the DB2 Information Center at http://publib.boulder.ibm.com/infocenter/db2help/.

Procedure:

To order printed DB2 books:
- To find out whether you can order printed DB2 books online in your country or region, check the IBM Publications Center at http://www.ibm.com/shop/publications/order. You must select a country, region, or language to access publication ordering information and then follow the ordering instructions for your location.
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  - Locate the contact information for your local representative from one of the following Web sites:
    - The IBM directory of world wide contacts at www.ibm.com/planetwide
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  - When you call, specify that you want to order a DB2 publication.
  - Provide your representative with the titles and form numbers of the books that you want to order.

Related concepts:
- "Overview of the DB2 technical information" on page 77

Related reference:
- "DB2 technical library in hardcopy or PDF format" on page 78

Displaying SQL state help from the command line processor

DB2 returns an SQLSTATE value for conditions that could be the result of an SQL statement. SQLSTATE help explains the meanings of SQL states and SQL state class codes.

Procedure:

To invoke SQL state help, open the command line processor and enter:

    ? *sqlstate* or ? *class code*

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

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

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

Accessing different versions of the DB2 Information Center

For DB2 Version 9 topics, the DB2 Information Center URL is http://publib.boulder.ibm.com/infocenter/db2luw/v9/.

For DB2 Version 8 topics, go to the Version 8 Information Center URL at: http://publib.boulder.ibm.com/infocenter/db2luw/v8/.

Related tasks:
- "Setting up access to DB2 contextual help and documentation" in *Administration Guide: Implementation*

Displaying topics in your preferred language in the DB2 Information Center

The DB2 Information Center attempts to display topics in the language specified in your browser preferences. If a topic has not been translated into your preferred language, the DB2 Information Center displays the topic in English.

Procedure:

To display topics in your preferred language in the Internet Explorer browser:
1. In Internet Explorer, click the **Tools** —> **Internet Options** —> **Languages...** button. The Language Preferences window opens.
2. Ensure your preferred language is specified as the first entry in the list of languages.
   - To add a new language to the list, click the **Add...** button.

     Note: Adding a language does not guarantee that the computer has the fonts required to display the topics in the preferred language.
   - To move a language to the top of the list, select the language and click the **Move Up** button until the language is first in the list of languages.
3. Clear the browser cache and then refresh the page to display the DB2 Information Center in your preferred language.

To display topics in your preferred language in a Firefox or Mozilla browser:
1. Select the **Tools** —> **Options** —> **Languages** button. The Languages panel is displayed in the Preferences window.
2. Ensure your preferred language is specified as the first entry in the list of languages.
   - To add a new language to the list, click the **Add...** button to select a language from the Add Languages window.
   - To move a language to the top of the list, select the language and click the **Move Up** button until the language is first in the list of languages.
3. Clear the browser cache and then refresh the page to display the DB2 Information Center in your preferred language.

On some browser and operating system combinations, you might have to also change the regional settings of your operating system to the locale and language of your choice.

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

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

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

Updating your locally-installed DB2 Information Center requires that you:
1. Stop the DB2 Information Center on your computer, and restart the Information Center in stand-alone mode. Running the Information Center in stand-alone mode prevents other users on your network from accessing the Information Center, and allows you to download and apply updates.
2. Use the Update feature to determine if update packages are available from IBM.

   Note: Updates are also available on CD. For details on how to configure your Information Center to install updates from CD, see the related links. If update packages are available, use the Update feature to download the packages. (The Update feature is only available in stand-alone mode.)
3. Stop the stand-alone Information Center, and restart the DB2 Information Center service on your computer.

