DB2

IBM

DB2 Connect Version 9

Quick Beginnings for DB2 Connect Servers

GC10-4243-00

DB2

IBM

DB2 Connect Version 9

Quick Beginnings for DB2 Connect Servers

GC10-4243-00

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

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Part 1. Introduction to DB2 Connect

The following section contains an overview of DB2 Connect™, including examples of different DB2 Connect environments. Topics discussed include:

- Available versions of DB2 Connect
- Suitability of each version for different business environments
- Administration and client tools that work with DB2 Connect
- How DB2 Connect relates to Java™, web applications, and transaction processing scenarios

Who Should Read This Section

- Managers exploring how to integrate DB2 Connect with present or planned business operations
- Technical staff preparing to install DB2 Connect

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Chapter 1. About DB2 Connect

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

DB2 Connect product offerings

DB2 Connect has several connection solutions, including DB2 Connect Personal Edition, and a number of DB2 Connect server products:

- DB2 Connect Enterprise Edition
- DB2 Connect Application Server Edition
- DB2 Connect Unlimited Edition for zSeries™
- DB2 Connect Unlimited Edition for iSeries

For detailed information about DB2 Connect product offerings, see http://www.ibm.com/support/docview.wss?rs=73&uid=swg21219983

Related tasks:

- "Installing a DB2 Connect server product (AIX)" on page 52
- "Installing a DB2 Connect server product (HP-UX)" on page 54
- "Installing a DB2 Connect server product (Linux)" on page 55
- "Installing a DB2 Connect server product (Solaris)" on page 57
- "Installing a DB2 Connect server product (Windows)" on page 51
- "Installing DB2 Connect Personal Edition (Linux)" in *Quick Beginnings for DB2 Connect Personal Edition*
- "Installing DB2 Connect Personal Edition (Windows)" in *Quick Beginnings for DB2 Connect Personal Edition*

Host and iSeries support for DB2 Connect

DB2 Connect supports connectivity to the following host and iSeries data servers:

Table 1. Supported host and iSeries data servers

Version	Recommended Service Upgrade (RSU)
DB2 UDB for OS/390 and z/OS Version 7.1	RSU0606 See http://www.ibm.com/servers/eserver/zseries/zos/servicetst/
DB2 UDB for z/OS Version 8	RSU0606 See http://www.ibm.com/servers/eserver/zseries/zos/servicetst/

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Table 1. Supported host and iSeries data servers (continued)

Version	Recommended Service Upgrade (RSU)
DB2 UDB for iSeries V5R1, V5R2 , V5R3, and V5R4	II13348 (Informational APAR) For iSeries Preventative Service Planning, see http://www-912.ibm.com/s_dir/sline003.NSF/GroupPTFs?OpenView&view=GroupPTFs
DB2 Server for VM/VSE Version 7 and later	See http://www.ibm.com/software/data/db2/vse-vm/support/dwnldsfs.html

Detailed prerequisite information is available at:

http://www-1.ibm.com/support/docview.wss?rs=71&context=SSEPGG&dc=D600&uid=swg21233566

Related concepts:

- "DB2 Connect" in *DB2 Connect User's Guide*
- "Accessing host or iSeries DB2 data using DB2 Connect" on page 5

Related tasks:

- "Configuring a connection to host or iSeries database servers using the CA (Linux and Windows)" on page 79

Related reference:

- "Host databases" in *DB2 Connect User's Guide*

Chapter 2. DB2 Connect scenarios

Accessing host or iSeries DB2 data using DB2 Connect

A DB2 Connect server enables DB2 clients on a LAN access to data that is stored on host or iSeries systems.

In organizations with large amounts of data, DB2 UDB for iSeries, DB2 UDB for OS/390 and z/OS, or DB2 Server for VSE & VM are commonly used to manage that data. Applications that run on any of the supported platforms can work with this data transparently, as if a local database server managed it. A DB2 Connect server product, such as DB2 Connect Enterprise Edition, is required for supporting applications which access host or iSeries data and exploit transaction monitors as well as applications that are implemented as Java applets.

In addition, you can use a wide range of off-the-shelf or custom-developed database applications with DB2 Connect and its associated tools. For example, you can use DB2 Connect products with:

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

A DB2 Connect server product, such as DB2 Connect Enterprise Edition, is most appropriate for environments where:

- Application is implemented using data-aware Java applets (see Figure 5 on page 11).
- Web servers are used to implement web-based applications (see Figure 4 on page 9 and Figure 5 on page 11).
- Middle-tier application server is employed.
- Transaction monitors such as IBM® TXSeries® CICS® and Encina® Monitor, WebSphere Application Server, WebSphere MQ, Microsoft Transaction Server (MTS), and BEA Tuxedo are used. (See Figure 2 on page 7.)

DB2 Connect provides transparent access to host or iSeries data through a standard architecture for managing distributed data. This standard is known as Distributed Relational Database Architecture (DRDA). DRDA allows your applications to establish a fast connection to host and iSeries databases without expensive host or iSeries components or proprietary gateways.

Although DB2 Connect is often installed on an intermediate server machine to connect DB2 clients to a host or iSeries database, it is also installed on machines where multiple local users want to access the host or iSeries servers directly. For example, DB2 Connect can be installed on a large machine with many local users.

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DB2 Connect can also be installed on a Web server, Transaction Processor (TP) monitor, or other 3-tier application server machines with multiple local SQL application processes and threads. In these cases, you can choose to install DB2 Connect on the same machine for simplicity, or on a separate machine to off-load CPU cycles.

A DB2 Connect server enables multiple clients to connect to host or iSeries data and can significantly reduce the effort that is required to establish and maintain access to enterprise data. Figure 1 illustrates IBM's solution for environments where a DB2 client makes an indirect connection to a host or iSeries database server through a DB2 Connect server product.

To connect to an IBM host or iSeries database server you require a licensed DB2 Connect product. You cannot connect directly to an IBM host or iSeries Data Server using a DB2 client.

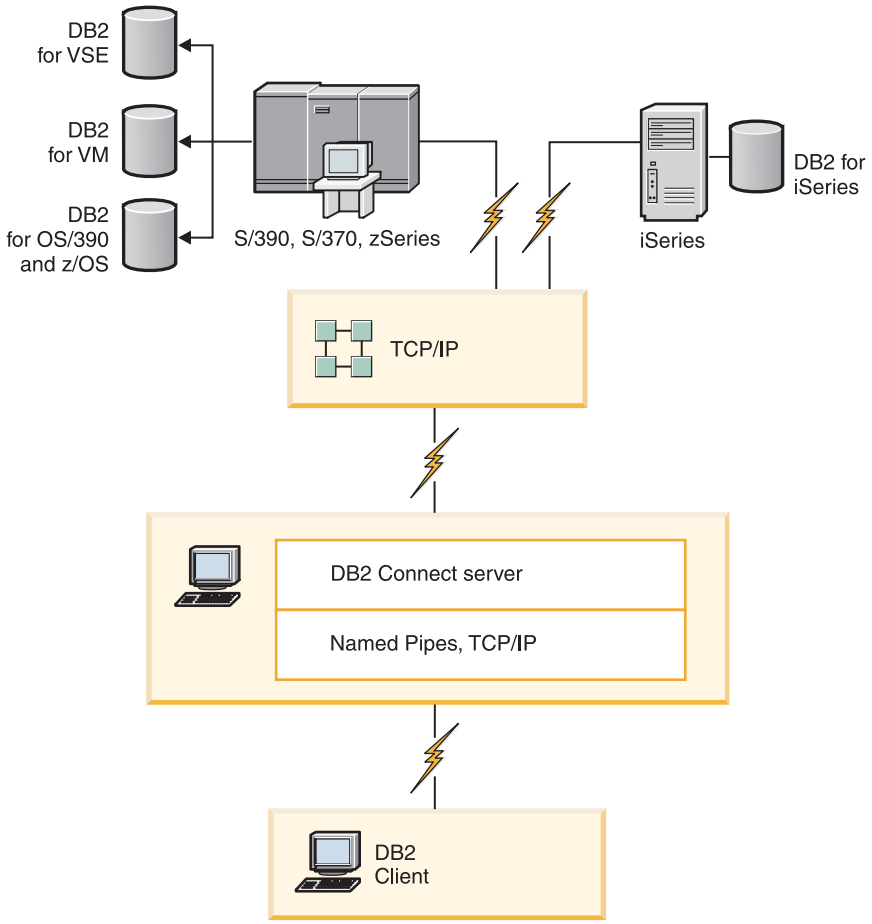

Figure 1. Connecting a client to a host or iSeries data server using DB2 Connect

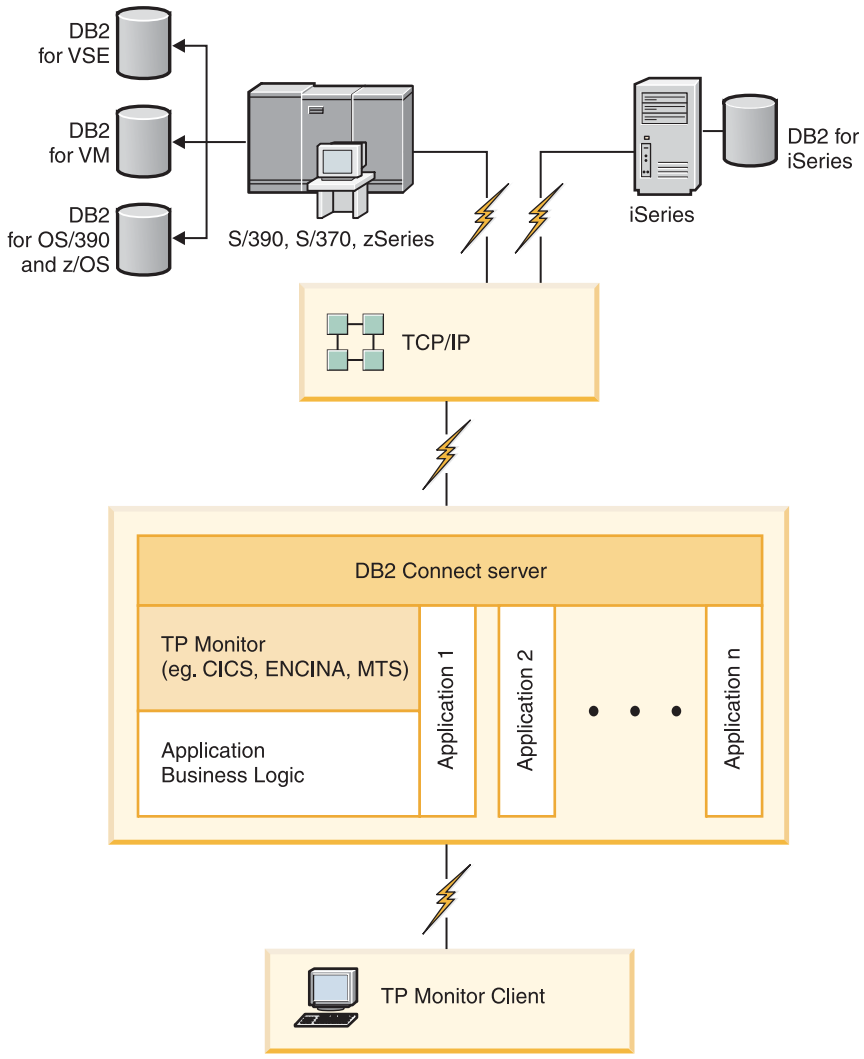

Figure 2. Transaction monitors working with DB2 Connect.

