



Quick Beginnings for DB2 Connect Servers
Updated March, 2008



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Note

Before using this information and the product it supports, read the general information under Appendix B, "Notices," on page 125.

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Part 1. About this book

The *Quick Beginnings for DB2 Connect Servers* provides all the information you need to prepare for and then install the DB2 Connect™ Servers product. Information specific to each supported operating system is included. The relationship between DB2 Connect Servers and the supported database server products is presented including how to configure connections.

Who should use this book?

System administrators, database administrators, communications specialists, and software product installers would all be interested in part or all of this book.

Part 2. Introduction to DB2 Connect

Chapter 1. About DB2 Connect

DB2 Connect provides connectivity to mainframe and midrange databases from Linux®, UNIX®, and Windows® operating systems. You can connect to DB2® databases on z/OS®, i5/OS® and 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 i5/OS

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

Host and System i support for DB2 Connect

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

Table 1. Supported host and System i data servers

Version	Recommended Service Upgrade (RSU)
DB2 Universal Database (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/
DB2 UDB for z/OS Version 9	RSU0606 See http://www.ibm.com/servers/eserver/zseries/zos/servicetst/
DB2 UDB for i5/OS V5R1, V5R2, V5R3, and V5R4	II13348 (Informational APAR) For System i 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-306.ibm.com/software/data/db2/vse-vm/

Detailed prerequisite information is available at:

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

Chapter 2. Common DB2 Connect scenarios

Common ways in which DB2 Connect is used to create working database environments and common ways of completing primary tasks involving DB2 Connect are presented. The scenarios include environments and tasks such as: direct connection between DB2 Connect and a host or System i™ database server; using the Configuration Assistant to manage connections to databases; and IBM® Data Server Client support for database application development.

Access DB2 data from remote clients

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

The IBM data server client is supported on Linux, UNIX, and Windows platforms.

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.

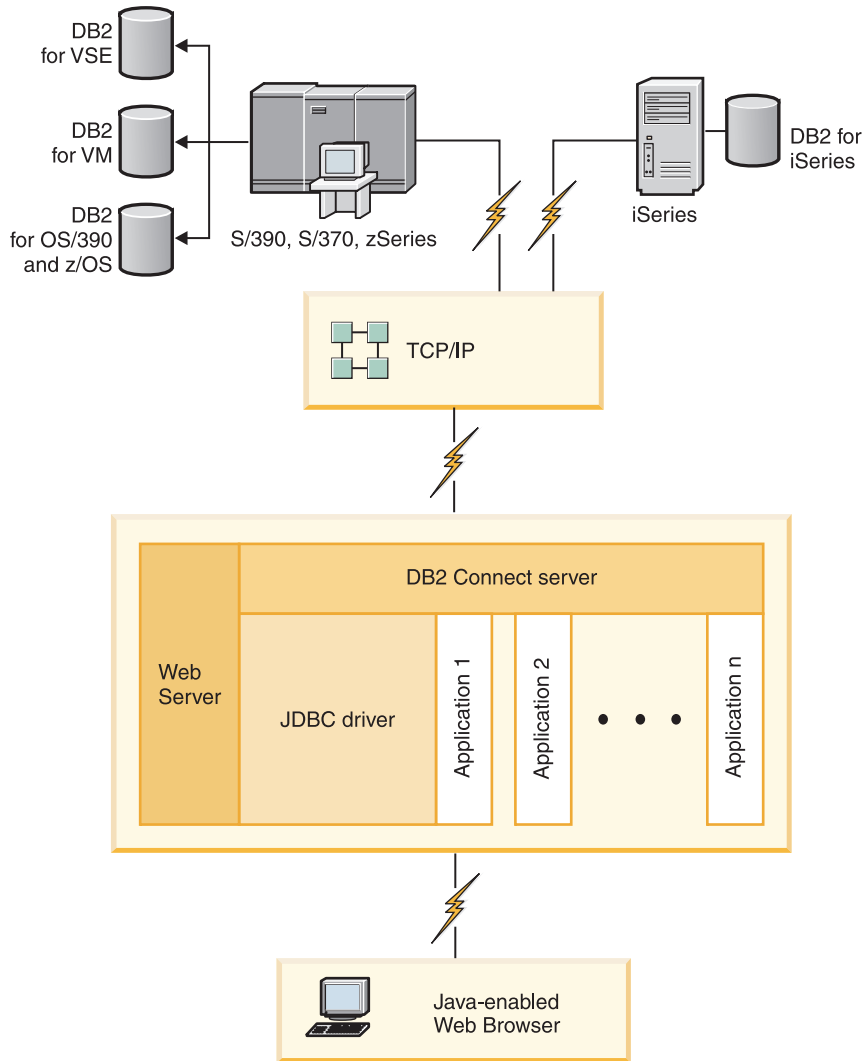


Figure 1. JDBC and DB2 Connect

JDBC and SQLJ applications can be run from any system that has a IBM data server 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/webpage>.

Accessing host or System i DB2 data using DB2 Connect

A DB2 Connect server enables a IBM data server client on a LAN access to data that is stored on host or System i systems.

In organizations with large amounts of data, DB2 for i5/OS, DB2 Universal Database (UDB) for iSeries, DB2 for z/OS, 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 System i 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 1 on page 8).
- Web servers are used to implement web-based applications (see Figure 5 on page 13 and Figure 1 on page 8).
- 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 3 on page 11.)

DB2 Connect provides transparent access to host or System i 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 System i databases without expensive host or System i components or proprietary gateways.

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

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 System i data and can significantly reduce the effort that is required to establish and maintain access to enterprise data. Figure 2 on page 10 illustrates IBM's solution for environments where a IBM data server client makes an indirect connection to a host or System i database server through a DB2 Connect server product.

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

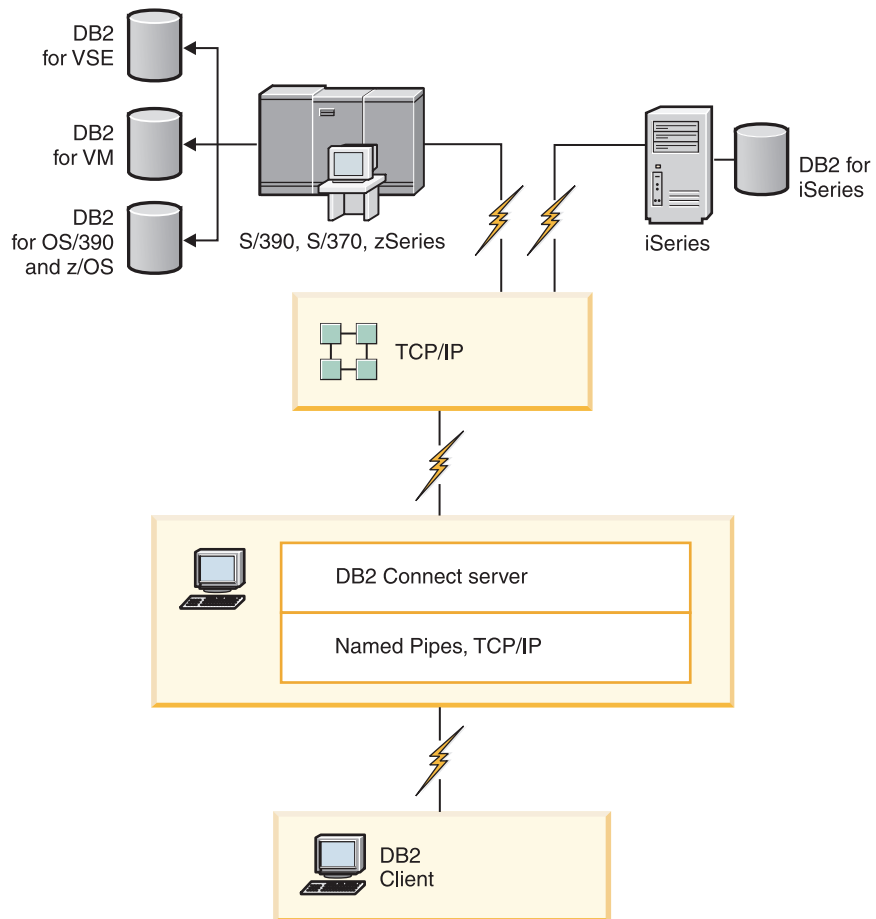


Figure 2. Connecting a client to a host or System i data server using DB2 Connect

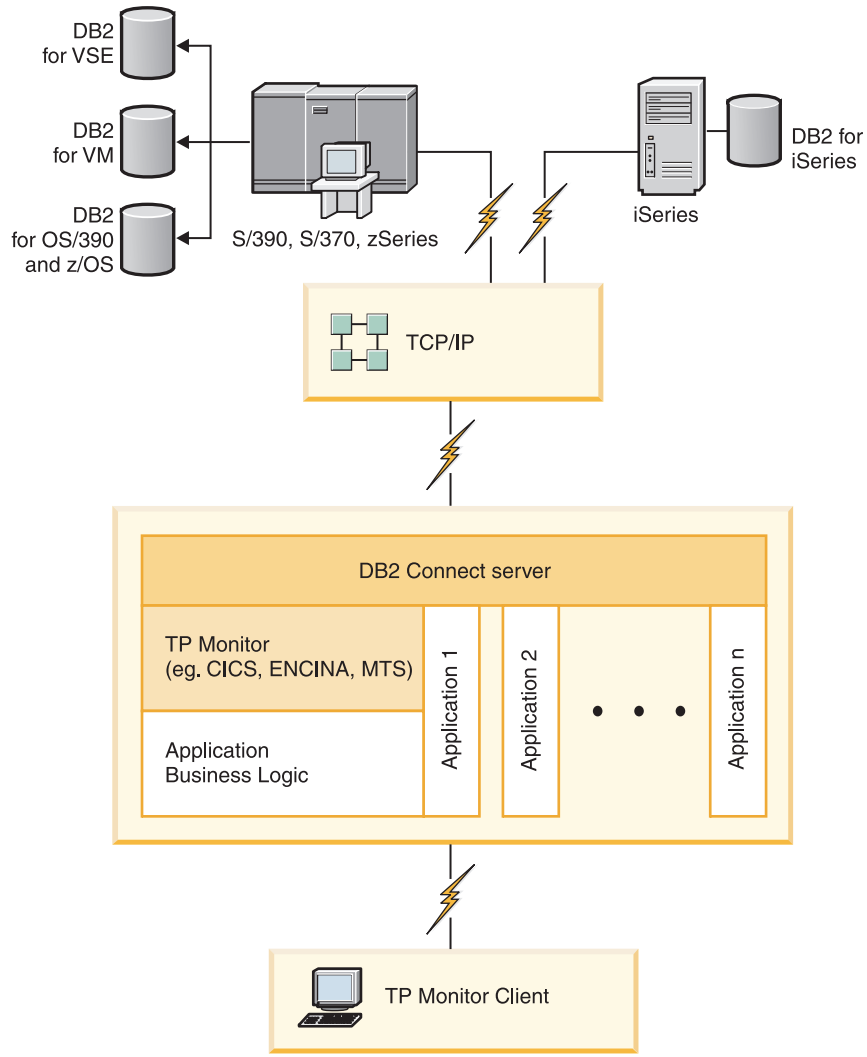


Figure 3. Transaction monitors working with DB2 Connect.