Procedure:

To update the DB2 Information Center installed on your computer or intranet server:
1. Stop the DB2 Information Center service.
   • On Windows, click **Start → Control Panel → Administrative Tools → Services**. Then right-click on **DB2 Information Center** service and select **Stop**.
   • On Linux, enter the following command:
     ```
     /etc/init.d/db2icdv9 stop
     ```
2. Start the Information Center in stand-alone mode.
   • On Windows:
     a. Open a command window.
     b. Navigate to the path where the Information Center is installed. By default, the DB2 Information Center is installed in the `C:\Program Files\IBM\DB2 Information Center\Version 9` directory.
     c. Run the `help_start.bat` file using the fully qualified path for the DB2 Information Center:
        ```
        <DB2 Information Center dir>\doc\bin\help_start.bat
        ```
   • On Linux:

a. Navigate to the path where the Information Center is installed. By default, the DB2 Information Center is installed in the `/opt/ibm/db2ic/V9` directory.

b. Run the `help_start` script using the fully qualified path for the DB2 Information Center:

```
<DB2 Information Center dir>/doc/bin/help_start
```

The systems default Web browser launches to display the stand-alone Information Center.

3. Click the Update button (🔄). On the right hand panel of the Information Center, click **Find Updates**. A list of updates for existing documentation displays.

4. To initiate the download process, check the selections you want to download, then click **Install Updates**.

5. After the download and installation process has completed, click **Finish**.

6. Stop the stand-alone Information Center.
   - On Windows, run the `help_end.bat` file using the fully qualified path for the DB2 Information Center:

     ```
     <DB2 Information Center dir>\doc\bin\help_end.bat
     ```

     Note: The help_end batch file contains the commands required to safely terminate the processes that were started with the help_start batch file. Do not use `Ctrl-C` or any other method to terminate `help_start.bat`.

   - On Linux, run the `help_end` script using the fully qualified path for the DB2 Information Center:

     ```
     <DB2 Information Center dir>/doc/bin/help_end
     ```

     Note: The help_end script contains the commands required to safely terminate the processes that were started with the help_start script. Do not use any other method to terminate the `help_start` script.

7. Restart the DB2 Information Center service.
   - On Windows, click **Start → Control Panel → Administrative Tools → Services**. Then right-click on **DB2 Information Center** service and select **Start**.
   - On Linux, enter the following command:

     ```
     /etc/init.d/db2icdv9 start
     ```

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

Related concepts:
- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*

Related tasks:
- "Installing the DB2 Information Center using the DB2 Setup wizard (Linux)" in *Quick Beginnings for DB2 Servers*
- "Installing the DB2 Information Center using the DB2 Setup wizard (Windows)" in *Quick Beginnings for DB2 Servers*

DB2 tutorials

The DB2 tutorials help you learn about various aspects of DB2 products. Lessons provide step-by-step instructions.

Before you begin:

You can view the XHTML version of the tutorial from the Information Center at http://publib.boulder.ibm.com/infocenter/db2help/.

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

DB2 tutorials:

To view the tutorial, click on the title.

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

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

Related concepts:
- "Visual Explain overview" in *Administration Guide: Implementation*

DB2 troubleshooting information

A wide variety of troubleshooting and problem determination information is available to assist you in using DB2 products.

DB2 documentation
> Troubleshooting information can be found in the DB2 Troubleshooting Guide or the Support and Troubleshooting section of the DB2 Information Center. There you will find information on how to isolate and identify problems using DB2 diagnostic tools and utilities, solutions to some of the most common problems, and other advice on how to solve problems you might encounter with your DB2 products.

DB2 Technical Support Web site
> Refer to the DB2 Technical Support Web site if you are experiencing problems and want help finding possible causes and solutions. The Technical Support site has links to the latest DB2 publications, TechNotes, Authorized Program Analysis Reports (APARs or bug fixes), fix packs, and other resources. You can search through this knowledge base to find possible solutions to your problems.
>
> Access the DB2 Technical Support Web site at http://www.ibm.com/software/data/db2/udb/support.html

Related concepts:
- "Introduction to problem determination" in *Troubleshooting Guide*
- "Overview of the DB2 technical information" on page 77

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