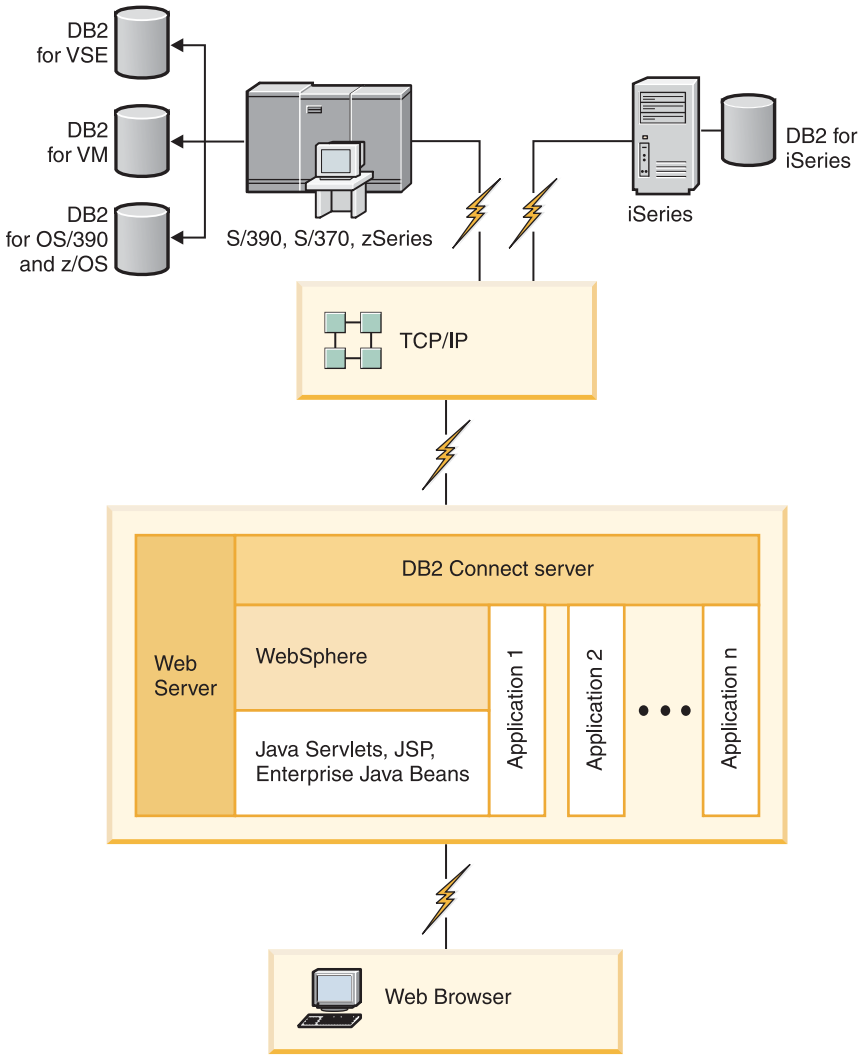

Figure 3. WebSphere and Java server functionality in DB2 Connect

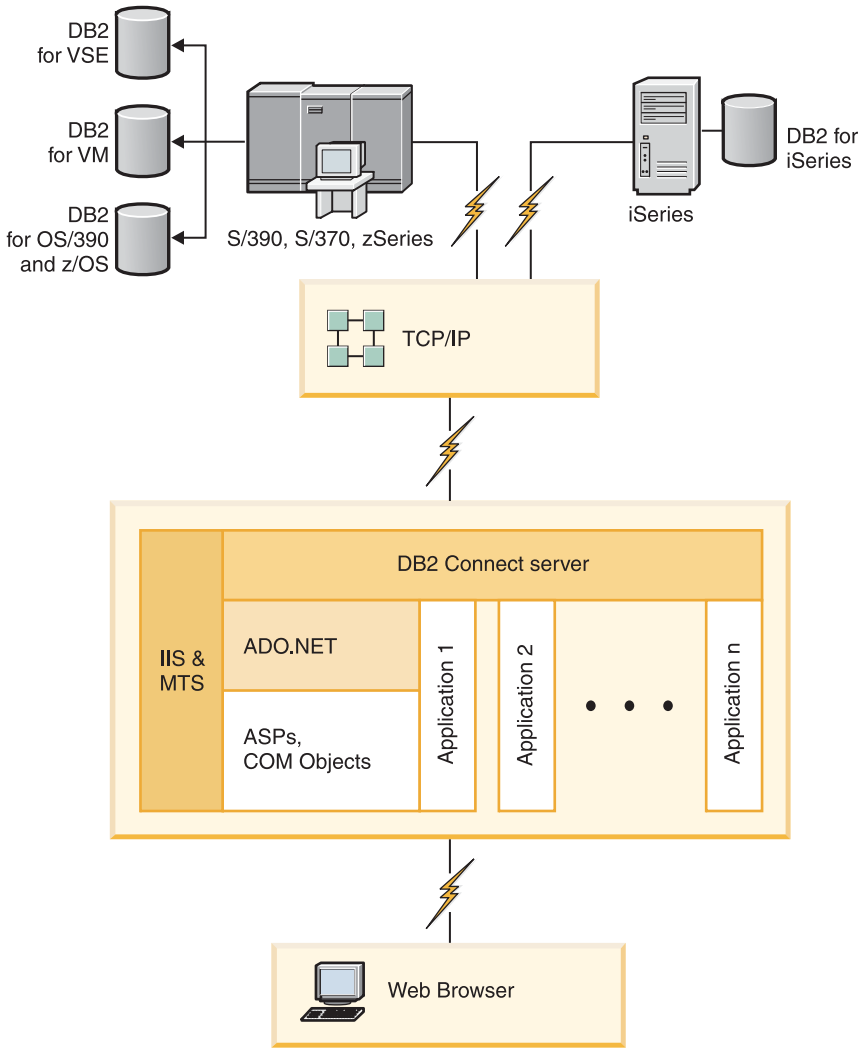

Figure 4. DB2 Connect working with Microsoft Internet Information Server (IIS)

Related concepts:

- "DB2 Connect server products: installation and configuration overview" on page 33

Related reference:

- "DB2 Connect product offerings" on page 3

Access DB2 data from remote clients

DB2 clients provide a run-time environment that enables client applications to access one or more remote databases. With the DB2 client, you can remotely administer DB2 or DB2 Connect servers. All applications must access a database through the DB2 client. A Java applet can access a remote database through a Java-enabled browser.

The DB2 client is supported on Linux, UNIX, and Windows platforms.

Related concepts:

- "DB2 client setup overview" in *Quick Beginnings for DB2 Clients*
- "Types of clients - DB2 Runtime Client and DB2 Client" in *Quick Beginnings for DB2 Clients*

Accessing DB2 host data from the web using Java

DB2 Connect products include the IBM DB2 Driver for JDBC and SQLJ to allow you to create applications that access data in DB2 databases from the Web.

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

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

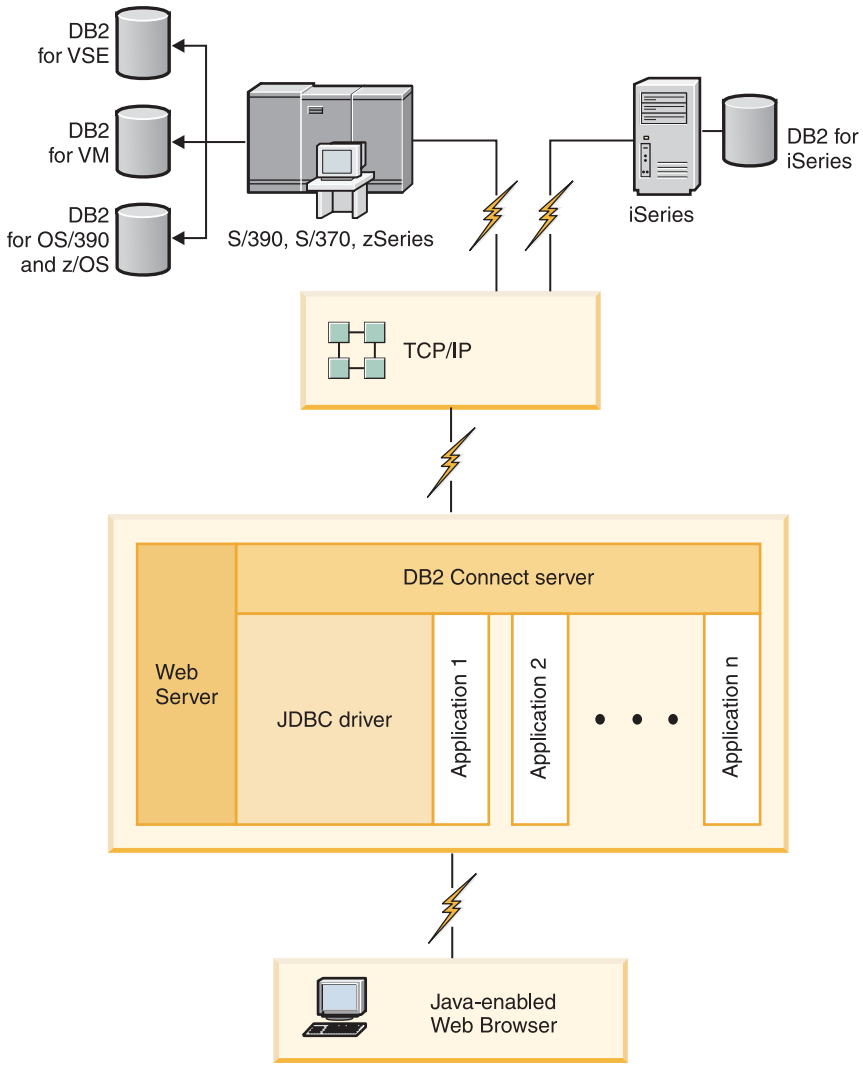

Figure 5. JDBC and DB2 Connect

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

For more information on the JDBC API, see the http://java.sun.com/products/jdbc/ web page.

Related concepts:

- "Managing connections to databases using the Configuration Assistant (Linux and Windows)" on page 11
- "Supported drivers for JDBC and SQLJ" in *Developing Java Applications*

Managing connections to databases using the Configuration Assistant (Linux and Windows)

The Configuration Assistant (CA) helps you manage your database connections to remote servers. The CA is available as part of the DB2 client. The CA is the preferred method to set up any client to server communications.

Note: In previous releases, the DB2 Administration Tools, such as the CA, were supported on all platforms. As of Version 9, the DB2 Administration Tools are supported only on Windows x86, Windows x64 (AMD64/EM64T), Linux on x86, and Linux on AMD64/EM64T. For all platforms, you can use the DB2 command line processor (CLP) to manage connections.

With the CA, you can:

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

Related concepts:

- "Client-to-server communications configuration overview" in *Quick Beginnings for DB2 Clients*

Related tasks:

- "Configuring a database connection manually using the Configuration Assistant" on page 102
- "Configuring database connections using a client profile with the Configuration Assistant" in *Quick Beginnings for DB2 Clients*
- Chapter 21, "Binding database utilities on DB2 Connect," on page 87
- "Configuring a connection to host or iSeries database servers using the CA (Linux and Windows)" on page 79

Understanding the Administration Server

The DB2 Administration Server (DAS) responds to requests from the DB2 Administration Tools and the Configuration Assistant (CA). The DB2 Administration Tools, for example, allow you to start, stop, and set database manager configuration parameters for servers. The Administration Server is used by the CA to help users catalog databases on a client. The DAS is available on all supported Linux, Windows, and UNIX operating systems as well as the zSeries (OS/390 and z/OS only) operating systems.

An Administration Server must reside on each server that you want to administer and detect. The Administration Server is automatically created and started for you. The setup program creates the Administration Server on the instance-owning machine and automatically starts it at boot time. By default the DAS instance is DB2AS, which is the default user ID that is created using the DB2 Setup wizard.

Related concepts:

- "DB2 Administration Server" in *Administration Guide: Implementation*

Related tasks:

- "Creating a DB2 administration server (DAS)" in *Administration Guide: Implementation*

Administering instances and databases with the DB2 administration tools (Linux and Windows)

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

Note: In previous releases, the DB2 Administration Tools, such as the Control Center, were supported on all platforms. As of Version 9, the DB2 Administration Tools are supported only on Windows x86, Windows x64 (AMD64/EM64T), Linux on x86, and Linux on AMD64/EM64T. For all platforms, you can use the DB2 command line processor (CLP) to administer instances and databases.

The Control Center has support for the following products:

- DB2 UDB for OS/390 and z/OS Version 7
- DB2 UDB for z/OS Version 8

The remainder of this topic will refer collectively to these products as DB2 UDB for z/OS, unless the content is version specific.

If you want to access DB2 UDB for z/OS functions from the Control Center:

1. Verify that:
   - You have a DB2 UDB for z/OS license
   - You have a DB2 Connect product installed on the client workstation
   - Distributed Data Facility (DDF) is started at the host
   - The DB2 subsystem is cataloged on the client
   - The DB2 Connect utilities and the DB2 CLI are bound to the host
2. Apply the FMIDs for the DB2 Management Clients Package (a feature of DB2 UDB for z/OS) and DB2 Administration Server (DAS) for OS/390 and z/OS. DAS is an optional feature that is shipped with DB2 for OS/390 and z/OS server. Read the DB2 UDB for z/OS, DB2 Management Clients Package, and DB2 Administration Server for OS/390 and z/OS program directories. The program directory identifies and describes the contents of FMIDs for each tape or cartridge. The program directory also provides the installation requirements and instructions.
3. Apply any additional service to DB2 UDB for z/OS as described in the program directories.

4. The DB2 Control Center provides support to help you manage DB2 databases on multiple platforms. When managing DB2 UDB for z/OS subsystems, you need to install a set of stored procedures, user defined functions, and batch programs for each DB2 subsystem:

   DB2 UDB for z/OS Version 8
   If you have DB2 UDB for z/OS Version 8 installed, you need to install the z/OS enablement feature (JDB881D).

   DB2 UDB for OS/390 and z/OS Version 7
   If you have DB2 UDB for OS/390 and z/OS Version 7 installed, you need to install the 390 enablement feature (JDB771D).