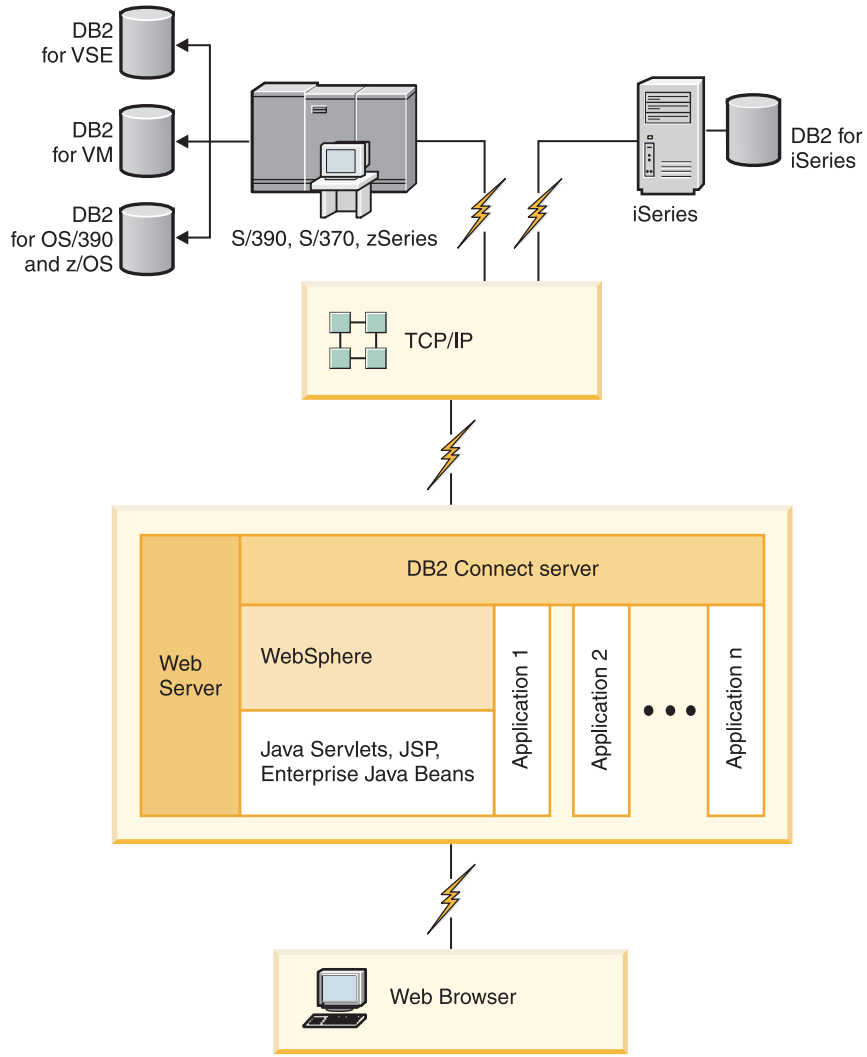


Figure 4. WebSphere and Java server functionality in DB2 Connect

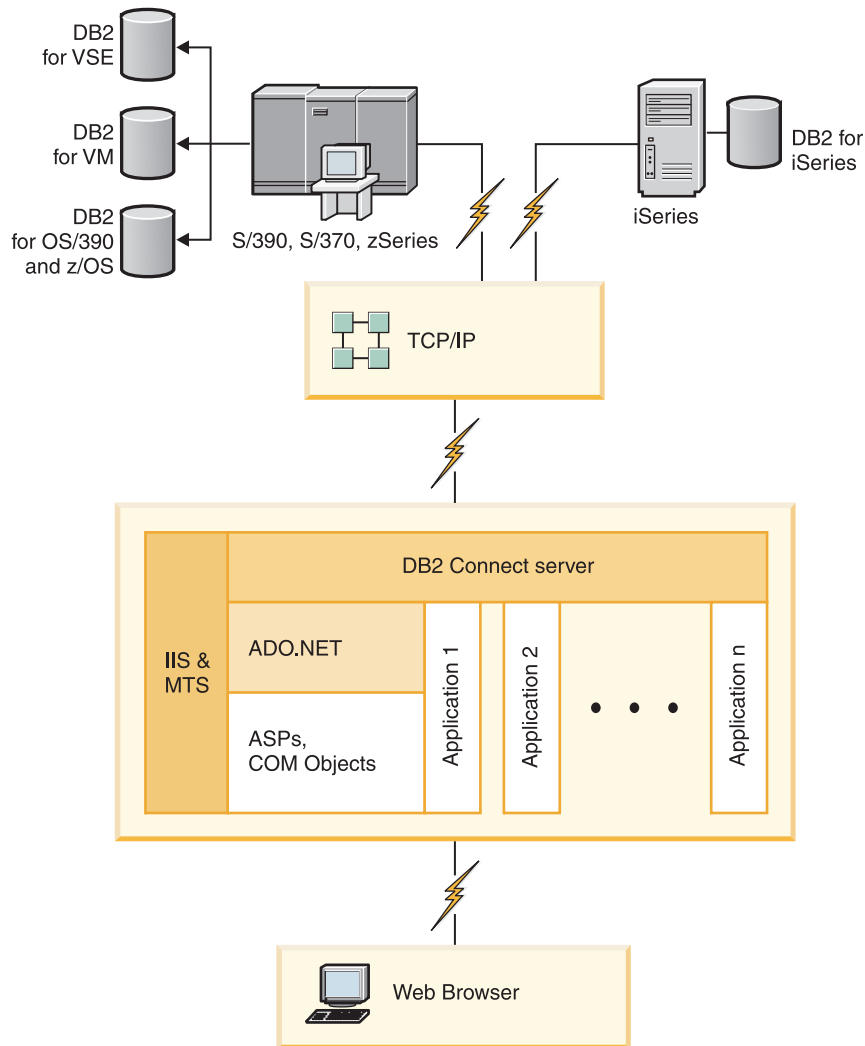


Figure 5. DB2 Connect working with Microsoft Internet Information Server (IIS)

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 System i databases except through a DB2 Connect server that has host or System i 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.

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.

Administering local and remote instances and databases with the DB2 administration tools (available on Linux and Windows)

You can administer local or remote servers using the DB2 administration tools. The DB2 administration tools are used through 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, found as part of 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.

In addition to performing local administration tasks, the Control Center has support for the following remote products:

- DB2 Universal Database (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 for z/OS, unless the content is version specific.

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

1. Verify that:
 - You have a DB2 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 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 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 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 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 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 for z/OS.

Note:

- 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 for z/OS exists at:

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

IBM Data Server Client support for database application development

The Data Server 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 Data Server Driver for JDBC and SQLJ**, which includes:
 - Support for JDBC 3 and JDBC 4 compliant applications
 - SQLJ support, for developing Java applications with static SQL
- **Java 5** environment is embedded in DB2 servers to support server-side Java application artifacts including stored procedures and user-defined functions
- **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++.
- **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.
- **Ruby and Ruby on Rails application support**, including IBM_DB gem for easy install and code samples. Ruby is a fully-integrated object-oriented programming language used to develop web applications. Ruby on Rails (RoR), also known as Rails, is a framework for developing web applications that access databases according to the Model-View-Control architectural framework
- **PHP Hypertext Preprocessor application support**, including programming libraries and code samples. PHP is a scripting language used to develop web applications. It also supports object-oriented programming
- **IBM Data Studio** is a comprehensive suite of integrated Eclipse tools for the database developer and development DBA. IBM Data Studio reduces the time to perform day-to-day administration tasks, create, deploy, and debug SQL and

Java stored procedures, deploy data-centric web services, and create queries for relational and XML data using SQL and XQuery for DB2 and Informix data servers.

- **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.

Part 3. Migrating DB2 Connect

Chapter 3. Migration to DB2 Connect Version 9.5

Upgrading to a new release of DB2 Connect might require migration of your environment components if you want them to run on the new release. 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 9.5, then you can migrate your DB2 Connect server and you might need to migrate other components in your environment.

DB2 Connect Version 9.5 servers supports the migration of DB2 Connect instances, and any existing transaction manager and DB2 Connect federated databases created on DB2 Connect Version 9.1 or Version 8 servers. For DB2 Connect releases prior to DB2 Connect Version 8, you need to migrate first to DB2 Connect Version 8, and then migrate to DB2 Connect Version 9.5. Refer to migrating from previous versions of DB2 Connect for details on how to migrate to DB2 Universal Database (UDB) Version 8.

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 9.5 requires that you perform different tasks:

- Migrating DB2 Connect servers 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 9.5.
- Migrate your existing instances and databases so that they can run in DB2 Connect Version 9.5. Refer to the Migration for DB2 servers topic in the *Migration Guide*.
- Migrate your client instances to keep the configuration of your existing DB2 clients. Refer to the Migration for clients topic in the *Migration Guide*.
- Migrating database applications involves testing them in DB2 Connect Version 9.5 and modifying them only when you need to support changes in DB2 Connect Version 9.5. Review changes in existing functionality and discontinued and deprecated functionality for DB2 Connect in the What's New to determine the changes that could impact your database applications. If your database applications connect to DB2 servers, review also the Migration 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.

Migration essentials for DB2 Connect

If you are migrating your clients to DB2 Connect Version 9.5, 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 9.5, 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

If you are migrating from a release prior to DB2 Connect Version 9.1, you need to recatalog all nodes that use SNA protocol to use TCP/IP protocol instead.