   If you want to fully exploit all the DB2 Control Center functions for DB2 UDB for z/OS, including Cloning and JCL building and creation, you need to install the DB2 Administration Server (DAS) for OS/390 and z/OS Version 8 (HDAS810) which ships as a feature of DB2 UDB for z/OS.

   Notes:

   a. FMID JDB881D or JDB771D needs to be installed on every DB2 subsystem that you want to work with using the Control Center.
   b. FMID HDAS810 needs to be installed only once per image of the operating system or LPAR where you have DB2 subsystems that you want to work with using Control Center.
   c. Instructions for the various installations can be found in the Program Directory within the DB2 Management Clients Package of the appropriate product and version. For example, instructions for installing the DAS (HDAS810) are in the Program Directory for IBM DB2 UDB for z/OS DB2 Management Clients Package Version 8.
   d. The DB2 Administration Server only needs to be installed once per system.
5. Ensure that you enabled the stored procedures address space.
6. Ensure that the DB2 Administration Server is started.

Detailed instructions for enabling the Control Center to work with DB2 UDB for z/OS exists at:

http://www.ibm.com/support/docview.wss?rs=64&context=SSEPEK&q1=jdb881d&uid=swg27006262

Managing communications on the server:

The Control Center allows you to view, update, and reset server protocol settings in the database manager configuration file. These functions are accessed by clicking with the right mouse button on an instance and selecting the **Setup communications** option from the pop-up menu. By default, the setup program automatically detects and configures most communication protocols that it detects on your system.

You can also perform the following operations with the Control Center:

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

Viewing SQL access plans using Visual Explain:

You cannot use Visual Explain to generate access plans on host or iSeries databases.

Visual Explain helps database administrators and application developers to:

- View the access plan chosen by the database manager's optimizer for a given SQL statement.
- Tune SQL statements for better performance.
- Design application programs and databases.
- View all the details of an access plan, including the statistics in the system catalogs.
- Decide whether or not to add an index to a table.
- Identify the source of problems by analyzing the access plan or performance of SQL statements.
- Use the portable snapshot function to view snapshots from any remote DB2 server.
- Display access plans for queries on all supported DB2 configurations.

Related tasks:

- Chapter 21, "Binding database utilities on DB2 Connect," on page 87

DB2 Client support for database application development

There are two DB2 clients: the DB2 Client; and the DB2 Runtime Client. Of the two, only the DB2 Client is suitable for database application development.

The DB2 Client includes the following:

- **Precompilers for C/C++, COBOL, and Fortran**, (providing the language is supported for that platform).
- **Embedded SQL application support**, including programming libraries, include files and code samples.
- **ODBC and DB2 Call Level Interface (DB2 CLI) application support**, including programming libraries, include files, and code samples for developing applications which are easily ported to ODBC and compiled with an ODBC SDK. An ODBC SDK is available from Microsoft for Windows operating systems, and from various other vendors for many of the other supported platforms. On Windows operating systems, the ODBC and CLI driver is installed by default with the DB2 Client, supporting applications developed with the Microsoft ODBC Software Developer's Kit. For all other platforms, the ODBC and CLI driver can optionally be installed with the DB2 Client, supporting applications that can be developed with an ODBC SDK for that platform, if one exists.
- **The IBM DB2 Driver for JDBC and SQLJ**, which includes:
  - JDBC support, for developing Java applications with dynamic SQL
  - SQLJ support, for developing Java applications with static SQL
- **An SDK for Java** is shipped with DB2 clients for all supported operating systems.
- **ActiveX Data Objects (ADO) and Object Linking and Embedding (OLE) automation routines (UDFs and Stored Procedures)** on Windows operating systems, including code samples implemented in Microsoft Visual Basic and Microsoft Visual C++. Also, code samples with Remote Data Objects (RDO) implemented in Microsoft Visual Basic.

- **Object Linking and Embedding Database (OLE DB) table functions** on Windows operating systems.
- **C# and Visual Basic .NET applications and CLR .NET routines** on Windows operating systems.
- **DB2 Developer Workbench** is an Eclipse-based tool that replaces the Development Center from DB2 Universal Database™ (DB2 UDB) for Linux, UNIX, and Windows Version 8. Developer Workbench is a comprehensive development environment for creating, editing, debugging, deploying, and testing DB2 stored procedures and user-defined functions. You can also use Developer Workbench to develop SQLJ applications, and create, edit, and run SQL statements and XML queries.
- **Interactive SQL** through the Command Editor or Command Line Processor (CLP) to prototype SQL statements or to perform ad hoc queries against the database.
- **A set of documented APIs** to enable other application development tools to implement precompiler support for DB2 directly within their products. For example, IBM COBOL on AIX® uses this interface.

Related concepts:

- "Types of clients - DB2 Runtime Client and DB2 Client" in *Quick Beginnings for DB2 Clients*

Related reference:

- "Support for elements of the database application development environment" in *Getting Started with Database Application Development*

Part 2. Migrating DB2 Connect

Use this section to plan every step of your DB2 Connect migration. This section describes the overall migration process for all components in your DB2 Connect environment and includes the details about migration support, pre-migration tasks, migration tasks, and post-migration tasks that you need to perform to migrate your DB2 Connect servers.

- Chapter 3, "Migration to DB2 Connect Version 9," on page 19
- Chapter 4, "Migration essentials for DB2 Connect," on page 21
- Chapter 5, "Pre-migration tasks for DB2 Connect servers," on page 23
- Chapter 6, "Migrating DB2 Connect servers," on page 25
- Chapter 7, "Post-migration tasks for DB2 Connect servers," on page 29

If you are planning a new installation of DB2 Connect Version 9, see "DB2 Connect server products: installation and configuration overview" on page 33.

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Chapter 3. Migration to DB2 Connect Version 9

Upgrading to a new release of DB2 Connect might require migration of your environment components. These components are DB2 Connect servers, DB2 servers, DB2 clients, and database applications. For example, if you have an existing environment using DB2 Connect Version 8 and you want to install DB2 Connect Version 9, then you can migrate your DB2 Connect server and you might need to migrate other components in your environment.

The migration process consists of all the tasks that you need to perform to have your environment running successfully on a new release. The migration of each of the components in your environment to DB2 Connect Version 9 requires that you perform different tasks:

- Chapter 6, "Migrating DB2 Connect servers," on page 25 involves migrating your existing instances, any existing DB2 Connect federated databases, and any existing transaction manager databases so that they can run in DB2 Connect Version 9.
- Migrating DB2 servers involves migrating your existing instances and databases so that they can run in DB2 Version 9. Refer to the Migration overview for DB2 servers topic in the *Migration Guide*.
- Migrating DB2 clients involves migrating your client instances to keep the configuration of your existing DB2 clients. Refer to the Migration overview for DB2 clients topic in the *Migration Guide*.
- Migrating database applications involves testing them in DB2 Connect Version 9 and modifying them only when you need to support changes in DB2 Connect Version 9. Review Changes in existing functionality and Discontinued and deprecated functionality in the What's new for V9.1: DB2 Connect enhancements summary topic to determine the changes that could impact your database applications. If your database applications connect to DB2 servers, review also the Migration overview for database applications and routines topic in the *Migration Guide*.

The best approach to migration is to write a migration plan. A strategy defines how to approach the migration of your environment and gives you the outline for your migration plan. The characteristics of your environment and the information in migration essentials, especially the migration recommendations and restrictions, can help you determine your strategy. A migration plan should include the following migration details for each component:

- Migration prerequisites that indicate all the requirements that you need to meet before migration.
- Pre-migration tasks which describe all the preparation tasks that you need to perform before migration.
- Migration tasks which describe step by step the basic migration process for a component and how to migrate environments with special characteristics.
- Post-migration tasks which describe all the tasks that you need perform after migration to have your DB2 server running at the optimum level.

You will find that pre-migration tasks, migration tasks, and post-migration tasks for DB2 Connect servers reference pre-migration tasks, migration tasks, and post-migration tasks for DB2 servers because they are exactly the same tasks.

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Chapter 4. Migration essentials for DB2 Connect

If you are migrating your DB2 clients to DB2 Connect Version 9, you need to consider the following changes in support and resolve them before you migrate:

Authentication type specified in the database directory entry at the gateway overrides the authentication type cataloged at the client

If you are migrating from a release prior to DB2 Connect Version 8.2.2 (equivalent to Version 8.1 FixPak 9) to Version 9, ensure that the authentication type at the gateway is compatible with the client and the server. If you did not specify an authentication type in the database directory entry at the gateway, the default authentication type is SERVER.

DB2 Connect Server and DB2 Connect Personal Edition no longer supports SNA protocol

You need to recatalog all nodes that use SNA protocol to use TCP/IP protocol instead.

Migration essentials for DB2 servers also apply to DB2 Connect servers

Migration support and restrictions for DB2 servers also apply when you migrate to DB2 Connect server. Review Migration essentials for DB2 servers, especially Connectivity support between DB2 clients and DB2 servers, to determine any changes that impact your migration and how to address any issues.

Migration recommendations for DB2 Connect

In general, the recommendation is to migrate DB2 Connect servers first and then DB2 clients. Version 8 DB2 clients can connect to Version 9 DB2 Connect servers. The only restriction is that DB2 Version 9 features are not available to the Version 8 DB2 clients. However, it is not likely that you need access to these new features because your existing applications do not use them.

If you choose to migrate your DB2 clients first, you need to be aware that there are known limitations about the support for connectivity from a Version 9 DB2 client to DB2 Connect Version 8 servers. Check the Version 9 incompatibilities with previous releases, see if these limitations apply to your application in order to take necessary actions.

Perform the pre- and post-migration tasks to ensure a successful migration.

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Chapter 5. Pre-migration tasks for DB2 Connect servers

Before you migrate your DB2 Connect servers, you need to prepare them for migration to address any issues prior to migration in order to have a successful migration.

Perform the following pre-migration tasks for DB2 servers that also apply to DB2 Connect servers:

1. Review the Chapter 4, "Migration essentials for DB2 Connect," on page 21 to identify the changes or restrictions that can affect your migration and learn how to address any issues prior to migration.
2. Save configuration information to have a record of your current configuration that you can compare with the configuration after the migration. You can also use this information to create new instances or databases using the same configuration that you had before migration. For details, refer to the Saving configuration information topic in the *Migration Guide*.
3. Optional: If you enabled the Syncpoint Manager (SPM) functionality on your DB2 Connect server, ensure that the DRDA sync point managers do not contain any indoubt transactions by using the LIST DRDA INDOUBT TRANSACTIONS command to get a list of indoubt transactions and to interactively resolve any indoubt transactions.
4. Optional: If you have transaction manager databases, perform the following pre-migration tasks to prepare your databases for migration:
   a. Ensure that the database to be migrated does not contain any indoubt transactions by using the LIST INDOUBT TRANSACTIONS command to get a list of indoubt transactions and to interactively resolve any indoubt transactions.
   b. Verify that your databases are ready for DB2 Connect migration to identify and resolve any problems before the actual migration. For details, refer to the Verifying that your databases are ready for migration topic in the *Migration Guide*.
   c. Back up your databases to be able to migrate them to a new migrated system or restore them in the original pre-migration system. For details, refer to the Backing up databases before migration topic in the *Migration Guide*.
   d. Review the Disk space requirements for DB2 server migration topic in the *Migration Guide* to ensure that you have enough free disk space, temporary table space and log space for database migration and increase table space and log file sizes if necessary. For details, refer to the Increasing table space and log file sizes before migration topic in the *Migration Guide*.
   e. Linux only: Change raw devices to block devices. For details, refer to the Changing raw devices to block devices (Linux) topic in the *Migration Guide*.
5. Optional: If you have DB2 Connect federated databases, refer to the Preparing to migrate to federated systems topic in the *IBM WebSphere Information Integration: Migrating to Federation Version 9* for details on pre-migrations tasks for these databases.
6. Windows only: If you obtained customized code page conversion tables from the DB2 support service, you need to backup all of the files in the DB2OLD\conv directory where DB2OLD is the location of your existing DB2

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UDB Version 8 copy. Migrating your DB2 UDB Version 8 copy removes these tables because standard code page tables are contained in a DB2 Version 9 library. You do not need to backup standard code page conversion tables.

7. Optional: Apply the DB2 Connect Version 8.2 latest FixPak. This allows you to take advantage of the fixes for migration commands and eliminate potential issues. Consider taking another backup of your databases after applying the FixPak.
8. Optional: Migrate your DB2 Connect server in a test environment to identify migration issues and to verify that database applications and routines work as expected before migrating your production environment.
9. Capture error and diagnostic information during migration. Additional diagnostic information is useful in problem determination when the normal migration logging information in the `db2diag.log` is not sufficient. For details, refer to the Capturing error and diagnostic information during migration topic in the *Migration Guide*.
10. Take the DB2 Connect server offline for migration. For details, refer to the Taking a DB2 server offline before migration topic in the *Migration Guide*.

Chapter 6. Migrating DB2 Connect servers

DB2 Connect Version 9 servers supports the migration of DB2 Connect instances, any existing transaction manager and DB2 Connect federated databases created on DB2 Connect Version 8 servers.

Since DB2 Connect server products are host database connectivity servers, the only databases that can exist within a DB2 Connect server instance are transaction manager databases and DB2 Connect federated databases. The DB2 Connect transaction manager database stores transaction state information for DB2 coordinated transactions. The sole purpose of DB2 Connect federated databases is to contain information about data sources.

On Linux and UNIX platforms, you should manually migrate your DB2 Connect instances after installing DB2 Connect Version 9. All the remote nodes and databases that you cataloged on the DB2 clients refer to these instances. If you create a new instance, again you will have to catalog nodes, DCS databases, and databases on the DB2 clients that existed in the DB2 Version 8 instance.

On Windows operating systems, you have an option to automatically migrate an existing DB2 Connect Version 8 copy during installation. Your DB2 Connect instances are automatically migrated. Alternatively, you can install a new copy of DB2 Connect Version 9 and then manually migrate your DB2 Connect instances.

This procedure describes how to migrate by installing a new copy of DB2 Connect Version 9 and then migrate instances and any existing databases. To automatically migrate an existing DB2 Connect Version 8 copy on Windows, follow the same steps specified in the Migrating a DB2 server (Windows) topic in the *Migration Guide*.

Prerequisites:

Before migrating to the latest the version of DB2 Connect:

- Ensure that you have the proper operating system access:
  - Root access on UNIX
  - Local Administrator on Windows
- Ensure that you have SYSADM authority.
- Review the system requirements Web page at http://www.ibm.com/software/data/db2/db2connect/sysreqs.html.
- Review the Migration recommendations for DB2 servers topic..
- Review the Disk space requirements for DB2 server migration topic..
- Perform the Chapter 5, “Pre-migration tasks for DB2 Connect servers,” on page 23, especially backup your databases.

Restrictions:

Migration is only supported from DB2 Connect Version 8. The following connectivity is supported, however, only DB2 Version 8 functionality is available:

- 32-bit or 64-bit DB2 Version 8 clients can connect to 32-bit or 64-bit DB2 Connect Version 9 servers.

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- 32-bit or 64-bit DB2 Version 9 clients can connect to 32-bit or 64-bit DB2 Connect Version 8 servers.

For DB2 Connect Version 6 or DB2 Connect Version 7, you must migrate to DB2 Connect Version 8 first. Refer to the following topic for details: http://publib.boulder.ibm.com/infocenter/db2luw/v8/topic/com.ibm.db2.udb.doc/conn/t0008566.htm

Procedure:

To migrate your DB2 Connect server:

1. Export your connectivity configuration information for your DB2 Connect Version 8 server to an export profile. Use the **db2cfexp** tool to create a configuration profile:

   ```
   $ db2cfexp cfg_profile backup
   ```

   This profile contains all of the instance configuration information, including the database manager configuration and registry profile because the option *backup* is specified. You can use this profile to recreate your connectivity configuration if necessary.
2. Install DB2 Connect Version 9 by running the DB2 Setup wizard and select the option Install New on the Install a Product panel.
3. Migrate instances using the **db2imigr** command.
4. Migrate any existing transaction manager and DB2 Connect federated databases under your migrated instances using the **MIGRATE DATABASE** command. You can also migrate your databases by restoring a DB2 Connect Version 8 backup.

After migrating the DB2 Connect server, perform the recommended Chapter 7, "Post-migration tasks for DB2 Connect servers," on page 29 such as resetting the diagnostic error level, adjusting log space size, and rebinding packages, and verifying that your migration was successful.

Related concepts:

- "Migration overview for DB2 clients" in *Migration Guide*
- "Migration recommendations for DB2 servers" in *Migration Guide*
- "Migration restrictions for DB2 servers" in *Migration Guide*

Related tasks:

- "Creating links for DB2 files" in *Installation and Configuration Supplement*
- "Backing up databases before migration" in *Migration Guide*
- "Migrating a DB2 server (Linux and UNIX)" in *Migration Guide*
- "Migrating a DB2 server (Windows)" in *Migration Guide*
- "Migrating databases" in *Migration Guide*
- "Migrating instances" in *Migration Guide*
- "Verifying that your databases are ready for migration" in *Migration Guide*

Related reference:

- "db2imigr - Migrate instance command" in *Command Reference*
- "MIGRATE DATABASE command" in *Command Reference*
- "Disk space requirements for DB2 server migration" in *Migration Guide*

- "Pre-migration tasks for DB2 servers" in *Migration Guide*

Chapter 7. Post-migration tasks for DB2 Connect servers

After migrating your DB2 Connect servers, you should perform several post-migration tasks to ensure that your DB2 Connect servers perform as expected and run at their optimum level.

Perform the following post-migration tasks for DB2 servers that also apply to DB2 Connect servers:

1. If you set the *diaglevel* database manager configuration parameter to 4 as recommended in the pre-migration tasks for DB2 Connect servers, reset this parameter to the value set before the migration.
2. Review Changes in DB2 registry variables, configuration parameters, and database physical design characteristics topic in the *Migration Guide*. There are new registry variables, new configuration parameters, and new default values for registry variables and configuration parameters introduced in DB2 Version 9 that can impact the behavior of your application.
3. Set your DB2 global profile registry variables. The variables that you set at the global profile level, using the **db2set -g** command, are not migrated. The global profile variables apply to all instances pertaining to a specific DB2 Connect Version 9 copy. Therefore after migration, use the configuration information that you saved in the pre-migration tasks to restore the values of your global profile registry variables for every DB2 Connect Version 9 copy. For details, refer to the Declaring, showing, changing, resetting, and deleting registry and environment variables topic in the *Administration Guide: Implementation*.
4. If you obtained customized code page conversion tables from the DB2 support service, copy all of the files for those tables from the `DB2OLD/conv` to `DB2DIR/conv`, where DB2OLD is the location of your DB2 Connect Version 8 copy and DB2DIR is the location of your DB2 Connect Version 9 copy. You do not need to copy standard code page conversion tables.

   If you migrated your existing DB2 Connect Version 8 copy on Windows operating systems, you can restore the customized code page conversion tables that you backed up as part of the pre-migration tasks for DB2 servers to the `DB2PATH\conv` directory, where DB2PATH is the location of your DB2 Connect Version 9 copy.
5. Optional: If you migrated any databases in your DB2 Connect server and changed the log space setting as recommended in the pre-migration tasks for DB2 Connect servers, adjust the log space size. Ensure that the amount of log space that you allocate is adequate for your DB2 Connect server. For details, refer to the Adjusting the log space size in migrated databases topic in the *Migration Guide*.

   Also, back up your databases after the migration is complete.
6. Optional: If you have DB2 Connect federated databases, review the Configuring federated systems after migration topic in the *IBM WebSphere Information Integration: Migrating to Federation Version 9* to determine if you need to perform any tasks after you migrate your federated databases.
7. Verify that your DB2 Connect server migration was successful. Test connections to all your cataloged databases. The following example shows how to test a connection from the Command Line Processor (CLP):

   ```
   db2 CONNECT TO DATABASE sample user mickey using mouse
   ```

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You need to specify a user and password when connecting to a remote database. Ensure all connections are successful.

Also, test your applications and tools to ensure that the DB2 Connect server is working as expected.

At this point, you should resume all of your maintenance activities. You should also remove any DB2 Connect Version 8 copies that you no longer need.

Part 3. Installing DB2 Connect

Use this section to plan every step of your installation. Prerequisite software and patch levels, operating system, and communications protocol requirements are all provided in simple tables. You can verify that your system meets the requirements for your planned DB2 Connect implementation, then move on to the installation procedure.

If you are planning to migrate from a previous version of DB2 Connect, see Part 2, ″Migrating DB2 Connect″.

To manually install your DB2 Connect product, refer to the Installing a DB2 product manually topic in the *Installation and Configuration Supplement*.

Who Should Read This Section

- Technical personnel installing and configuring a DB2 Connect system

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Chapter 8. Installation overview

DB2 Connect server products: installation and configuration overview

Setting up a DB2 Connect server product, such as DB2 Connect Enterprise Edition, is a multi-step process. DB2 Connect server products are often installed with hundreds or thousands of clients connecting to host or iSeries database servers. For this reason, it is recommended to use a test installation, outlined below. After the test configuration has proven stable, you can use it as the template for an unattended installation of DB2 Connect and your clients across your organization.

The typical steps to installing and configuring a DB2 Connect server product are as follows:

1. Determine how you want to use DB2 Connect in your network.
2. Verify that you have the correct hardware and software prerequisites on both your workstation and the host database server.
3. Verify that your host or iSeries database server is configured to accept connections from DB2 Connect servers.
4. Install your DB2 Connect software. You will use this workstation to configure and verify your host and iSeries connections.
5. After installation, establish the connection between DB2 Connect and your host or iSeries database system. DB2 Connect can locate and configure all TCP/IP connections for you. You can use the Configuration Assistant (CA) or the DB2 command line processor (CLP) to configure host or iSeries databases.
6. Bind the programs and utilities provided with DB2 Connect to your host or iSeries database.
7. Test the connection.
8. (Optional) Enable the Multisite Update feature.
9. If you are planning to use WebSphere®, transaction monitors, or your own application server software, install these products or applications. For information on installing WebSphere consult the documentation provided with these products as part of the DB2 Connect server product package. For other products consult the installation documentation provided with the product.
10. Install and configure the DB2 client. Use this workstation to test connectivity from the DB2 client to host and iSeries database servers, as well as to test applications that use this connectivity.
11. Use the Configuration Assistant to connect the client to the host or iSeries system through DB2 Connect.
12. Install DB2 clients on all end-user workstations that will use applications that connect to host and iSeries database servers.
13. You are now ready to use DB2 Connect with all your applications. Workstations that will be used for application development should have the DB2 client installed.
14. If you want to use your workstation to administer DB2 UDB for OS/390 and z/OS or DB2 Database for Linux, UNIX, and Windows, install the DB2 client.

Related tasks:

• Chapter 21, “Binding database utilities on DB2 Connect,” on page 87

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- "Configuring a connection to host and iSeries database servers using the CLP" on page 81
- "Configuring a connection to host or iSeries database servers using the CA (Linux and Windows)" on page 79
- "Installing DB2 clients (UNIX and Linux)" in *Quick Beginnings for DB2 Clients*
- "Installing DB2 clients (Windows)" in *Quick Beginnings for DB2 Clients*
- "Preparing DB2 Universal Database for OS/390 and z/OS for connections from DB2 Connect" on page 69
- "Testing a database connection using the Configuration Assistant" on page 103
- "Enabling Multisite Updates using the Control Center" in *DB2 Connect User's Guide*

Chapter 9. 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.
- On Linux, SWAP space at least twice as large as RAM is recommended.

Related concepts:

- "Self tuning memory" in *Performance Guide*

Installation requirements (Windows)

Installation requirements for DB2 Connect server products (Windows)

For the most up-to-date prerequisite information, see http://www.ibm.com/software/data/db2/db2connect/sysreqs.html.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, the following requirements must be met:

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Hardware requirements

All Intel® and AMD processors capable of running the supported Windows operating systems (32-bit and 64-bit)

Operating system requirements

One of:

- Windows XP Professional Edition (32-bit and 64-bit) with Service Pack 2 or later
- Windows 2003 with Service Pack 1 or later:
  - Standard Edition (32-bit and 64-bit)
  - Advanced Edition (32-bit and 64-bit)
  - Datacenter Edition (32-bit and 64-bit)

Software requirements

- MDAC 2.8 is required. The DB2 Setup wizard will install MDAC 2.8 if it is not already installed.
- A browser is required to view online help.

Communication requirements

- TCP/IP is supported and supplied by the operating system.

Windows (64–bit) considerations

- 32-bit UDFs and stored procedures are supported.
- SQL requests sent by remote 32-bit clients from earlier versions are supported.

Related concepts:

- "Non-Administrator installation of DB2 Connect (Windows)" in *Quick Beginnings for DB2 Connect Personal Edition*

Related tasks:

- "Installing a DB2 Connect server product (Windows)" on page 51

Related reference:

- "IBM Software Development Kit for Java levels for DB2 products" on page 45

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

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

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

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

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

Extended security on Windows:

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

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

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

DB2 server user accounts:

Installation user account

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

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

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

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

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

User rights granted by the DB2 installer:

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

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

DB2 Administration Server (DAS) user account

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

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

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

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

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

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

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

The Lock pages in memory privilege is required for AWE (Advanced Windowing Extensions) support. The ″Debug programs″ privilege is only needed when DB2 group lookup is explicitly specified to use the access token.