Migration essentials for DB2 servers and clients also apply to DB2 Connect servers

Migration support and restrictions for DB2 servers and clients also apply when you migrate to DB2 Connect server.

- Review the “migration essentials for DB2 servers” topic in *Migration Guide* to determine additional changes that impact your migration and how to address any issues.
- Review the “migration essentials for clients” topic in *Migration Guide*, especially Connectivity support between clients and DB2 servers. Connections to DB2 Connect Version 9.5 servers from a client release prior to Version 8 are not supported.

New client product and new names for existing clients

In Version 9.5, a new client product is available and new names are used for existing clients that are different than client names used in previous releases. Refer to the “DB2 client product added to simplify deployment (Windows)” topic in the *What's New* for details on the new names and generic client names.

Migration recommendations for DB2 Connect

In general, the recommendation is to migrate DB2 Connect servers first and then clients. Version 9.1 and Version 8 clients can connect to Version 9.5 DB2 Connect servers. The only restriction is that new DB2 Version 9.5 features are not available to the pre-V9.5 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 clients first, you need to be aware that there are known limitations about the support for connectivity from a Version 9.5 client to DB2 Connect Version 8 servers. Check the Version 9.5

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.

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 “Migration essentials for DB2 Connect” on page 22 to identify the changes or restrictions that can affect your migration and learn how to address any issues prior to migration.
2. Refer to the “Backing up DB2 server configuration and diagnostic information” topic in *Migration Guide* 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.
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” in the *Command Reference* 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” in the *Command Reference* to get a list of indoubt transactions and to interactively resolve any indoubt transactions.
 - b. Refer to the “Verify that your databases are ready for migration” topic in the *Migration Guide* to identify and resolve any problems before the actual migration.
 - c. Refer to the “Backing up databases before migration” topic in the *Migration Guide* to be able to migrate them to a new migrated system or restore them in the original pre-migration system.
 - d. Review the “disk space requirements” topic in the *Migration Guide* to ensure that you have enough free disk space, temporary table space and log space for database migration and the “Increasing table space and log file sizes before migration” topic in the *Migration Guide* if necessary.
 - e. Linux only: “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 Connect Version 9.1 or Version 8 copy. Migrating your DB2 Connect Version 9.1

or Version 8 copy removes these tables because standard code page tables are contained in a DB2 Connect Version 9.5 library. You do not need to backup standard code page conversion tables.

7. 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.
8. In DB2 Connect Version 9.5, all significant migration events are logged in the db2diag.log file when the **diaglevel** database manager configuration parameter is set to 3 (default value) or higher. If this parameter is set to 2 or less, refer to the “Setting the diagnostic log file error capture level” topic in the *Troubleshooting Guide* to set this parameter to 3 or higher before migration.
9. 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*

Migrating DB2 Connect servers

DB2 Connect Version 9.5 servers supports the migration of DB2 Connect instances, and any existing transaction manager and DB2 Connect federated databases created on DB2 Connect Version 9.1 or 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 9.5. 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 Version 9.1 or Version 8 instance.

On Windows operating systems, you have an option to automatically migrate an existing DB2 Connect Version 9.1 or Version 8 copy during installation. Your DB2 Connect instances are automatically migrated. Alternatively, you can install a new copy of DB2 Connect Version 9.5 and then manually migrate your DB2 Connect instances.

This procedure describes how to migrate by installing a new copy of DB2 Connect Version 9.5 and then migrate instances and any existing databases. To automatically migrate an existing DB2 Connect Version 9.1 or 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.

- Ensure that you meet the requirements given in the “Installation requirements for DB2 database products” topic in the *Quick Beginnings for DB2 Servers*. The requirements for Linux and UNIX operating systems have changed.
- Review the “Migration best practices for DB2 servers” topic in the *Migration Guide*.
- Review the “Disk space requirements for DB2 server migration” topic in the *Migration Guide*.
- Perform the pre-migration tasks, especially backup your databases.

Restrictions

- The bit size of the client instance is determined by the operating system where you install DB2 Connect. Refer to the “Support changes for 32-bit and 64-bit DB2 servers” topic in the *Migration Guide* for details.
- Additional migration restrictions found in the “Migration restrictions for DB2 servers” topic in the *Migration Guide* also apply to DB2 Connect servers.

For 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>

To migrate your DB2 Connect server:

1. Export your connectivity configuration information for your DB2 Connect Version 9.1 or 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 9.5 by running the DB2 Setup wizard and select the option Install New on the Install a Product panel.
3. Refer to the “Migrating instances” topic in the *Migration Guide* using the `db2imigr` command.
4. Migrate any existing transaction manager and DB2 Connect federated databases by referring to the “Migrating databases” topic in the *Migration Guide*. You can also migrate your databases by restoring a DB2 Connect Version 9.1 or Version 8 backup.

After migrating the DB2 Connect server, perform the recommended post-migration tasks such as resetting the diagnostic error level, adjusting log space size, and rebinding packages, and verifying that your migration was successful.

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. Refer to the “Manage changes in DB2 server behavior” 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 9.5 that can impact the behavior of DB2 server. There are also changes in physical design characteristics of databases and changes to security that also have an impact.
3. If you obtained customized code page conversion tables from the DB2 support service for Version 9.1 or Version 8, 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 9.1 or Version 8 copy and DB2DIR is the location of your DB2 Connect Version 9.5 copy. You do not need to copy standard code page conversion tables.

If you migrated your existing DB2 Connect Version 9.1 or 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 Connect servers to the DB2PATH\conv directory, where DB2PATH is the location of your DB2 Connect Version 9.5 copy.

4. 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, refer to the “Adjusting the log space size in migrated databases” topic in the *Migration Guide* . Ensure that the amount of log space that you allocate is adequate for your DB2 Connect server.
5. Optional: Refer to the “Backing up databases before migration” topic in the *Migration Guide* after the migration is complete.
6. Optional: If you have DB2 Connect federated databases, review the “Configuring federated systems after migration” topic in *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
```

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 9.1 or Version 8 copies that you no longer need.

Part 4. Preinstallation tasks

Chapter 4. Java software support 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 IBM Data Server Runtime Client or the IBM Data Server Driver for ODBC, CLI, and .NET.

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

Operating System Platform	SDK for Java level
AIX	SDK 5 Service Release 5
HP-UX for Itanium-based systems	HP SDK for J2SE HP-UX 11i platform, adapted by IBM for IBM Software, Version 5 Service Release 5
Linux on x86	SDK 5 Service Release 5
Linux on AMD64/EM64T	SDK 5 Service Release 5
Linux on zSeries	SDK 5 Service Release 5
Linux on POWER™	SDK 5 Service Release 5
Solaris Operating System	SDK 5 Service Release 5
Windows x86	SDK 5 Service Release 5
Windows x64	SDK 5 Service Release 5

Note:

1. 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>. For a list of the supported levels of the SDK for Java, see the table below entitled DB2 Database for Linux, UNIX, and Windows support for SDKs for Java.

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

Supported Java application development software

The following table lists the supported levels of the SDK for Java. The listed levels and forward-compatible later versions of the same levels are supported

Because there are frequent SDK for Java fixes and updates, not all levels and versions have been tested. If your database application has problems that are related to the SDK for Java, try the next available version of your SDK for Java at the given level.

Non-IBM versions of the SDK for Java are supported only for building and running stand-alone Java applications. For building and running Java stored procedures and user-defined functions, only the IBM SDK for Java that is included with the DB2 Database for Linux, UNIX, and Windows product is supported.

Table 2. DB2 Database for Linux, UNIX, and Windows support for SDKs for Java

Operating system	Supported levels of the SDK for Java
AIX	1.4.2 to 5
HP-UX for Itanium-based systems	1.4.2 to 5 ¹
Linux on POWER	1.4.2 to 5 ³
Linux on x86	1.4.2 to 5 ^{2, 3,4}
Linux on AMD64 and Intel® EM64T processors	1.4.2 to 5 ^{2, 3,4}
Linux on zSeries	1.4.2 to 5 ³
Solaris operating system	1.4.2 to 5 ^{2,4}
Windows on x86	1.4.2 to 5 ^{2,4}
Windows on x64, for AMD64 and Intel EM64T processors	1.4.2 to 5 ^{2,4}

Note:

1. The same levels of the SDK for Java that are available from Hewlett-Packard are supported for building and running stand-alone client applications that run under the IBM Data Server Driver for JDBC and SQLJ.
2. The same levels of the SDK for Java that are available from Sun Microsystems are supported for building and running stand-alone client applications that run under the IBM Data Server Driver for JDBC and SQLJ.
3. A minimum level of SDK for Java 1.4.2 SR6 is required for SUSE Linux Enterprise Server (SLES) 10. A minimum level of SDK for Java 1.4.2 SR7 is required for Red Hat Enterprise Linux (RHEL) 5.
4. The Sun Java Runtime Environment (JRE) 6 is supported, for running stand-alone Java applications

The following table lists the versions of the IBM Data Server Driver for JDBC and SQLJ that are available with DB2 database products.

Table 3. Versions of IBM Data Server Driver for JDBC and SQLJ and DB2 Database for Linux, UNIX, and Windows fix pack levels

DB2 version and fix pack level	IBM Data Server Driver for JDBC and SQLJ version ¹
DB2 Version 9.1	3.1xx
DB2 Version 9.1 Fix Pack 1	3.2xx
DB2 Version 9.1 Fix Pack 2	3.3xx
DB2 Version 9.1 Fix Pack 3	3.4xx
DB2 Version 9.5	3.50xx, 4.0xx

Note: All driver versions are of the form *n.m.xx*. *n.m* stays the same within a GA level or a fix pack level. *xx* changes when a new version of the IBM Data Server Driver for JDBC and SQLJ is introduced through an APAR fix.

Chapter 5. Kernel parameters (Linux and UNIX)

Kernel configuration parameters may need to be updated to allow DB2 Connect (and other DB2 products) to perform properly. Each of the supported operating systems is discussed with the goal of showing how to modify the respective kernel configuration parameters.

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.

You must have root authority to modify kernel parameters.

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.

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.

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.

You must have root authority to modify kernel parameters.

To update kernel parameters on Red Hat and SUSE Linux:

1. Run the `ipcs -l` command

- Analyze the output to determine if there are any necessary changes required for your system. 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.
 - It is recommended to set the SHMMAX value to be equal to the amount of physical memory on your system. However, the minimum required on x86 systems is 268435456 (256 MB) and for 64-bit systems, it is 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 your computer's physical memory. For instance, if you have a computer system with 16 GB of memory to be used primarily for DB2, then SHMALL should be set to 3774873 (90% of 16 GB is 14.4 GB; 14.4 GB is then divided by 4 KB, which is the base page size). 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 agents expected on the system 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.
- To modify these kernel parameters, edit the /etc/sysctl.conf file. If this file does not exist, create it. 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
```

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

```
sysctl -p
```
5. To make the changes effective after every reboot:
 - (SUSE Linux) Make `boot.sysctl` active
 - (Red Hat) The `rc.sysinit` initialization script will read the `/etc/sysctl.conf` file automatically

Modifying kernel parameters (Solaris Operating System)

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. If you want to take advantage of project resource controls (`/etc/project`), you should consult your Solaris documentation.