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

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

DB2 instance user account

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

A local or domain user account is required for the DB2 instance. Every DB2 instance has one user that is assigned when the instance is created. DB2 logs on with this user name when the instance is started.

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

You can create the DB2 instance user account before installing DB2 or you can have theDB2 Setup wizard create it for you. If you want to have the DB2 Setup wizard create a new domain user account, the user account you use to perform the installation must have authority to create domain user accounts. This account will be granted the following user rights:

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

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

The Lock pages in memory privilege is required for AWE (Advanced Windowing Extensions) support. The ″Debug programs″ privilege is only needed when DB2 group lookup is explicitly specified to use the access token.

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

Related concepts:

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

Related tasks:

- "An overview of installing your DB2 product (Windows)" in *Quick Beginnings for DB2 Servers*
- "Setting up Windows elevated privileges prior to installing a DB2 product (Windows)" in *Quick Beginnings for DB2 Servers*

Installation requirements (UNIX)

Installation requirements for DB2 Connect server products (AIX)

For the most up-to-date prerequisite information, see http://www.ibm.com/software/data/db2/db2connect/sysreqs.html.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, the following requirements must be met:

Hardware requirements

- IBM RISC/6000
- eServer™ pSeries®

Operating system requirements

DB2 Connect server products are available on:

Version 5.2.0
64-bit kernel is required.

Version 5.3.0
64-bit kernel is required.

Software requirements

- Use the **bosboot** command to switch to the 64-bit kernel.
- A browser is required to view online help.

Communication requirements
You can use TCP/IP

- For TCP/IP connectivity, no additional software is required.
- For LDAP (Lightweight Directory Access Protocol) support, you require an IBM SecureWay® Directory Client V3.2.1 or later.

Related tasks:

- "Installing a DB2 Connect server product (AIX)" on page 52

Related reference:

- "IBM Software Development Kit for Java levels for DB2 products" on page 45

Installation requirements for DB2 Connect server products (HP-UX)

For the most up-to-date prerequisite information, see http://www.ibm.com/software/data/db2/db2connect/sysreqs.html.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on HP-UX, the following operating system, software, and communication requirements must be met:

Hardware requirements

- HP 9000 Series 700 or 800 system
- HP Integrity Series server

Operating system requirements
DB2 Connect server products can run on HP-UX 11i v2 (11.23.0505) for Itanium-based systems with:

- May 2005 Base Quality (QPKBASE) bundle
- May 2005 Applications Quality (QPAPPS) bundle

Software requirements

A browser is required to view online help.

Communication requirements
You can use TCP/IP

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

Related tasks:

- "Installing a DB2 Connect server product (HP-UX)" on page 54

Related reference:

- "IBM Software Development Kit for Java levels for DB2 products" on page 45

Installation requirements for DB2 Connect server products (Linux)

For the most up-to-date prerequisite information, see http://www.ibm.com/software/data/db2/db2connect/sysreqs.html.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, the following hardware, distribution, software, and communication requirements must be met:

Hardware requirements

Your processor can be:

- x86 (Intel Pentium®, Intel Xeon®, and AMD Athlon)
- x86–64 (Intel EM64T and AMD64)
- POWER™ (any iSeries or pSeries that support Linux)
- eServer zSeries

Distribution requirements

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

You might be required to update your kernel configuration parameters. 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.

Software requirements

- 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 Connect or if you want to use any DB2 graphical tools.
- A browser is required to view online help.

Communication requirements

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

Related tasks:

- "Installing a DB2 Connect server product (Linux)" on page 55

Related reference:

- "IBM Software Development Kit for Java levels for DB2 products" on page 45

Installation requirements for DB2 Connect server products (Solaris)

For the most up-to-date prerequisite information, see http://www.ibm.com/software/data/db2/db2connect/sysreqs.html.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, the following operating system, software, and communication requirements must be met:

Hardware requirements

Solaris UltraSPARC-based computer

Operating system requirements

DB2 Connect server products are supported on the following Solaris versions:

- Solaris 9 (64-bit)
- Solaris 10 (64-bit)

"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 J2SE Solaris Operating Environment Patch Clusters are also required.

For DB2 on 64-bit Fujitsu PRIMEPOWER systems, you also 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 Environment can be downloaded from FTSI at: http://download.ftsi.fujitsu.com/.

The following software is required to install DB2 on Solaris Operating Environments:

- SUNWlibC

Software requirements

A browser is required to view online help.

Communication requirements

You can use TCP/IP

- For TCP/IP connectivity, no additional software is required.
- DB2 Connect is supported on Sun Cluster 2.2 if:
  - The protocol to the host is TCP/IP
  - Two-phase commit is not used. This restriction is relaxed if the user configures the SPM log to be on a shared disk (this can be done through the *spm_log_path* database manager configuration parameter), and the failover system has an identical TCP/IP configuration (the same host name, IP address, and so on).

Related tasks:

- "Installing a DB2 Connect server product (Solaris)" on page 57

Related reference:

- "IBM Software Development Kit for Java levels for DB2 products" on page 45

Chapter 10. Preparing Windows for LDAP

Extending the directory schema (Windows)

If you plan to use the Lightweight Directory Access Protocol (LDAP) directory server feature with Windows 2000 or Windows Server 2003, you should extend the Active Directory schema to contain DB2 object classes and attribute definitions. You should perform this task before you install any DB2 products.

Extending the directory schema ensures that:

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

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

Prerequisites:

Your Windows user account must have Schema Administration authority.

Procedure:

To extend the directory schema:

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

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

   where `x:` represents the CD drive letter.

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

Related reference:

- "Installation requirements for DB2 clients and servers (Windows)" in *Quick Beginnings for DB2 Servers*
- "CATALOG LDAP DATABASE command" in *Command Reference*
- "REGISTER command" in *Command Reference*

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Chapter 11. Preinstallation tasks

IBM Software Development Kit for Java levels for DB2 products

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

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

The SDK for Java is not installed with the DB2 Runtime client.

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

Operating System Platform	SDK for Java level
Windows x86	SDK 5 Service Release 1
Windows x64	SDK 5 Service Release 1
AIX 5	SDK 5 Service Release 1
Solaris Operating Environment	SDK 1.4.2_07
HP-UX for Itanium(R)-based systems	HP-UX SDK 1.4.2 SR3
Linux on x86	SDK 5 Service Release 1
Linux on AMD64/EM64T	SDK 5 Service Release 1
Linux on zSeries	SDK 5 Service Release 1
Linux on POWER	SDK 5 Service Release 1

Notes:

1. With the exception of HP-UX, Linux on IPF, Solaris Operating Environment, and Windows IA64, although the table above lists the installed SDK for Java levels, SDK 1.4.2 to SDK 5 is also supported. The SDK for Java levels can be downloaded from the developerWorks® web page at: http://www.ibm.com/developerworks/java/jdk/index.html

   Note: For Windows operating system platforms, use the IBM Development Package for Eclipse downloads.
2. DB2 GUI tools only run on Linux on x86, Linux on AMD64/EM64T, Windows x86, and Windows x64.
3. On Windows x86 and Linux on x86:
   - the 32-bit SDK is installed
   - 32-bit applications and Java external routines are supported
4. On Linux on IPF:
   - only 64-bit applications and Java external routines are supported
5. On all supported platforms (except Windows x86, Linux on x86, and Linux on IPF):

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- 32-bit applications are supported
- 32-bit Java external routines are not supported
- 64-bit applications and Java external routines are supported

Related tasks:

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

Kernel parameters (UNIX)

Modifying kernel parameters (HP-UX)

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

Prerequisites:

You must have `root` authority to modify kernel parameters.

Procedure:

To modify kernel parameters:

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

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

Related reference:

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

Recommended kernel configuration parameters (HP-UX)

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

Related tasks:

- "Modifying kernel parameters (HP-UX)" on page 46

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)" 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*

Chapter 12. Installation tasks

Installing DB2 Connect (Windows)

Installing a DB2 Connect server product (Windows)

This task describes how to install a DB2 Connect server product, such as DB2 Connect Enterprise Edition on Windows operating systems.

Prerequisites:

Before you launch the DB2 Setup wizard:

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

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

Procedure:

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on Windows:

1. Log on to the system as a user with administrator authority.
2. Close all programs so the installation program can update files as required.
3. Insert the CD into the drive. The auto-run feature automatically starts the DB2 Setup wizard. The DB2 Setup wizard will determine the system language and launch the setup program for that language. If you want to run the setup program in a different language, or the setup program failed to auto-start, you can run the DB2 Setup wizard manually.
4. The DB2 Launchpad opens. From this window, you can view the installation prerequisites and the release notes, or you can proceed directly to the installation.
5. Once you have initiated the installation, proceed by following the setup program's prompts. Online help is available to guide you through the remaining steps. Click **Help** to invoke the online help. You can click **Cancel** at any time to exit the installation.

A log file stores general information and error messages resulting from the install and uninstall activities. The file name of the log follows the format `DB2-<Product`

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Abrreviation>-<*Date Time*>.log, such as DB2-CEE-10-06-2006_17_23_42.log. By default, the log file is located in the My Documents\DB2LOG directory.

Manually launching the DB2 Setup wizard:

To invoke the DB2 Setup wizard manually:

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

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

   where:

   - *x:* represents your CD drive
   - *language* represents the territory code for your language (for example, EN for English).
3. Click **OK**.

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database and DB2 related products. See "Installing the DB2 Information Center using the DB2 Setup wizard (Windows)".

Related concepts:

- "DB2 installation methods" in *Quick Beginnings for DB2 Servers*
- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*

Related tasks:

- "Extending the directory schema (Windows)" on page 43
- "Installing the DB2 Information Center using the DB2 Setup wizard (Windows)" in *Quick Beginnings for DB2 Servers*
- "Applying fix packs" on page 63

Related reference:

- "Installation requirements for DB2 Connect server products (Windows)" on page 35

Installing DB2 Connect (UNIX)

Installing a DB2 Connect server product (AIX)

It is recommended that you use the DB2 Setup wizard to install a DB2 product on AIX. The DB2 Installer program is a Java-based installation tool that automates the installation and configuration of any DB2 product. If you prefer not to use this utility, you can install a DB2 product manually using the db2_install command. You *cannot* manually install a DB2 product using the operating system's native installation utility SMIT. Any existing scripts containing this native installation utility that you use to interface and query with DB2 installations will need to change.

Prerequisites:

Before you begin your installation:

- Ensure that your system meets:
  - Disk and memory requirements
  - Hardware, distribution and software requirements
- Log on to the system as a user with root authority.
- The DB2 product CD must be mounted on your system, see Mounting the CD on AIX. You can also copy the CD contents to a filesystem, see Multiple CD installation (Linux and UNIX).
- Ensure that asynchronous I/O has been enabled; it must be enabled before your DB2 Connect server product can be successfully installed.
- To locate DB2 products already installed on your system, see Listing DB2 products installed on your system (Linux and UNIX) .

Procedure:

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on AIX:

1. Change to the directory where the CD is mounted:

   ```
   cd /cdrom
   ```

   where */cdrom* represents mount point of the CD.
2. Enter the **./db2setup** command to start the DB2 Setup wizard. After a few moments, the IBM DB2 Setup Launchpad opens.

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

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

   Once completed, the DB2 Connect server product is installed using the `/opt/IBM/db2/V9.1` default installation path.

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database and DB2 related products. See Installing the DB2 Information Center using the DB2 Setup wizard (UNIX).

Related concepts:

- "DB2 installation methods" in *Quick Beginnings for DB2 Servers*
- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*
- "Multiple CD installation (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*

Related tasks:

- "Mounting the CD-ROM (AIX)" on page 93
- "Installing the DB2 Information Center using the DB2 Setup wizard (Linux)" in *Quick Beginnings for DB2 Servers*
- "Applying fix packs" on page 63
- "Listing DB2 products installed on your system (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*

- "Installing a DB2 product using the db2_install or doce_install command (Linux and UNIX)" in *Installation and Configuration Supplement*

Related reference:

- "Installation requirements for DB2 Connect server products (AIX)" on page 39

Installing a DB2 Connect server product (HP-UX)

It is recommended that you use the DB2 Setup wizard to install a DB2 product on HP-UX. The DB2 Installer program is a Java-based installation tool that automates the installation and configuration of any DB2 product. If you prefer not to use this utility, you can install a DB2 product manually using the db2_install command. You *cannot* manually install a DB2 product using the operating system's native installation utility swinstall. Any existing scripts containing this native installation utility that you use to interface and query with DB2 installations will need to change.

Prerequisites:

Before begin your installation:

- Ensure that your system meets:
  - Disk and memory requirements
  - Hardware, distribution and software requirements
- Log on to the system as a user with root authority.
- The DB2 product CD must be mounted on your system, see Mounting the CD on HP-UX. You can also copy the CD contents to a filesystem, see Multiple CD installation (Linux and UNIX).
- To locate DB2 products already installed on your system, see Listing DB2 products installed on your system (Linux and UNIX) .

Procedure:

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on HP-UX:

1. Change to the directory where the CD is mounted by entering the following command:

   ```
   cd /cdrom
   ```

   where */cdrom* represents the mount point of the CD.
2. Enter the **./db2setup** command to start the DB2 Setup wizard. After a few moments, the IBM DB2 Setup Launchpad opens.

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

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

   When you have completed your installation, your DB2 Connect server product will be installed. `The default installation path is /opt/IBM/db2/V9.1`

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database and DB2 related products. See Installing the DB2 Information Center using the DB2 Setup wizard (UNIX).

Related concepts:

- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*
- "Multiple CD installation (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "DB2 installation methods" in *Quick Beginnings for DB2 Servers*

Related tasks:

- "Mounting the CD-ROM (HP-UX)" on page 94
- "Installing the DB2 Information Center using the DB2 Setup wizard (Linux)" in *Quick Beginnings for DB2 Servers*
- "Listing DB2 products installed on your system (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "Applying fix packs" on page 63
- "Installing a DB2 product using the db2_install or doce_install command (Linux and UNIX)" in *Installation and Configuration Supplement*

Related reference:

- "Installation requirements for DB2 Connect server products (HP-UX)" on page 40

Installing a DB2 Connect server product (Linux)

It is recommended that you use the DB2 Setup wizard to install a DB2 product on Linux. The DB2 Setup wizard is a Java-based installation tool that automates the installation and configuration of any DB2 products. If you prefer not to use this utility, you can install a DB2 product manually using the db2_install command. You *cannot* manually install a DB2 product using the operating system's native installation utility rpm. Any existing scripts containing this native installation utility that you use to interface and query with DB2 installations will need to change.

Prerequisites:

Before you begin your installation:

- Ensure that your system meets:
  - Disk and memory requirements
  - Hardware, distribution and software requirements
- Log on to the system as a user with root authority.
- The DB2 product CD must be mounted on your system, see Mounting the CD on Linux. You can also copy the CD contents to a filesystem, see Multiple CD installation (Linux and UNIX).
- To locate DB2 products already installed on your system, see Listing DB2 products installed on your system (Linux and UNIX).

Procedure:

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on Linux:

1. Change to the directory where the CD is mounted by entering the following command:

   ```
   cd /cdrom
   ```

   where */cdrom* represents the mount point of the CD.
2. Enter the **./db2setup** command to start the DB2 Setup wizard. After a few moments, the IBM DB2 Setup Launchpad opens.

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

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

   When you have completed your installation, your DB2 Connect server product will be installed. `The default installation path is /opt/ibm/db2/V9.1`

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database and DB2 related products. See "Installing the DB2 Information Center using the DB2 Setup wizard (Linux)".

Related concepts:

- "DB2 installation methods" in *Quick Beginnings for DB2 Servers*
- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*
- "Multiple CD installation (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*

Related tasks:

- "Mounting the CD-ROM (Linux)" on page 94
- "Installing the DB2 Information Center using the DB2 Setup wizard (Linux)" in *Quick Beginnings for DB2 Servers*
- "Listing DB2 products installed on your system (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "Installing a DB2 product using the db2_install or doce_install command (Linux and UNIX)" in *Installation and Configuration Supplement*

Related reference:

- "Installation requirements for DB2 Connect server products (Linux)" on page 41
- "Availability of Asian fonts (Linux)" in *Administration Guide: Planning*

Preparing to install DB2 for Linux on zSeries

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

Prerequisites:

You have already obtained your DB2 product installation image.

Using FTP to access the installation image:

From the IBM zSeries computer running Linux:

1. Enter the following command:

   ```
   ftp yourserver.com
   ```

   where *yourserver.com* represents the FTP server where the DB2 product installation image resides.
2. Enter your user ID and password.
3. Enter the following commands:

   ```
   bin
   get product file
   ```

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

Using the DB2 product CD over NFS to access the installation image:

To use the product CD on a Linux operating system:

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

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

   where *nfsservername* represents the hostname of the NFS server, *cdrom* represents the name of the directory being exported on the NFS server, and *local_directory_name* represents the name of the local directory.
4. From the IBM zSeries computer running Linux, change to the directory where the CD is mounted. You can do this by entering the **cd** */local_directory_name* command, where *local_directory_name* represents the mount point of your product CD.

Related tasks:

- "Installing a DB2 Connect server product (Linux)" on page 55
- "Mounting the CD-ROM (Linux)" on page 94

Installing a DB2 Connect server product (Solaris)

It is recommended that you use the DB2 Setup wizard to install a DB2 product on the Solaris operating system. The DB2 Installer program is a Java-based installation tool that automates the installation and configuration of any DB2 products. If you prefer not to use this utility, you can install a DB2 product manually using the db2_install command. You *cannot* manually install a DB2 product using the operating system's native installation utility pkgadd. Any existing scripts containing this native installation utility that you use to interface and query with DB2 installations will need to change.

Prerequisites:

Before you begin your installation:

- Ensure that your system meets:
  - Disk and memory requirements
  - Installing a DB2 product manually
- Log on to the system as a user with root authority.
- The DB2 product CD must be mounted on your system, see Mounting the CD-ROM (Solaris Operating Environment). You can also copy the CD contents to a filesystem, see Multiple CD installation (Linux and UNIX).
- To locate DB2 products already installed on your system, see Listing DB2 products installed on your system (Linux and UNIX) .

Procedure:

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on the Solaris operating system:

1. Change to the directory where the CD is mounted by entering the following command:

   ```
   cd /cdrom
   ```

   where */cdrom* represents mount point of the CD.
2. Enter the **./db2setup** command to start the DB2 Setup wizard.

   After a moment, the IBM DB2 Setup Launchpad opens.

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

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

   When you have completed your installation, your DB2 Connect server product will be installed. `The default installation path is /opt/IBM/db2/V9.1`

If you want your DB2 product to have access to DB2 documentation either on your local computer or on another computer on your network, then you must install the DB2 Information Center. The DB2 Information Center contains documentation for the DB2 database and DB2 related products. See Installing the DB2 Information Center using the DB2 Setup wizard (UNIX).

Related concepts:

- "DB2 installation methods" in *Quick Beginnings for DB2 Servers*
- "DB2 Information Center installation options" in *Quick Beginnings for DB2 Servers*
- "Multiple CD installation (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*

Related tasks:

- "Installing a DB2 product manually" in *Installation and Configuration Supplement*
- "Mounting the CD-ROM (Solaris Operating Environment)" on page 95
- "Listing DB2 products installed on your system (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "Installing the DB2 Information Center using the DB2 Setup wizard (Linux)" in *Quick Beginnings for DB2 Servers*
- "Applying fix packs" on page 63

- "Installing a DB2 product using the db2_install or doce_install command (Linux and UNIX)" in *Installation and Configuration Supplement*

Chapter 13. ID management

Adding your user ID to the DB2ADMNS and DB2USERS user groups (Windows)

After successfully completing a DB2 installation, you now have to add users to the DB2ADMNS or the DB2USERS groups to give them access to your DB2 product. The DB2 installer creates two new groups. You can either use a new name or accept the default names. The default group names are DB2ADMNS and DB2USERS.

Prerequisites:

- You must have installed a DB2 product.
- You must have selected the Enable operating system security check box on the Enable operating system security for DB2 object panel during the installation of your DB2 product.

Procedure:

To add users to the appropriate group:

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

If you did the install and chose not to enable the new security feature you can still do so post-install by running the **db2extsec.exe** command.

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

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

Related concepts:

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

Related reference:

- "Required user accounts for installation of DB2 server products (Windows)" on page 36

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- "db2extsec - Set permissions for DB2 objects command" in *Command Reference*

Chapter 14. Postinstallation tasks

Applying fix packs

A DB2 fix pack contains updates and fixes for problems (Authorized Program Analysis Reports, or ″APARs″) found during testing at IBM, as well as fixes for problems reported by customers. Every fix pack is accompanied by a document, called APARLIST.TXT, that describes the fixes it contains.

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

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

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

Fix packs are cumulative. This means that the latest fix pack for any given version of DB2 contains all of the updates from previous fix packs for the same version of DB2. It is recommended that you keep your DB2 environment running at the latest fix pack level to ensure problem-free operation.

There are two types of fix pack images:

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

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

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

Prerequisites:

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

Procedure:

1. Access and download the latest DB2 fix pack by selecting the link for fix pack downloads from the DB2 Support Web site at http://www.ibm.com/software/data/db2/udb/support.html.

Related reference:

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

DB2 Connect license activation

During the installation of licensed DB2 Connect server products, the installation program registers the DB2 Connect licenses.

However, if you need to manually activate a license for your DB2 Connect product, you can use either the DB2 License Center or the **db2licm** command.

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

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

If you want the product or feature license key added automatically during the installation, you need to copy the license key to the `/db2/license` directory of the installation image before launching the DB2 Setup wizard.

Procedure:

To register a DB2 license key, enter:

```
db2licm -a filename
```

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

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

1. Create the instance environment and become the instance owner.
2. Register the DB2 license with the appropriate command:
   - For Linux and UNIX operating systems:

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

   - For Windows operating systems:

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

   where *db2instance_path* is where the DB2 instance was created and *filename* is the full pathname and filename for the license file that corresponds to the product you have purchased. The license file is in the `/db2/license` directory located in the root directory of your Activation CD for the product or feature.

Related concepts:

- "License management" in *Administration Guide: Implementation*

Related tasks:

- "Checking DB2 license compliance" in *Installation and Configuration Supplement*

- "Registering a DB2 product or feature license key using the License Center" on page 65

Related reference:

- "DB2 product license files" in *Installation and Configuration Supplement*

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

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

If you want the product or feature license key added automatically during the installation, you need to copy the license key to the `/db2/license` directory of the installation image before launching the DB2 Setup wizard.

Procedure:

To register a DB2 license key:

1. Start the DB2 Control Center and select **License Center** from the **Tools** menu.
2. Select the system for which you are installing a license. Select the instance on your systems. Select the product from installed products. The **Installed Products** field will display the name of the product that you have installed.
3. Select **Add** from the **License** menu.
4. In the Add License window, select the license file:
   - On Windows servers: `x:\db2\license\`*`license_filename`*`.lic`
   - On Linux or UNIX servers: `/cd/db2/license/`*`license_filename`*`.lic`

   where `x:` or `/cd` represents the CD drive or mount point containing the DB2 Activation CD for the DB2 product or feature.
5. Click **Apply** to add the license key.

Related concepts:

- "License management" in *Administration Guide: Implementation*

Related tasks:

- "Checking DB2 license compliance" in *Installation and Configuration Supplement*
- "Registering a DB2 product or feature license key using the db2licm command" on page 64

Related reference:

- "DB2 product license files" in *Installation and Configuration Supplement*

Setting the DB2 license policy using the db2licm command

The license policy controls and monitors the number of users that can connect simultaneously to a single DB2 server.

Procedure:

Before you set your license policy using the **db2licm** command, you need the product identifier. To list the product identifier information, enter the following command:

```
db2licm -l
```

The product identifier is listed in the Product Identification field.

To set your license policy, perform *one* of the following depending on the type of licenses that you purchased. For example:

- If you purchased a WebSphere Information Integrator Connector Concurrent User license, enter the following command:

  ```
  db2licm -c wsiif concurrent
  ```

- If you purchased a DB2 Connect Server Concurrent User license, enter the following command:

  ```
  db2licm -p db2consv concurrent
  ```

Related tasks:

- "Registering a DB2 product or feature license key using the db2licm command" on page 64

Related reference:

- "db2licm - License management tool command" in *Command Reference*

Setting the DB2 license policy using the License Center

The license policy controls and monitors the number of users that can connect simultaneously to a single DB2 server or DB2 Connect server.

Procedure:

To set your license policy using the License Center, perform the following depending on the type of licenses that you purchased:

1. In the License Center, select **Change** from the **License** menu.
2. In the Change License window, select the type of license that you have purchased. For example:
   - If you purchased a WebSphere Information Integrator Connector Concurrent User license, select **Connector** and enter the number of user licenses that you purchased.
   - If you purchased a DB2 Connect Server Concurrent User license, select **Concurrent users** or **Concurrent connect users** and enter the number of user licenses that you have purchased.