You must have root authority to modify 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.

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.

Part 5. Installation and configuration tasks

Chapter 6. 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 System i 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 System i 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 System i connections. Use the related links to find the details specific to the installation of a DB2 Connect server product on your operating system.
5. After installation, establish the connection between DB2 Connect and your host or System i 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 System i databases.
6. Bind the programs and utilities provided with DB2 Connect to your host or System i 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 IBM data server client. Use this workstation to test connectivity from the IBM data server client to host and System i 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 System i system through DB2 Connect.
12. Install a IBM data server client on all end-user workstations that will use applications that connect to host and System i 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 IBM data server client installed.
14. If you want to use your workstation to administer DB2 Universal Database (UDB) for OS/390 and z/OS or DB2 Database for Linux, UNIX, and Windows, install the IBM data server client.

Chapter 7. 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.

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

On Linux and UNIX operating systems, 2 GB of free space in the /tmp directory is recommended.

Memory requirements

At a minimum, a DB2 database system requires 256 MB of RAM. For a system running just a DB2 product 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 for Itanium-based systems require 512 MB of RAM at a minimum.
- For IBM data server 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.

For DB2 server products, the self-tuning memory feature simplifies the task of memory configuration by automatically setting values for several memory configuration parameters. When enabled, the memory tuner dynamically distributes available memory resources among several memory consumers including sort, the package cache, the lock list and buffer pools.

- On Linux operating system, SWAP space at least twice as large as RAM is recommended.

Chapter 8. Installing a DB2 Connect server product (AIX)

To define your installation preferences and to install a DB2 Connect product on AIX, use the DB2 Setup wizard.

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 have two alternatives. You can install a DB2 Connect product:

- Using the response file method
- 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:

- You can install DB2 Connect using either root or non-root authority. For more information on non-root installation, see the related links.
- Ensure that your system meets:
 - Disk and memory requirements
 - Hardware, distribution and software requirements
- The DB2 product DVD must be mounted on your system.
- The DB2 Connect product image must be available. If you are installing a non-English version of a DB2 Connect product, you must also have the appropriate National Language Packages.
- 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 the “Listing DB2 products installed on your system (Linux and UNIX)” topic in *Quick Beginnings for DB2 Servers*.
- The DB2 Setup wizard is a graphical installer. You must have X windows software capable of rendering a graphical user interface for the DB2 Setup wizard to run on your machine. Ensure that the X windows server is running. Ensure that you have properly exported your display. For example, export `DISPLAY=9.26.163.144:0`.
- If security software such as Lightweight Directory Access Protocol (LDAP) is used in your environment, you must manually create required DB2 users before you start the DB2 Setup wizard. Refer to the “Centralized user-management considerations” topic before you begin.

Note: Network Information Services (NIS) and Network Information Services Plus (NIS+) features are deprecated starting with DB2 Version 9.1 Fix Pack 2. Support for these features might be removed in a future release. Lightweight Directory Access Protocol (LDAP) is the recommended solution for centralized user-management services.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on AIX using the DB2 Setup wizard:

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

```
cd /db2dvd
```

where */db2dvd* represents mount point of the DVD.

2. If you downloaded the DB2 Connect product image, you must decompress and untar the product file.

- a. Decompress the product file:

```
gzip -d product.tar.gz
```

where *product* is the name of the database product that you downloaded.

- b. Untar the product file:

```
tar xvf product.tar
```

- c. Change directory:

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

Note: If you downloaded a National Language Package, untar it into the same directory. This will create the subdirectories (for example *./nlpack/disk2*) in the same directory, and allows the installer to automatically find the installation images without prompting

3. Enter the *./db2setup* command from the directory where the product image resides to start the DB2 Setup wizard. After a few moments, the IBM DB2 Setup Launchpad opens. For multiple CD installations, issue the *db2setup* command outside the mounted CD location with either a relative or absolute path name to ensure the DB2 Connect product CD can be unmounted as required. From this window, you can view the installation prerequisites and the release notes or you can proceed directly to the installation.
4. 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/V9.5* default installation path.

If you are installing on a system where this directory is already being used, the DB2 Connect product installation path will have *_xx* added to it, where *xx* are digits, starting at 01 and increasing depending on how many DB2 copies you have installed.

You can also specify your own DB2 database product installation path.

National Language Packs can also be installed by running the *./db2setup* command from the directory where the National Language Pack resides, after a DB2 Connect product has been installed.

The installation logs, *db2setup.log* and *db2setup.err* will be located, by default, in the */tmp* directory. You can specify the location of the log files.

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 the “Installing the DB2 Information Center using the DB2 Setup wizard (UNIX)” topic in *Quick Beginnings for DB2 Servers* .

Installation requirements for DB2 Connect server products (AIX)

Before you install DB2 Connect server products on AIX operating systems, ensure that the system you choose meets the necessary operating system, hardware, software, and communications requirements.

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

Installation requirements

Table 4. AIX installation requirements

Operating System	Hardware
AIX Version 5.3 <ul style="list-style-type: none">64-bit AIX kernel is requiredAIX 5.3 Technology Level (TL) 6 and Service Pack (SP) 2 plus APAR IZ03063Minimum C++ runtime level is xlC.rte 9.0.0.1 and xlC.aix50.rte 9.0.0.1	64-bit Common Hardware Reference Platform (CHRP) architecture ¹ All processors that are capable of running the supported AIX operating systems.
AIX Version 6.1 <ul style="list-style-type: none">64-bit AIX kernel is required	

- ¹To verify that it is a CHRP architecture system, issue the command `lscfg` and look for the following output: `Model Architecture: chrp`

Software requirements

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

```
ln -sf /usr/lib/boot/unix_64 /unix
ln -sf /usr/lib/boot/unix_64 /usr/lib/boot/unix
bosboot -a
shutdown -Fr
```
- DB2 Connect Version 9 requires the “August 2007 IBM C++ Runtime Environment Components for AIX” which includes the `xlC.rte 9.0.0.1` and `xlC.aix50.rte 9.0.0.1` filesets. This is available from the IBM AIX support web site.
- One of the following browsers is required to view online help and to run First Steps (db2fs):
 - Mozilla 1.4 and up
 - Firefox 1.0 and up
 - Netscape 7.0 and up
- For details regarding known AIX issues, see www.ibm.com/support/docview.wss?&uid=swg21165448

Communication requirements

When using a communication protocol, you have the following requirements:

- 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.

DB2 product installation on NFS (Network File System)

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting /opt/IBM/db2/V9.5 and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for a DB2 server. These include possible problems that involve:

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

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

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

For detailed instructions, see the "Setting up DB2 for UNIX and Linux on NFS mounted file systems" white paper in <http://www.ibm.com/developerworks/db2/library/long/dm-0609lee>.

Mounting CDs or DVDs (AIX)

Depending on your system configuration, you might need to log on as root to mount discs.

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

1. Insert the disc in the drive.
2. Create a disc mount point by entering the `mkdir -p /disc` command, where `disc` represents the CD or DVD mount point directory.
3. Allocate a disc file system using SMIT by entering the `smit storage` command.
4. After SMIT starts, select **File Systems** → **Add / Change / Show / Delete File Systems** → **CDROM File Systems** → **Add CDROM File System**.
5. In the Add a File System window:
 - Enter a device name for your CD or DVD file system in the **DEVICE Name** field. Device names for CD or DVD file systems must be unique. If there is a duplicate device name, you may need to delete a previously-defined CD or DVD file system or use another name for your directory. In our example, we will use `/dev/cd0` as the device name.
 - Enter the disc mount point directory in the **MOUNT POINT** window. In our example, the mount point directory is `/disc`.

- 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.
6. Next, mount the CD or DVD file system by entering the `smit mountfs` command.
 7. In the Mount a File System window:
 - Enter the device name for this CD or DVD file system in the **FILE SYSTEM name** field. In our example, the device name is `/dev/cd0`.
 - Enter the disc mount point in the **Directory over which to mount** field. In our example, the mount point is `/disc`.
 - 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 or DVD file system is now mounted. To view the contents of the CD or DVD, place the disk in the drive and enter the `cd /disc` command where `disc` is the disc mount point directory.

Chapter 9. Installing a DB2 Connect server product (HP-UX)

To define your installation preferences and to install a DB2 Connect product on HP-UX, use the DB2 Setup wizard.

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 have two alternatives. You can install a DB2 Connect product:

- Using the response file method
- 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 you begin your installation:

- You can install DB2 Connect using either root or non-root authority. For more information on non-root installation, see the related links.
- Ensure that your system meets:
 - Disk and memory requirements
 - Hardware, distribution and software requirements
- The DB2 product DVD must be mounted on your system.
- The DB2 Connect product image must be available. If you are installing a non-English version of a DB2 Connect product, you must also have the appropriate National Language Packages.
- To locate DB2 products already installed on your system, see the “Listing DB2 products installed on your system (Linux and UNIX)” topic in *Quick Beginnings for DB2 Servers*.
- The DB2 Setup wizard is a graphical installer. You must have X windows software capable of rendering a graphical user interface for the DB2 Setup wizard to run on your machine. Ensure that the X windows server is running. Ensure that you have properly exported your display. For example, export `DISPLAY=9.26.163.144:0`.
- If security software such as Lightweight Directory Access Protocol (LDAP) is used in your environment, you must manually create required DB2 users before you start the DB2 Setup wizard. Refer to the “Centralized user-management considerations” topic before you begin.

Note: Network Information Services (NIS) and Network Information Services Plus (NIS+) features are deprecated starting with DB2 Version 9.1 Fix Pack 2. Support for these features might be removed in a future release. Lightweight Directory Access Protocol (LDAP) is the recommended solution for centralized user-management services.

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

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

```
cd /db2dvd
```

where */db2dvd* represents mount point of the DVD.

2. If you downloaded the DB2 Connect product image, you must decompress and untar the product file.

- a. Decompress the product file:

```
gzip -d product.tar.gz
```

where *product* is the name of the database product that you downloaded.

- b. Untar the product file:

```
tar xvf product.tar
```

- c. Change directory:

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

Note: If you downloaded a National Language Package, untar it into the same directory. This will create the subdirectories (for example *./nlpack/disk2*) in the same directory, and allows the installer to automatically find the installation images without prompting

3. Enter the *./db2setup* command from the directory where the product image resides to start the DB2 Setup wizard. After a few moments, the IBM DB2 Setup Launchpad opens. For multiple CD installations, issue the *db2setup* command outside the mounted CD location with either a relative or absolute path name to ensure the DB2 Connect product CD can be unmounted as required. From this window, you can view the installation prerequisites and the release notes or you can proceed directly to the installation.
4. 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/V9.5* default installation path.

If you are installing on a system where this directory is already being used, the DB2 Connect product installation path will have *_xx* added to it, where *xx* are digits, starting at 01 and increasing depending on how many DB2 copies you have installed.

You can also specify your own DB2 database product installation path.

National Language Packs can also be installed by running the *./db2setup* command from the directory where the National Language Pack resides, after a DB2 Connect product has been installed.

The installation logs, *db2setup.log* and *db2setup.err* will be located, by default, in the */tmp* directory. You can specify the location of the log files.

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 the “Installing the DB2 Information Center using the DB2 Setup wizard (UNIX)” topic in *Quick Beginnings for DB2 Servers* .

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

Before you install DB2 Connect server products on HP-UX operating systems, ensure that the system you choose meets the necessary operating system, hardware, software, and communications requirements.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on HP-UX, the following 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.
- For details regarding known HP-UX issues, see www.ibm.com/support/docview.wss?&uid=swg21257602

Communication requirements

You can use TCP/IP

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

Mounting CDs or DVDs (HP-UX)

This topic explains how to mount your DB2 for HP-UX product CD or DVD.

Depending on your system configuration, you might need to log on as root to mount discs.

To mount your DB2 for HP-UX product CD or DVD:

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

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

Your CD or DVD file system is now mounted. View the contents of the CD or DVD by placing it in the drive and enter the **cd /cdrom** command where cdrom is the mount point directory.

Chapter 10. Installing a DB2 Connect server product (Linux)

To define your installation preferences and to install a DB2 Connect product on Linux, use the DB2 Setup wizard.

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 have two alternatives. You can install a DB2 Connect product:

- Using the response file method
- 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:

- You can install DB2 Connect using either root or non-root authority. For more information on non-root installation, see the related links.
- Ensure that your system meets:
 - Disk and memory requirements
 - Hardware, distribution and software requirements
- The DB2 product DVD must be mounted on your system.
- The DB2 Connect product image must be available. If you are installing a non-English version of a DB2 Connect product, you must also have the appropriate National Language Packages.
- To locate DB2 products already installed on your system, see the “Listing DB2 products installed on your system (Linux and UNIX)” topic in *Quick Beginnings for DB2 Servers*.
- The DB2 Setup wizard is a graphical installer. You must have X windows software capable of rendering a graphical user interface for the DB2 Setup wizard to run on your machine. Ensure that the X windows server is running. Ensure that you have properly exported your display. For example, export `DISPLAY=9.26.163.144:0`.
- If security software such as Lightweight Directory Access Protocol (LDAP) is used in your environment, you must manually create required DB2 users before you start the DB2 Setup wizard. Refer to the “Centralized user-management considerations” topic before you begin.

Note: Network Information Services (NIS) and Network Information Services Plus (NIS+) features are deprecated starting with DB2 Version 9.1 Fix Pack 2. Support for these features might be removed in a future release. Lightweight Directory Access Protocol (LDAP) is the recommended solution for centralized user-management services.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on Linux using the DB2 Setup wizard:

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

```
cd /db2dvd
```

where */db2dvd* represents mount point of the DVD.

2. If you downloaded the DB2 Connect product image, you must decompress and untar the product file.

- a. Decompress the product file:

```
gzip -d product.tar.gz
```

where *product* is the name of the database product that you downloaded.

- b. Untar the product file:

```
tar xvf product.tar
```

- c. Change directory:

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

Note: If you downloaded a National Language Package, untar it into the same directory. This will create the subdirectories (for example *./nlpack/disk2*) in the same directory, and allows the installer to automatically find the installation images without prompting

3. Enter the *./db2setup* command from the directory where the product image resides to start the DB2 Setup wizard. After a few moments, the IBM DB2 Setup Launchpad opens. For multiple CD installations, issue the *db2setup* command outside the mounted CD location with either a relative or absolute path name to ensure the DB2 Connect product CD can be unmounted as required. From this window, you can view the installation prerequisites and the release notes or you can proceed directly to the installation.
4. 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/V9.5* default installation path.

If you are installing on a system where this directory is already being used, the DB2 Connect product installation path will have *_xx* added to it, where *xx* are digits, starting at 01 and increasing depending on how many DB2 copies you have installed.

You can also specify your own DB2 database product installation path.

National Language Packs can also be installed by running the *./db2setup* command from the directory where the National Language Pack resides, after a DB2 Connect product has been installed.

The installation logs, *db2setup.log* and *db2setup.err* will be located, by default, in the */tmp* directory. You can specify the location of the log files.

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 the “Installing the DB2 Information Center using the DB2 Setup wizard (UNIX)” topic in *Quick Beginnings for DB2 Servers* .

Installation requirements for DB2 Connect server products (Linux)

Before you install DB2 Connect server products on Linux operating systems, ensure that the system you choose meets the necessary operating system, hardware, software, and communications requirements.

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, the following 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 System i 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.

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 DVD 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 DVD over NFS to access the installation image

To use the product DVD on a Linux operating system:

1. Mount the appropriate product DVD.
2. Export the directory where you mounted the DVD. For example, if you mounted the DVD under */db2dvd*, then export the */db2dvd* directory.
3. On the IBM zSeries computer running Linux, NFS mount this directory using the following command:

```
mount -t nfs -o ro nfsservername:/db2dvd /local_directory_name
```

where *nfsservername* represents the hostname of the NFS server, *db2dvd* 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 DVD 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 DVD.

Mounting the CD or DVD (Linux)

Depending on your system configuration, you might need to log on as root to mount discs.

To mount the CD or DVD on Linux operating systems:

1. Insert the CD or DVD 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 or DVD.

2. Log out.

Your CD or DVD file system is now mounted. View the contents of the CD or DVD by placing the disc in the drive and enter the `cd /cdrom` command where *cdrom* is the mount point directory.

Chapter 11. Installing a DB2 Connect server product (Solaris Operating System)

To define your installation preferences and to install a DB2 Connect product on the Solaris operating system, use the DB2 Setup wizard.

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 have two alternatives. You can install a DB2 Connect product:

- Using the response file method
- 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:

- You can install DB2 Connect using either root or non-root authority. For more information on non-root installation, see the related links.
- Ensure that your system meets:
 - Disk and memory requirements
 - Hardware, distribution and software requirements
- The DB2 product DVD must be mounted on your system.
- The DB2 Connect product image must be available. If you are installing a non-English version of a DB2 Connect product, you must also have the appropriate National Language Packages.
- To locate DB2 products already installed on your system, see the “Listing DB2 products installed on your system (Linux and UNIX)” topic in *Quick Beginnings for DB2 Servers* .
- The DB2 Setup wizard is a graphical installer. You must have X windows software capable of rendering a graphical user interface for the DB2 Setup wizard to run on your machine. Ensure that the X windows server is running. Ensure that you have properly exported your display. For example, export `DISPLAY=9.26.163.144:0`.
- If security software such as Lightweight Directory Access Protocol (LDAP) is used in your environment, you must manually create required DB2 users before you start the DB2 Setup wizard. Refer to the “Centralized user-management considerations” topic before you begin.

Note: Network Information Services (NIS) and Network Information Services Plus (NIS+) features are deprecated starting with DB2 Version 9.1 Fix Pack 2. Support for these features might be removed in a future release. Lightweight Directory Access Protocol (LDAP) is the recommended solution for centralized user-management services.

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

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

```
cd /db2dvd
```

where */db2dvd* represents mount point of the DVD.

2. If you downloaded the DB2 Connect product image, you must decompress and untar the product file.

- a. Decompress the product file:

```
gzip -d product.tar.gz
```

where *product* is the name of the database product that you downloaded.

- b. Untar the product file:

```
tar xvf product.tar
```

- c. Change directory:

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

Note: If you downloaded a National Language Package, untar it into the same directory. This will create the subdirectories (for example *./nlpack/disk2*) in the same directory, and allows the installer to automatically find the installation images without prompting

3. Enter the *./db2setup* command from the directory where the product image resides to start the DB2 Setup wizard. After a few moments, the IBM DB2 Setup Launchpad opens. For multiple CD installations, issue the *db2setup* command outside the mounted CD location with either a relative or absolute path name to ensure the DB2 Connect product CD can be unmounted as required. From this window, you can view the installation prerequisites and the release notes or you can proceed directly to the installation.
4. 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/V9.5* default installation path.

If you are installing on a system where this directory is already being used, the DB2 Connect product installation path will have *_xx* added to it, where *xx* are digits, starting at 01 and increasing depending on how many DB2 copies you have installed.

You can also specify your own DB2 database product installation path.

National Language Packs can also be installed by running the *./db2setup* command from the directory where the National Language Pack resides, after a DB2 Connect product has been installed.

The installation logs, *db2setup.log* and *db2setup.err* will be located, by default, in the */tmp* directory. You can specify the location of the log files.

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 the “Installing the DB2 Information Center using the DB2 Setup wizard (UNIX)” topic in *Quick Beginnings for DB2 Servers* .

Installation requirements for DB2 Connect products (Solaris Operating Environment)

Before you install DB2 Connect products on Solaris Operating Environment, ensure that the system you choose meets the necessary operating system, hardware, software, and communications requirements.