Related tasks:

- "Registering a DB2 product or feature license key using the License Center" on page 65

Part 4. Preparing host and iSeries databases for DB2 Connect communications

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

For more information on configuring host and iSeries database servers, refer to the DB2 for z/OS installation documentation, available at:

`http://www.ibm.com/software/data/db2/zos/v8books.html`

Also refer to the Distributed Database Programming information available at:

`http://publib.boulder.ibm.com/infocenter/iseries/v5r4/index.jsp?topic=/ddp/rbal1kickoff.htm`

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

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Chapter 15. Preparing DB2 for OS/390 and z/OS databases for DB2 Connect communications

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

This topic provides instructions for establishing TCP/IP network connections between DB2 Connect and DB2 Universal Database for z/OS and OS/390.

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

Procedure:

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

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

Related tasks:

- "Configuring TCP/IP for DB2 Universal Database for OS/390 and z/OS" on page 69
- "Configuring DB2 Universal Database for OS/390 and z/OS" on page 72
- "Enabling Multisite Updates using the Control Center" in *DB2 Connect User's Guide*

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

This topic describes how to configure TCP/IP communications between your DB2 Connect workstation and DB2 UDB for OS/390 and z/OS Version 7 or later. The instructions assume the following conditions:

- You are connecting to a single host database via TCP/IP. Multiple host connections will be handled in exactly the same way, although the *port number* and *service number* required in each case might be different.
- The target database resides on DB2 UDB for OS/390 and z/OS Version 7 or later.
- All the necessary software prerequisites are installed.
- DB2 clients have been set up as required.

Collecting information:

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

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

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On UNIX and Linux
/etc/

On Windows XP and Windows Server 2003
Usually *%SystemRoot%*\system32\drivers\etc\, where *%SystemRoot%* represents the Windows install path directory.

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

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

  Note: The associated *service name* information is not exchanged between the DB2 Connect workstation and DB2 Universal Database for z/OS and OS/390. Port number 446 has been registered as the default for communication from a DB2 Connect workstation.
- The TCP/IP addresses and host names for both the host and the DB2 Connect workstation.
- The LOCATION NAME of the DB2 for OS/390 database server.
- The user ID and password to be used when issuing CONNECT requests to the database at the host or iSeries server.

Refer to your local network administrator and your DB2 for OS/390 and z/OS administrator for help getting this information. Use the tables that follow as a worksheet to plan *each* TCP/IP connection between DB2 Connect and a host database server.

Table 2. User Information

Ref.	Description	Sample Value	Your Value
TCP-1	User name	A.D.B.User	
TCP-2	Contact info	(123)-456-7890	
TCP-5	User ID	ADBUSER	
TCP-6	Database type	db2390	
TCP-7	Connection type (must be TCPIP).	TCPIP	TCPIP

Table 3. Network Elements at the Host

Ref.	Description	Sample Value	Your Value
TCP-8	Host name	MVSHOST	
TCP-9	Host IP address	9.21.152.100	
TCP-10	Service name	db2inst1c	
TCP-11	Port number	446	446
TCP-12	LOCATION NAME	NEW_YORK3	
TCP-13	User ID		
TCP-14	Password		

Notes:

1. To obtain the host's IP address TCP-9, enter at the host:
   ```
   TSO NETSTAT HOME
   ```

2. To obtain the port number **TCP-11**, look for DSNL004I in the DB2 master address space or system log.

Table 4. Network Elements at the DB2 Connect Workstation

Ref.	Description	Sample Value	Your Value
TCP-18	Host name	mcook02	
TCP-19	IP address	9.21.27.179	
TCP-20	Service name	db2inst1c	
TCP-21	Port number	446	446

Table 5. DB2 Directory Entries at the DB2 Connect Workstation

Ref.	Description	Sample Value	Your Value
TCP-30	Node name	MVSIPNOD	
TCP-31	Database name	nyc3	
TCP-32	Database alias	mvsipdb1	
TCP-33	DCS database name	nyc3	

Configuring the TCP/IP connection:

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

Complete the worksheet:

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

1. Fill in the values to be used for the host name and IP address of the DB2 Universal Database for z/OS and OS/390 host (TCP-8 and TCP-9).
2. Fill in the values to be used for the host name and IP address of the DB2 Connect workstation (TCP-18 and TCP-19).
3. Determine the service name or port number to be used for the connection (TCP-10 or TCP-20, or TCP-11 or TCP-21).
4. Determine the LOCATION NAME of the DB2 for OS/390 and z/OS database server to which you want to connect.
5. Determine the values to be used for user ID and PASSWORD when connecting to the host database.

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

At your zSeries server:

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

7. PING the DB2 Connect server, using the correct port number if that option is supported by TCP/IP on the host system. For example:

   ```
   ping remote_host_name -p port_number
   ```

   Note: DB2 Connect does not support the PING command when issued from a Version 7 client through a Version 9 gateway to the host.

Support for your zSeries or OS/390 server is available at http://www.ibm.com/servers/eserver/support/zseries/

Related tasks:

- "Configuring a connection to host and iSeries database servers using the CLP" on page 81
- "Configuring a connection to host or iSeries database servers using the CA (Linux and Windows)" on page 79
- "Preparing DB2 Universal Database for OS/390 and z/OS for connections from DB2 Connect" on page 69

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

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

- Version 7 documentation is available at http://www.ibm.com/software/data/db2/zos/v7books.html
- Version 8 documentation is available at http://www.ibm.com/software/data/db2/zos/v8books.html

Recommended maintenance level:

For DB2 UDB for OS/390 and z/OS Version 7, apply the fixes for APARs PQ50016, PQ50017 and PK05198.

See also http://www.ibm.com/servers/eserver/zseries/zos/servicetst/ for the latest Consolidated Service Test.

Related tasks:

- "Configuring TCP/IP for DB2 Universal Database for OS/390 and z/OS" on page 69

Chapter 16. Preparing DB2 UDB for iSeries databases for DB2 Connect communications

Preparing DB2 Universal Database for iSeries for connections from DB2 Connect

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

Procedure:

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

1. The local network name. You can get this information by entering `DSPNETA`.
2. The local adapter address. You can get this information by entering the `WRKLIND` command in one of the following ways:

   `WRKLIND (*elan)`
   Lists Ethernet adapters

   `WRKLIND (*trlan)`
   Lists token ring adapters

   `WRKLIND (*all)`
   Lists all adapters
3. The hostname. You can get this information by entering `DSPNETA`.
4. The TCP/IP port or service name. The default is X'07'6DB (X'07F6C4C2'). The default is always used by DB2 UDB for iSeries. If entering a hexadecimal number is not convenient, an alias is QCNTEDDM.
5. The relational database name. You can get this information by entering `DSPRDBDIRE`. This will display a list. The line containing `*LOCAL` in the Remote Location column identifies the RDBNAME which must be defined to the client. If there is no *LOCAL entry, you can add one, or use the system name obtained from the DSPNETA command on the server.

   Here is an example:

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```
                  Display Relational Database Directory Entries

Position to  . . . . . .

Type options, press Enter.
    5=Display details   6=Print details

                  Relational                  Remote

Option            Database                    Location Text


       _          ____________________

       _          DLHX                        RCHAS2FA

       _          JORMT2FA                    JORMT2FA

       _          JORMT4FD                    JORMT4FD

       _          JOSNAR7B                    RCHASR7B

       _          RCHASR7B                    *LOCAL

       _          RCHASR7C                    RCHASR7C

       _          R7BDH3SNA                   RCH2PDH3

       _          RCHASDH3                    RCHASDH3
```

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

Table 6. Configuration parameters from iSeries

Item	Parameter	Example	Your value
A-1	Local network name	SPIFNET	
A-2	Local adapter address	400009451902	
A-4	Hostname	SYD2101A	
A-5	TCP/IP port or service name	X'07F6C4C2'(default)	
A-6	Relational database name	NEW_YORK3	

For more information, refer to the "DRDA Considerations" section of the *DB2 Server for VSE & VM SQL Reference* (SC09-2989).

Related tasks:

- "Preparing DB2 for VSE & VM for connections from DB2 Connect" on page 75

Chapter 17. Preparing DB2 for VM & VSE databases for DB2 Connect communications

Preparing DB2 for VSE & VM for connections from DB2 Connect

For information about how to set up DB2 Server for VSE & VM as an application server, refer to the "DRDA Considerations" section of the *DB2 Server for VSE & VM SQL Reference* (SC09-2989) .

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Part 5. Configuring access to host and iSeries databases

After DB2 Connect is installed and the database server is configured to accept communications, you need to establish and fine-tune the connection between the two systems. This section describes how to use the Configuration Assistant (CA) or the DB2 command line processor (CLP) to find, connect, and bind to a database server.

Who Should Read This Section

- Network or system administrators
- Technical personnel installing and configuring a DB2 Connect system

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Chapter 18. Using the Configuration Assistant

Configuring a connection to host or iSeries database servers using the CA (Linux and Windows)

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

Note: In previous releases, the DB2 Administration Tools, such as the CA, were supported on all platforms. As of Version 9, the DB2 Administration Tools are supported only on Windows x86, Windows x64 (AMD64/EM64T), Linux on x86, and Linux on AMD64/EM64T. For all platforms, you can use the DB2 command line processor (CLP) to configuring a connection to a host or iSeries database server.

Your DB2 Connect workstation can be either:

A DB2 client
The DB2 client can connect indirectly to host or iSeries databases through a DB2 Connect server product.

DB2 Connect Personal Edition
You can connect directly to host or iSeries databases using DB2 Connect Personal Edition. You can also connect through a DB2 Connect server product.

Prerequisites:

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

Procedure:

The following methods can be used to configure a connection to a database using the CA (refer to the Related tasks at the end of this topic):

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

Related tasks:

- "Configuring a connection to host and iSeries database servers using the CLP" on page 81
- "Configuring a database connection manually using the Configuration Assistant" on page 102
- "Configuring database connections using a client profile with the Configuration Assistant" in *Quick Beginnings for DB2 Clients*
- "Testing a database connection using the Configuration Assistant" on page 103

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Chapter 19. Using the CLP

Configuring a connection to host and iSeries database servers using the CLP

You can manually configure your TCP/IP connection between a DB2 Connect server and a host or iSeries database using the DB2 command line processor (CLP).

Prerequisites:

Before you manually configure a TCP/IP connection between DB2 Connect and a host or iSeries database server, ensure that:

- TCP/IP is functional on the DB2 Connect server and host or iSeries system.
- You have identified the following parameter values:
  - Hostname (*hostname*) or IP address (*ip_address*)
  - Connection Service name (*svcename*) or Port number/Protocol (*port_number/tcp*)
  - Target database name (*target_dbname*)
  - Local database name (*local_dcsname*)
  - Node name (*node_name*)

Procedure:

To manually configure TCP/IP communications between your DB2 Connect server and a host or iSeries database:

1. Configure TCP/IP on the DB2 Connect server.
2. Catalog the TCP/IP node.
3. Catalog the host or iSeries database as a Database Connection Service (DCS) database.
4. Catalog the host or iSeries database.
5. Bind utilities and applications to the host or iSeries database server.
6. Test the host or iSeries connection.

Note: Due to the characteristics of the TCP/IP protocol, TCP/IP might not be immediately notified of a partner's failure on another host or iSeries. As a result, a client application accessing a remote DB2 server using TCP/IP, or the corresponding agent at the server, might sometimes appear to be hung. The TCP/IP SO_KEEPALIVE socket option is used to detect when there has been a failure and the TCP/IP connection has been broken.

Related tasks:

- Chapter 21, "Binding database utilities on DB2 Connect," on page 87
- "Configuring a connection to host or iSeries database servers using the CA (Linux and Windows)" on page 79
- "Configuring TCP/IP for DB2 Universal Database for OS/390 and z/OS" on page 69

Related reference:

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- "CATALOG DATABASE command" in *Command Reference*
- "CATALOG DCS DATABASE command" in *Command Reference*
- "CATALOG TCPIP/TCPIP4/TCPIP6 NODE command" in *Command Reference*
- "CONNECT (Type 1) statement" in *SQL Reference, Volume 2*

Part 6. Using DB2 Connect

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Chapter 20. Running your own applications

You can build and run DB2 applications with a DB2 client installed.

Various types of applications can access DB2 databases:

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

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

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

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

To run a database client application:

1. Ensure the server is configured and running.
2. On the DB2 server, ensure that the database manager is started on the database server to which the application program is connecting. If it is not, you must issue the **db2start** command at the server before starting the application.
3. Ensure that you can connect to the database that the application uses.
4. Bind the utilities and the applications to the database.
5. Run the application program.

Related concepts:

- "Supported database application programming interfaces" in *Getting Started with Database Application Development*

Related tasks:

- "Setting up the CLI environment" in *Call Level Interface Guide and Reference, Volume 1*
- "Setting up the UNIX ODBC environment" in *Call Level Interface Guide and Reference, Volume 1*
- "Setting up the Windows CLI environment" in *Call Level Interface Guide and Reference, Volume 1*

Related reference:

- "DB2 Client support for database application development" on page 15

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Chapter 21. Binding database utilities on DB2 Connect

You must bind the database utilities (import, export, reorg, the Command Line Processor) and DB2 CLI bind files to each database before they can be used with that database. In a network environment, if you are using multiple clients that run on different operating systems or are at different versions or service levels of DB2, you must bind the utilities once for each operating system and DB2-version combination.

Binding a utility creates a *package*, which is an object that includes all of the information that is needed to process specific SQL statements from a single source file.

The bind files are grouped together in different `.lst` files in the `bnd` directory, under the installation directory (typically `sqllib` for Windows). Each file is specific to a server.

Procedure:

Binding to host or iSeries databases

To bind the utilities and applications to the host or iSeries database server, connect to the host or iSeries server and use the following example as a template:

```
connect to dbalias user userid using password
bind path/bnd/@ddcsmvs.lst blocking all sqlerror continue
        messages mvs.msg grant public
connect reset
```

where *path* corresponds to the *DB2PATH* registry value.

Binding to DB2 databases

How you bind the database utilities to a database depends on your workstation's operating system:

- Using the Configuration Assistant:
  1. Start the Configuration Assistant (CA).
  2. Select the database to which you want to bind the utilities.
  3. Right click and select **Bind**.
  4. Select the utility or files to bind.
  5. Add any desired bind options.
  6. Enter a user ID and password to connect to the database. The user ID must have the authority to bind new packages against the database. Click **Bind**.
- Use the command line processor:
  1. Change to the `bnd` directory, which is `x:\sqllib\bnd`, where x: represents the drive where you installed DB2.
  2. To connect to the database, enter the following commands in the Command Center or the Command Line Processor:

     ```
     connect to database_alias
     ```

     where *database_alias* represents the alias of the database to which you want to connect.

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3. Enter the following commands in the Command Center or the Command Line Processor:

```
"bind @db2ubind.lst messages bind.msg grant public"
"bind @db2cli.lst messages clibind.msg grant public"
```

   In this example, `bind.msg` and `clibind.msg` are the output message files, and EXECUTE and BINDADD privileges are granted to *public*.

4. Reset the connection to the database by entering the following command:

```
connect reset
```

Notes:

1. The `db2ubind.lst` file contains the list of bind (.bnd) files required to create the packages for the database utilities. The `db2cli.lst` file contains the list of bind (.bnd) files required to create packages for the DB2 CLI and the DB2 ODBC driver.
2. Binding might take a few minutes to complete.
3. If you have BINDADD authority, the first time you use the DB2 CLI or ODBC driver, the DB2 CLI packages will be bound automatically. If the applications that you are using require binding to the database, you can use the Configuration Assistant's Bind facility, or the command line processor, to perform the bind action.

Related reference:

- "BIND command" in *Command Reference*
- "DB2 CLI bind files and package names" in *Call Level Interface Guide and Reference, Volume 1*

Chapter 22. Further reading

For further reading, please refer to the *DB2 Connect User's Guide*, which covers topics such as:

- Distributed Relational Database Architecture (DRDA)
- DB2 Connect scenarios
- Updating database directories
- Security
- Binding applications and utilities
- Multisite updates
- SQLCODE mapping
- Database system monitor
- Performance
- Connection pooling
- Connection concentrator
- DB2 Connect Sysplex support
- Connecting with WebSphere Information Integrator

For 3-tier environments where host data is accessed from clients, you can find information about installing and configuring DB2 clients in the *Quick Beginnings for DB2 clients* book.

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Part 7. Reference

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Chapter 23. Mounting the DB2 product CD

Mounting the CD-ROM (AIX)

Prerequisites:

Root authority is required to perform this task.

Procedure:

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

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

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

Related tasks:

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

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Related reference:

- "Installation requirements for DB2 clients and servers (AIX)" in *Quick Beginnings for DB2 Servers*

Mounting the CD-ROM (HP-UX)

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

Prerequisites:

Root authority is required to perform this task.

Procedure:

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

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

   ```
   mount -F cdfs -o rr /dev/dsk/c1t2d0 /cdrom
   ```

6. Obtain a file listing to verify the mount using the **ls /cdrom** command.
7. Log out.

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

Related reference:

- "Installation requirements for DB2 clients and servers (HP-UX)" in *Quick Beginnings for DB2 Servers*
- "DB2 product license files" in *Installation and Configuration Supplement*

Mounting the CD-ROM (Linux)

Prerequisites:

Root authority is required to perform this task.

Procedure:

To mount the CD-ROM on Linux:

1. Log in as a user with root authority.
2. Insert the CD-ROM in the drive and enter the following command:

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

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

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

Related reference:

- "DB2 product license files" in *Installation and Configuration Supplement*

Mounting the CD-ROM (Solaris Operating Environment)

Prerequisites:

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

Procedure:

To mount the CD-ROM on Solaris Operating Environment:

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

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

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

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

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

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

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

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

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

4. Log out.

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

Related tasks:

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

Related reference:

- "Installation requirements for DB2 clients and servers (Solaris Operating System)" in *Quick Beginnings for DB2 Servers*

Chapter 24. Uninstalling DB2 Connect

Uninstalling your DB2 product (Windows)

This task provides steps for completely removing your DB2 product from your Windows operating system. You should only perform this task if you no longer require existing your DB2 instances and databases.

If you are uninstalling the DB2 default copy, and you have other DB2 copies on your system, you should use the **db2swtch** command to choose a new default copy before you proceed with the uninstallation. Also, if your database administration server (DAS) is running under the copy being removed, you should move your DAS to a copy that is not being removed. Otherwise, you will have to recreate the DAS using **db2admin create** command after the uninstall and you might have to reconfigure the DAS for some functionality to work.

Procedure:

To remove your DB2 product from Windows:

1. Drop all databases. You can drop databases using the Control Center or **drop database** command. If you drop your databases, all of your data will be gone.
2. Stop all DB2 processes and services. This can be done through the Windows Services panel or by issuing the **db2stop** command. If DB2 services and processes are not stopped before attempting to remove your DB2 product, you will receive a warning containing a list of processes and services that are holding DB2 DLLs in memory.
3. You have two options for removing your DB2 product:

   Add/Remove Programs
   Accessible through the Windows Control Panel, use the Add/Remove Programs window to remove your DB2 product. Refer to your operating system's help for more information about removing software products from your Windows operating system.

   db2unins command
   You can run the **db2unins** command to remove your DB2 product. Using this command, you can uninstall multiple DB2 products at the same time using the **/p** parameter. You can also silently uninstall DB2 products by using **/u** parameter which will remove the DB2 products specified in the response file. For more information, see the **db2unins** command topic.

Unfortunately, your DB2 product cannot always be removed by using the Control Panel - Add/Remove Programs facility or using the **db2unins /p** command or the **db2unins /u** command. The following uninstallation option should ONLY be attempted if the above method fails.

To forcefully remove all DB2 copies from your Windows system, run the **db2unins /f** command. This command will perform a brute force uninstallation of ALL DB2 copies on the system. Everything except user data, such as DB2 databases, will be forcefully deleted.

Related tasks:

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- "Uninstalling your DB2 product (Linux and UNIX)" on page 98
- "Uninstalling a DB2 product using a response file (Windows)" in *Installation and Configuration Supplement*
- "Changing the Default DB2 copy after installation (Windows)" in *Administration Guide: Implementation*

Related reference:

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

Uninstalling your DB2 product (Linux and UNIX)

This task provides steps for removing a DB2 product from your Linux or UNIX operating system. This task is not required to install a new version of a DB2 product. Each version of a DB2 product on Linux or UNIX has a different installation path and can therefore coexist on the same computer.

Procedure:

To remove your DB2 product:

1. Optional: Drop all databases. You can drop databases using the Control Center or the **drop database** command. Database files remain intact on your file systems when you drop an instance without dropping databases first.
2. Stop the DB2 Administration Server.
3. Remove the Administration Server.
4. Stop DB2 instances.
5. Remove DB2 instances.
6. Remove DB2 products.

Related concepts:

- "DB2 Administration Server" in *Administration Guide: Implementation*

Related tasks:

- "Stopping the DB2 administration server (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "Removing the DB2 administration server (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "Stopping DB2 instances (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "Removing DB2 instances (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "Removing DB2 products using the db2_deinstall or doce_deinstall command (Linux and UNIX)" in *Quick Beginnings for DB2 Servers*
- "Uninstalling your DB2 product (Windows)" on page 97

Related reference:

- "DROP DATABASE command" in *Command Reference*

Part 8. Appendixes

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Appendix A. Configuring and testing database connections using the Configuration Assistant

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**.

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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" in *Quick Beginnings for DB2 Clients*

Related tasks:

- "Configuring a database connection manually using the Configuration Assistant" on page 102
- "Testing a database connection using the Configuration Assistant" on page 103

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" in *Quick Beginnings for DB2 Clients*

Related tasks:

- "Testing a database connection using the Configuration Assistant" on page 103

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" in *Quick Beginnings for DB2 Clients*

Related tasks:

- "Configuring a database connection by searching the network using the Configuration Assistant" on page 101
- "Configuring a database connection manually using the Configuration Assistant" on page 102

Appendix B. Language Support

Changing the DB2 interface language (Windows)

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

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

Prerequisites:

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

Procedure:

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

To change the DB2 interface language on Windows:

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

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

Related tasks:

- "Displaying topics in your preferred language in the DB2 Information Center" on page 116

Related reference:

- "Supported DB2 interface languages" on page 107
- "Supported territory codes and code pages" in *Administration Guide: Planning*

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Changing the DB2 interface language (Linux and UNIX)

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

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

Prerequisites:

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

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

Procedure:

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

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

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

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

For C shell:

```
setenv LANG <locale>
```

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

Related tasks:

- "Displaying topics in your preferred language in the DB2 Information Center" on page 116

Related reference:

- "Supported DB2 interface languages" on page 107
- "Supported territory codes and code pages" in *Administration Guide: Planning*

Supported DB2 interface languages

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

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

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

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

Related tasks:

- "Changing the DB2 interface language (Linux and UNIX)" on page 106
- "Changing the DB2 interface language (Windows)" on page 105
- "Capturing error and diagnostic information during migration" in *Migration Guide*

Related reference:

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

Language identifiers for running the DB2 Setup wizard in another language

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

Table 7. Language identifiers

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

Table 7. Language identifiers (continued)

Language	Language identifier
Danish	dk
Dutch	nl
English	en
Finnish	fi
French	fr
German	de
Greek	el
Hungarian	hu
Italian	it
Japanese	jp
Korean	kr
Norwegian	no
Polish	pl
Portuguese	pt
Romanian	ro
Russian	ru
Slovak	sk
Slovenian	sl
Spanish	es
Swedish	se
Turkish	tr

Related reference:

- "Displaying the db2setup command in your national language" in *Quick Beginnings for DB2 Servers*

Conversion of character data

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

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

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

For example, if DB2 Connect is used to access data, the following happens:

1. DB2 Connect sends an SQL statement and input data to OS/390 or z/OS.

2. DB2 Universal Database for z/OS and OS/390 converts the data to the host server's code page and then processes the data.
3. DB2 Universal Database for z/OS and OS/390 sends the result back to the DB2 Connect server.
4. DB2 Connect converts the result to the code page of the user's environment.

Refer to the Supported territory codes and code pages topic in the National language support appendix of the *Administration Guide: Planning* for the supported conversions between code pages on the DB2 Connect server and CCSIDs on the host or iSeries server.

For bidirectional languages, a number of special ″BiDi CCSIDS″ have been defined by IBM and are supported by DB2 Connect.

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

Related concepts:

- "Character-conversion guidelines" in *Administration Guide: Planning*

Related reference:

- "Supported territory codes and code pages" in *Administration Guide: Planning*

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

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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 117

Related reference:

- "DB2 technical library in hardcopy or PDF format" on page 112

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 8. 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 8. 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 9. DB2 Connect-specific technical information

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

Table 9. 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 10. 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 111
- "About the Release Notes" in *Release notes*

Related tasks:

- "Ordering printed DB2 books" on page 114

Ordering printed DB2 books

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

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

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

Procedure:

To order printed DB2 books:

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

Related concepts:

- "Overview of the DB2 technical information" on page 111

Related reference:

- "DB2 technical library in hardcopy or PDF format" on page 112

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:

- "Updating the DB2 Information Center installed on your computer or intranet server" on page 117

Displaying topics in your preferred language in the DB2 Information Center

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

Procedure:

To display topics in your preferred language in the Internet Explorer browser:

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

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

To display topics in your preferred language in a Firefox or Mozilla browser:

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

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

Related concepts:

- "Overview of the DB2 technical information" on page 111

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 111

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Part Number: CT3ZPNA

Printed in Ireland.

(1P) P/N: CT3ZPNA

GC10-4243-00

Spine information:

IBM DB2 **DB2 Connect Version 9**

DB2 Connect Servers Quick Beginnings