To install a DB2 Connect product on Solaris, the following requirements must be met:

Table 5. Solaris installation requirements

Operating System	Hardware
Solaris 10 <ul style="list-style-type: none">• 64-bit kernel• Patch 118855-33• If raw devices are used, patch 125101-07	Solaris x64 (Intel 64 or AMD64) ¹
Solaris 9 <ul style="list-style-type: none">• 64-bit kernel• Patches 111711-12 and 111712-12• If raw devices are used, patch 122300-11 Solaris 10 <ul style="list-style-type: none">• 64-bit kernel• If raw devices are used, patch 125100-07	UltraSPARC

1. As of DB2 Version 9.5 Fix Pack 1, you can install DB2 Connect Personal Edition and DB2 Connect server products on Solaris x64.

Operating system requirements

"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 System Patch Clusters are also required. They can be obtained from the <http://sunsolve.sun.com> Web site.

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 system can be downloaded from FTSI at: <http://download.ftsi.fujitsu.com/>.

For an additional list of issues that can affect DB2 database systems on Solaris, refer to: www.ibm.com/support/docview.wss?&uid=swg21257606

Software requirements

- SUNWlibC software is required to install DB2 on Solaris Operating Systems. It can be obtained from the <http://sunsolve.sun.com> Web site.
- 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).

Mounting CDs or DVDs (Solaris Operating System)

If you are mounting the CD or DVD drive from a remote system using NFS, the CD or DVD file system on the remote computer must be exported with root access.

Depending on your local system configuration, you might also need root access on the local computer.

To mount the CD or DVD on Solaris Operating System:

1. Insert the CD or DVD into the drive.
2. If the Volume Manager (vold) is running on your system, the disc is automatically mounted as `/cdrom/cd_label` if the CD or DVD 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 or DVD:

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

- b. Enter the following commands to mount the CD or DVD:

```
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 or DVD mount directory.

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

3. Log out.

Your CD or DVD file system is now mounted. View the contents of the CD or DVD by placing the disk in the drive and enter the `cd /cdrom` command where `cdrom` is the mount point directory.

Chapter 12. 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 using the DB2 Setup wizard. Alternatively, you can install DB2 Connect server products using the response file method.

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 refer to the “Extending the Active Directory Schema for LDAP directory services (Windows)” topic in *Quick Beginnings for DB2 Servers*.
- 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.

- If you want to install DB2 Connect with a non-Administrator account, refer to the topic, Non-Administrator installation of DB2 Connect (Windows).
- To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on Windows using the DB2 Setup wizard:
 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 DVD 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 Abbreviation>-<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.

- 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 DVD 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.

Installation requirements for DB2 Connect server products (Windows)

Before you install DB2 Connect server products on Windows operating systems, ensure that the system you choose meets the necessary operating system, hardware, software, and communications requirements.

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

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.

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 LocalSystem 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. If the extended security feature is selected, you must add the users who will administer or use the DB2 product to either the DB2ADMNS or DB2USERS group as appropriate.

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

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 computer 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.

On Windows Vista, a non-administrator can perform an installation, but will be prompted for administrative credentials by the DB2 Setup wizard.

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

The installation user ID must belong to the Domain Administrators group on the domain if the installation requires a domain account to be created or verified.

You may also use the built-in LocalSystem account as your Service Logon account for all products, except DB2 Enterprise Server Edition

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

The 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 computer 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 "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 computer 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. An error will occur if you use a domain user account to perform a database operation (such as, creating a database) against a DB2 instance created with either a Local user account or the LocalSystem account. If you know you will be a domain user account with your DB2 product, you should create the instance using a domain user account.

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

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

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

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

The "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.

Extending the Active Directory Schema for LDAP directory services (Windows)

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

Your Windows user account must have Schema Administration authority.

To extend the directory schema:

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

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

Non-Administrator installation of DB2 Connect (Windows)

For a non-Administrator's installation, the account you are logged on as must belong to Power Users group.

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

A member of the Windows Administrators group must configure the Windows elevated privileges settings to allow a non-Administrator user account to perform an installation. For example, on a 64-bit operating system you must manually grant full permission on HKLM\Software\Wow6432Node before DB2 Connect Personal Edition can be successfully installed.

Note: If a non-Administrator user account is going to do the product installation, then the VS2005 runtime library must be installed before attempting to install a DB2 product. The VS2005 runtime library is needed on the operating system before the DB2 product can be installed. The VS2005 runtime library is available from the

Microsoft runtime library download web site. There are two choices: choose `vcredist_x86.exe` for 32-bit systems or `vcredist_x64.exe` for 64-bit systems.

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

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

- A non-Administrator has installed DB2 Connect, and then an Administrator attempts to install DB2 Connect on the same system. The Administrator will get a message that the product is already installed. The Administrator does have the authority to uninstall and reinstall the product to get around this issue.
- A non-administrator has installed DB2 Connect, and then a second non-Administrator attempts to install DB2 Connect on the same system. In this scenario, the installation will fail, and return an error message that the user must be an Administrator to install the product.
- An Administrator has installed DB2 Connect, and then a non-Administrator attempts to install DB2 Connect on the same system. In this scenario, the install will fail, and return an error message that the user must be an Administrator to install the product. An Administrator always has the authority to uninstall or reinstall.
- Non-Administrator users cannot uninstall a DB2 product. Those non-Administrator users on a Windows Vista (and later) operating system **can** uninstall a DB2 product.

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 for users that need to run local DB2 applications and tools on the machine. 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.

To add users to the appropriate group:

1. Click **Start** and select **Run**.
2. Type `lusrmgr.msc` and click **OK**.
3. Select **Local Users and Groups**.
4. Select **Users**.
5. Select the user you want to add.
6. Click **Properties**.
7. Click the **Member Of** tab.
8. Click **Add**.

9. Select the appropriate group.
10. 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. Adding a user to a group takes effect the first time the user logs on after the user has been added. For example, if you add your user ID to the DB2ADMNS group, you need to log out and then log in again for this change to take effect.

Chapter 13. Non-root installation overview (Linux and UNIX)

Before Version 9.5, you could install products, apply and roll back fix packs, configure instances, add features, or uninstall products only if you had root privileges. Now, if you are a non-root user, you can perform these tasks on Linux and UNIX platforms.

The DB2 installer automatically creates and configures a non-root instance during a non-root installation. As a non-root user, you can customize the configuration of the non-root instance during the installation. You can also use and maintain the installed DB2 product without root privileges.

The non-root installation of a DB2 product has one DB2 instance with most features enabled by default.

A non-root installation can be attractive for many groups, such as the following ones:

- Enterprises that have thousands of workstations and users who want to install a DB2 product without consuming a system administrator's time
- Application developers who are not typically system administrators but use DB2 products to develop applications
- Independent Software Vendors (ISVs) who develop software that does not require root authority yet embeds a DB2 product

Although non-root installations have most of the functionality of root installations, there are some differences and limitations. You can lift some of the limitations by having a root user run the `db2rfe` command.

Differences between root installations and non-root installations

In addition to a few limitations, the directory structure of a non-root installation is slightly different than the directory structure of a root installation.

During a root installation, subdirectories and files for the DB2 product are created in a directory of the root user's choosing.

Unlike root users, non-root users cannot choose where DB2 products are installed. Non-root installations are always placed in the `$HOME/sqllib` directory, where `$HOME` represents the non-root user's home directory. The layout of the subdirectories within the `sqllib` directory of a non-root is similar to that of a root installation.

For root installations, multiple instances can be created. Instance ownership is associated with the user ID under which the instance was created.

Non-root installations can have only one DB2 instance. The non-root installation directory contains all of the DB2 product files and instance files with no soft links.

The following table summarizes the differences between root installations and non-root installations.

Table 6. Differences between root installations and non-root installations

Criteria	Root installations	Non-root installations
User can select installation directory	Yes	No. DB2 products are installed under the user's home directory.
Number of DB2 instances allowed	Multiple	One
Files deployed during installation	Program files only. Instances must be created after installation.	Program files and instance files. The DB2 product is ready for use immediately after installation.

Limitations of non-root installations

In addition to the differences between root installations and non-root installations, there are several limitations on non-root installations. This topic discusses the limitations to help you decide if you want to use a non-root installation.

Product limitations

Some DB2 products are not supported in non-root installations:

- IBM Data Studio
- DB2 Embedded Application Server (DB2 EAS)
- DB2 Query Patroller
- DB2 Net Search Extender
- Locally installed DB2 Information Center

Note: The locally installed DB2 Information Center is not supported in non-root installations because it requires root authority to start the daemon. However, a non-root-installation DB2 instance can be configured to use a locally installed DB2 Information Center if it is installed on the same computer.

Features and tools limitations

The following features and tools are not available in non-root installations:

- The DB2 Administration Server (DAS) and its associated commands: `dasprt`, `dasdrop`, `daslist`, `dasmigr`, and `dasupdt`
- The Configuration Assistant
- The Control Center
- The ability for the `db2governor` to increase priority is not supported
- In the Work Load Manager (WLM), attempts to set agent priority in a DB2 service class in a non-root DB2 instance are allowed. However, the agent priority will not be respected, and no `SQLCODE` error is returned.
- Automatic starting of non-root DB2 instances at system reboot is not supported

Health monitor limitations

The following health monitor features are not supported in non-root installations:

- Running script or task actions on alert occurrences
- Sending alert notifications

Partitioned database limitation

Only single-partition databases are supported in non-root installations. You cannot add additional database partitions.

Listing DB2 products

The output produced by the `db2ls` command, when run as a non-root user, is different than the output produced when run as a root user. For details, refer to the `db2ls` command topic.

DB2 copies

Each non-root user can have only one copy of a DB2 product installed.

DB2 instance limitation

In non-root installations, one DB2 instance is created during installation. Additional instances cannot be created.

DB2 instance actions can be performed only by the instance owner

Root installations and non-root installations can coexist on the same computer in different installation paths. However, a non-root instance can be updated, or dropped (using the `db2_deinstall` command), only by the non-root user who owns the non-root instance.

A DB2 instance created by a user with root privilege can be updated or dropped only by a user with root privilege.

DB2 instance commands

The following DB2 instance commands are unavailable in non-root installations:

db2icrt

When installing a DB2 product as a non-root user, a single instance is automatically created and configured. Further instances cannot be created in non-root installations. However, if the automatically created instance needs to be configured, you can use the non-root install configuration command, `db2nrcfg`.

db2iupdt

The `db2iupdt` command cannot be used for non-root instances. Instead, use the non-root install configuration command (`db2nrcfg`) to update the non-root DB2 instance. However, updating the non-root instance is normally not required because it gets updated automatically when updating your DB2 product.

db2idrop

The instance that gets automatically created during non-root installations cannot be dropped. The DB2 product must be uninstalled to drop the DB2 instance.

db2imigr

Migration is not supported for non-root installations.

Migration limitation

Root instances cannot be migrated to a non-root instance.

Post-installation actions can be performed only by the DB2 instance owner

Root installations and non-root installations can coexist on the same computer. However, only the original non-root user who installed the DB2 product can perform subsequent actions such as:

- Applying fix packs
- Adding features
- Installing add-on products

Adjusting ulimit values

The `ulimit` command on UNIX and Linux sets or reports user resource limits, such as data and stack limits. For root instances, the database server dynamically updates required `ulimit` settings without changing the permanent settings. However, for non-root instances, the `ulimit` settings can only be checked during installation. A warning message is displayed if the settings are inadequate. Root authority is required to change the `ulimit` settings.

Limitations that can be overcome by running `db2rfe`

There are further limitations on non-root installations which can be overcome by running the `db2rfe` command. The following features and abilities are initially unavailable in non-root installations:

- Operating system-based authentication
- High Availability (HA) feature
- The ability to reserve service names in the `/etc/services` file
- The ability to increase user data limits (ulimits). This ability applies only to AIX. On other platforms, user data limits must be increased manually.

Run the Enable root features for non-root install command (`db2rfe`) to enable these features and abilities. Running the `db2rfe` command is optional, and must be run by a user with root authority.

Authentication type in non-root installations

Operating system-based authentication is the default authentication type for DB2 products. Since non-root installations do not support operating system-based authentication, if you choose not to run the `db2rfe` command after installing your DB2 product as a non-root user, then you must manually set the authentication type. You can do so by updating the following parameters in the database manager configuration (`dbm cfg`) file:

- `clnt_pw_plugin` (Client userid-password plug-in configuration parameter)
- `group_plugin` (Group plug-in configuration parameter)
- `srvcon_pw_plugin` (Userid-password plug-in for incoming connections at the server configuration parameter)

Installing a DB2 product as a non-root user

Most DB2 products can be installed as a non-root user.

Before you install any DB2 product as a non-root user, you should be aware of the differences between root installations and non-root installations, and the limitations of non-root installations. Refer to the Related Links at the end of this topic for details.

Prerequisites for installing a DB2 product as a non-root user are:

- You must be able to mount the installation DVD, or have it mounted for you.
- You must have a valid user ID that can be used as the owner of a DB2 instance.

User IDs have the following restrictions and requirements:

- Must have a primary group other than `guests`, `admins`, `users`, and `local`
- Can include lowercase letters (a-z), numbers (0-9), and the underscore character (_)

- Cannot be longer than eight characters
- Cannot begin with IBM, SYS, SQL, or a number
- Cannot be a DB2 reserved word (USERS, ADMINS, GUESTS, PUBLIC, or LOCAL), or an SQL reserved word
- Cannot use any User IDs with root privilege for the DB2 instance ID, DAS ID or fenced ID.
- Cannot include accented characters
- If existing user IDs are specified instead of creating new user IDs, make sure that the user IDs:
 - Are not locked
 - Do not have expired passwords
- The hardware and software prerequisites that exist for the product you are installing apply to the non-root user just as they do for root users.
- On AIX Version 5.3, Asynchronous I/O (AIO) must be enabled.
- Your home directory must be a valid DB2 path.
DB2 installation paths have the following rules:
 - Can include lowercase letters (a-z), uppercase letters (A-Z), and the underscore character (_)
 - Cannot exceed 128 characters
 - Cannot contain spaces
 - Cannot contain non-English characters

Installing DB2 products as a non-root user should be transparent to the non-root user. In other words, there is nothing special a non-root user needs to do to install a DB2 product, other than being logged in as a non-root user. To perform a non-root installation:

1. Log in as a non-root user
2. Install your DB2 product using any of the methods available to you. Options include:
 - The DB2 Setup wizard (GUI install)
 - The db2_install command
 - The db2setup command with a response file (silent install)

Note: Since non-root users cannot choose the directory where DB2 products are installed, any FILE keyword in your response file is ignored.

Refer to the Related Links at the end of this topic for details.

3. After the DB2 product is installed, you need to open a new login session to use the non-root DB2 instance. Alternatively, you can use the same login session if you source the DB2 instance environment with \$HOME/sqllib/db2profile (for Bourne shell and Korn shell users) or \$HOME/sqllib/db2chsrc (for C shell users), where \$HOME is the non-root user's home directory.

After the DB2 product is installed, you should verify your operating system user process resource limits (ulimits). If the minimum ulimit values are not met, the DB2 engine could encounter unexpected operating resource shortage errors. These errors can lead to a DB2 outage.

Enabling root-based features in non-root installations with db2rfe

There are several features and abilities in non-root installations that are initially unavailable but can be enabled by running the db2rfe command

This task requires root authority.

To enable the features and abilities that are initially unavailable in non-root installations:

1. Locate the sample configuration files. Two sample configuration files are provided:
 - `$HOME/sqllib/instance/db2rfe.cfg` is pre-configured with default values for the non-root DB2 instance
 - `$HOME/sqllib/cfg/db2rfe.cfg.sample` is not configuredwhere `$HOME` is the non-root user's home directory.
2. Copy one of the sample configuration files to a different location so the original file remains unaltered.
3. Update the copied configuration file as needed. This configuration file is input to the db2rfe command. An example of a configuration file is:

```
INSTANCENAME=db2inst2
SET_ULIMIT=NO
ENABLE_HA=NO
ENABLE_OS_AUTHENTICATION=NO
RESERVE_REMOTE_CONNECTION=NO
  **SVCENAME=db2c_db2inst2
  **SVCEPORT=48000
RESERVE_TEXT_SEARCH_CONNECTION=NO
  **SVCENAME_TEXT_SEARCH=db2j_db2inst2
  **SVCEPORT_TEXT_SEARCH=55000
```

Note:

- The value for the **INSTANCENAME** parameter is filled in automatically by DB2 installer
- The **SET_ULIMIT** parameter is available only on AIX. On other operating systems, a user with root authority needs to set ulimit values manually.
- The default value for the other keywords is NO
- Child parameters (such as **SVCENAME**) are commented out by default. Comments are denoted with ******
- If you set a parameter to YES, and if it has any child parameters, it is recommended that you uncomment the child parameters and provide appropriate values. Any port values that are provided are examples. Ensure the port values you assign are free.

An example is provided below to show an edited configuration file that will enable the following features and abilities:

- High availability
- Operating system-based authentication
- DB2 Text Search, with a service name of **db2j_db2inst2** and a port value of **55000**

To enable these features and abilities, edit the configuration file as follows:

```
INSTANCENAME=db2inst2
SET_ULIMIT=NO
ENABLE_HA=YES
ENABLE_OS_AUTHENTICATION=YES
```



```
RESERVE_REMOTE_CONNECTION=NO
**SVCENAME=db2c_db2inst2
**SVCEPORT=48000
RESERVE_TEXT_SEARCH_CONNECTION=YES
SVCENAME_TEXT_SEARCH=db2j_db2inst2
SVCEPORT_TEXT_SEARCH=55000
```

4. Log in as a user with root authority
5. Navigate to the \$HOME/sqllib/instance directory, where \$HOME represent's the non-root user's home directory.
6. Run the db2rfe command using the following syntax:
`db2rfe -f config_file`

where *config_file* is the configuration file created in Step 3 on page 74.

You must rerun the db2rfe command after applying fix packs to keep root-based features enabled on non-root installations.

Applying fix packs to a non-root installation

The task of applying fix packs to a non-root installation is essentially the same as applying fix packs to a root installation, with a few exceptions.

Before applying fix packs to a non-root installation, you must log on with the user ID that was used to install the non-root installation.

If you enabled root features in your non-root installation using the db2rfe command, you should locate the configuration file that was used when running the db2rfe command. That configuration file will be needed to re-enable the root features after you apply the fix pack.

To apply a fix pack to a non-root installation:

1. Apply your fix pack according to the Applying fix packs topic.

Note: The `installFixPack` command's `-b` option is invalid for non-root installations.

2. Optional: Run the db2rfe command. If you had root-based features enabled in your non-root installation, and if you want to re-enable those features, the db2rfe command must be rerun. Running this command requires root authority.

Note: If you edited \$HOME/sqllib/instance/db2rfe.cfg when you first enabled root features, that configuration file will not have been overwritten when applying the fix pack, so you can reuse that file when running the db2rfe command. However, you should also check \$HOME/sqllib/cfg/db2rfe.cfg.sample. If the fix pack introduced any new root features available to non-root installations, \$HOME/sqllib/cfg/db2rfe.cfg.sample shows the new features.

Removing non-root DB2 products using db2_deinstall (Linux and UNIX)

This task provides steps for removing non-root DB2 products or components using the `db2_deinstall` command.

You must stop the non-root instance before running the `db2_deinstall` command.

Note:

- This task applies to DB2 products that were installed without root authority. A separate task exists for uninstalling DB2 products that were installed with root authority.
- As with root users, non-root users can use the `db2_deinstall` command to uninstall DB2 products. The `db2_deinstall` command for non-root installations has the same options as root installations, and has an extra option: `-f sqllib`.
- It is important to note that running `db2_deinstall` as a non-root user uninstalls the DB2 product *and* drops the non-root instance. This is different than root installations, where running `db2_deinstall` only uninstalls the DB2 program files.
- You cannot remove DB2 products using a native operating system utility, such as `rpm` or `SMIT`.

To uninstall a DB2 product that was installed by a non-root user:

1. Log in with the user ID that was used to install the DB2 product.
2. Navigate to the `$HOME/sqllib/install` directory, where `$HOME` is your home directory.
3. Run the `db2_deinstall` command.

Note:

- If you run the `db2_deinstall` command with the `-a` option, the DB2 program files are removed, but any configuration files are left behind in a backup directory called `sqllib_bk`.
- If you run the `db2_deinstall` command with the `-a -f sqllib` option, the entire `sqllib` subdirectory in your home directory will be removed. If you have any files in `sqllib` you want to keep, be sure to copy them elsewhere before running `db2_deinstall -a -f sqllib`.
- As with root installations, running the `db2_deinstall` command with the `-F` option against a non-root installation allows the non-root user to remove specific DB2 features. In non-root installations, however, you can also remove specific DB2 features by running the `db2nrupdt` command.

Part 6. Postinstallation tasks

Chapter 14. License key 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.

Using the License Center

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

The license key is available from either the DB2 product or feature image you downloaded from Passport Advantage®, or from the Activation CD you received in the physical media pack from IBM.

On Linux or Windows operating systems, you can register license key using the License Center. On UNIX operating systems, use the `db2licm` command to register a license key.

On Linux operating systems, the instance owner must have read and write privileges on the directory where the license files are located.

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 an instance on the system you selected. 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 servers: `/cd/db2/license/license_filename.lic`

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

5. Click Apply to add the license key.

Setting the DB2 license policy using the License Center

For DB2 Connect Enterprise Server Edition the license policy controls and monitors the number of users that can connect simultaneously to a DB2 Connect server. For WebSphere Replication Server or WebSphere Federation Server, the license policy controls and monitors the number of connectors to a non-DB2 data source.

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 Replication Server or WebSphere Federation Server Concurrent Connector policy, select **Connector** and enter the number of connector 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.

Using the db2licm command

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

The license key is available from either the DB2 product or feature image you downloaded from Passport Advantage, or from the Activation CD you received in the physical media pack from IBM.

- On Windows operating systems, if you are a member of the local administrator, register a DB2 license key by entering the following command:

```
db2instance_path\bin\db2licm -a filename
```

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.

- On Linux or UNIX operating systems, if you are the owner of the installation, register a DB2 license key by entering the following command:

```
DB2DIR/adm/db2licm -a filename
```

where

– *DB2DIR* specifies the path where the DB2 product was installed. The default installation directory is:

- For AIX, HP-UX or Solaris /opt/IBM/db2/V9.5
- For Linux/opt/ibm/db2/V9.5

– *filename* is the full pathname and filename for the license file that corresponds to the product or feature.

- On Linux or UNIX operating systems, if you are the instance owner or a member of sysadm group, register a DB2 license key by entering the following command:

```
INSTHOME/sql1lib/adm/db2licm -a filename
```

where *INSTHOME* is the home directory of the instance owner and *filename* is the full pathname and filename for the license file that corresponds to the product you have purchased.

Setting the DB2 license policy using the db2licm command

For DB2 Connect Enterprise Server Edition the license policy controls and monitors the number of users that can connect simultaneously to a DB2 Connect server.

For WebSphere Replication Server or WebSphere Federation Server, the license policy controls and monitors the number of connectors to a non-DB2 data source.

1. 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 Identifier field.

2. 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 Replication Server or WebSphere Federation Server Concurrent Connector policy, enter the following command:

```
db2licm -c wsfs concurrent
```

or

```
db2licm -c wsrs concurrent
```

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

```
db2licm -p db2consv concurrent
```

Chapter 15. Applying fix packs

It is recommended that you keep your DB2 environment running at the latest fix pack level to ensure problem-free operation. To install a fix pack successfully, perform all of the necessary pre-installation and post-installation tasks.

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. Each fix pack contains an APARLIST.TXT file, which describes the fixes it contains.

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.

The fix pack images available are:

- A single server image.

The single server image contains the new and updated code required for all DB2 server products and the IBM Data Server Client. If more than one DB2 server product is installed in a single location, the DB2 server fix pack applies maintenance code updates to all the installed DB2 server products. The Data Server Client fix pack is contained within the one DB2 server fix pack (namely the fix pack that can service any one of the following server products: Enterprise Server Edition, Workgroup Server Edition, Express Edition, Personal Edition, Connect Enterprise Edition, Connect Application Server Edition, Connect Unlimited Edition for zSeries, and Connect Unlimited Edition for i5/OS). You can use the DB2 server fix pack to upgrade a Data Server Client.

A single server image can also be used to install any of the DB2 database server products, at a particular fix pack level, with a DB2 try and buy license by default.

- A fix pack for each of the other DB2 database products.

Use this fix pack only if you only have non-server database products or add-on products installed. For example, IBM Data Server Runtime Client or Query Patroller.

Do not use this type of fix pack if the installed DB2 products are only DB2 server products or a Data Server Client. Instead, use the single server image fix pack.

For Windows platforms, if you have more than one DB2 database product (which includes at least one product that is not a Data Server Client or a DB2 server) installed in a single DB2 copy, you must download and uncompress all of the corresponding product-specific fix packs before starting the fix pack installation process.

- A universal fix pack (on Linux or UNIX platforms only).

The universal fix pack services installations where more than one DB2 database product has been installed.

The universal fix pack is not needed if the installed DB2 products are only DB2 server products or a Data Server Client. In this case, the single server image fix pack should be used.

Restrictions

- A DB2 Version 9.5 fix pack can only be applied to DB2 Version 9.5 general availability (GA) or fix pack level copies.
- All DB2 instances, DAS, and applications related to the DB2 copy being updated must be stopped before installing a fix pack.
- If you are using the database partitioning feature (DPF), prior to installing the fix pack, you must stop the database manager on all nodes. You must install the fix pack on the instance owning node and all other partitioned nodes. All computers participating in the instance must be upgraded to the same fix pack level.
- On Linux or UNIX operating systems:
 - If you have DB2 products on a Network File System (NFS), you must ensure the following are stopped completely before installing the fix pack: all instances, the DB2 administration server (DAS), interprocess communications (IPC), and applications on other machines using the same NFS mounted installation.
 - If the system commands `fuser` or `lsof` are not available, the `installFixPack` command cannot detect loaded DB2 files. You must ensure no DB2 files are loaded and provide an override option to install the fix pack. On UNIX, the `fuser` command is required to check for loaded files. On Linux, either the `fuser` command or `lsof` command is required.
For details on the override option, see the `installFixPack` command.
- On client applications, after a fix pack has been applied, to perform autobind of applications, the user must have bind authority.
- Installation of a DB2 fix pack will not service IBM Data Studio Administration Console or IBM Data Studio.

For non-root installations on Linux or UNIX, root-based features (such as High Availability and operating system-based authentication) can be enabled using the `db2rfe` command. If root-based features were enabled after installing your DB2 product, you must rerun the `db2rfe` command each time a fix pack is applied in order to re-enable those features. For details, see the non-root related links below.

On Linux or UNIX operating systems, if national languages have been installed, you also require a separate national language fix pack. The national language fix pack can not be installed alone. A universal or product-specific fix pack must be applied at the same time and they must both be at the same fix pack level. For example, if you are applying a universal fix pack to non-English DB2 database products on Linux or UNIX, you must apply both the universal fix pack and the national language fix pack to update the DB2 database products.

If you have multiple DB2 copies on the same system, those copies can be at different version and fix pack levels. If you want to apply a fix pack to one or more DB2 copies, you must install the fix pack on those DB2 copies one by one.

Chapter 16. DB2 Connect product installation requirements for host and midrange systems

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

Part 7. Preparing communications and access to host and iSeries databases

Chapter 17. Preparing DB2 for i5/OS and DB2 UDB for iSeries for connections from DB2 Connect

DB2 Connect gives remote system applications access to data on your DB2 for i5/OS and DB2 Universal Database™ (UDB) for iSeries system.

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 (*e1an)

Lists Ethernet adapters

WRKLIND (*tr1an)

Lists token ring adapters

WRKLIND (*a11)

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 for i5/OS and DB2 Universal Database (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:

```

Display Relational Database Directory Entries

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

Option          Relational          Remote
                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 System i server, enter your values into the worksheet that follows:

Table 7. Configuration parameters from System i

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).

Chapter 18. 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 topic that discusses enabling multisite updates using the Control Center in the related links.

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

Host databases

The term *database* is used throughout this document to describe a relational database management system (RDBMS). Other systems with which DB2 Connect communicates might use the term database to describe a slightly different concept. The DB2 Connect term database can also refer to:

OS/390 or z/OS

DB2 Universal Database (UDB) for OS/390 and z/OS Version 7 or DB2 UDB for z/OS Version 8. A DB2 Universal Database for z/OS and OS/390 subsystem identified by its LOCATION NAME. The LOCATION NAME can be determined by logging into TSO and issuing the following SQL query using one of the available query tools:

```
select current server from sysibm.sysdummy1
```

LOCATION NAME is also defined in the Boot Strap Data Set (BSDS) as well as the DSNL004I message (LOCATION=location), which is written when the Distributed Data Facility (DDF) is started. LOCATION NAME supports up to 8 alias location names, allowing applications the ability to use different dbalias names to access a Version 8 z/OS server. Use the z/OS -display ddf command to get the DB2 server location name, domain name, IP address and port.

VSE DB2 for VSE running in a database partition identified by its DBNAME

VM DB2 for VM running in a CMS virtual machine identified by its DBNAME

OS/400®

DB2 for i5/OS, an integral part of the OS/400 operating system. Only one database can exist on an System i server unless the system is configured to use independent auxiliary storage pools.

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

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

On UNIX 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 System i server.
2. 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 8. 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 9. 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		

Note:

- a. To obtain the host's IP address TCP-9, enter at the host:
TSO NETSTAT HOME
- b. To obtain the port number TCP-11, look for DSNL004I in the DB2 master address space or system log.

Table 10. 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 11. 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	

3. Complete a copy of the worksheet example for each TCP/IP host:
 - a. 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).
 - b. Fill in the values to be used for the host name and IP address of the DB2 Connect workstation (TCP-18 and TCP-19).
 - c. Determine the service name or port number to be used for the connection (TCP-10 or TCP-20, or TCP-11 or TCP-21).
 - d. Determine the LOCATION NAME of the DB2 for OS/390 and z/OS database server to which you want to connect.
 - e. Determine the values to be used for user ID and PASSWORD when connecting to the host database.
4. At your zSeries server:
 - a. Verify the host address or the host name.
 - b. Verify the port number or the service name.
 - c. Update the services file with the correct port number and service name if necessary.

- d. 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.
- e. Ensure the new definitions are active before attempting to test the connection. Refer to your host network administrator or change control staff if necessary.
- f. 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*.
- g. 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/>

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.

Chapter 19. 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) .

Chapter 20. Configuring connections to mainframe and midrange servers

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. The connections to the remote systems is done using either the Configuration Assistant (CA) or the command line processor (CLP).

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

This task describes how to connect to a remote database host or System i 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 System i database server.

Your DB2 Connect workstation can be either:

A IBM data server client

The IBM data server client can connect indirectly to host or System i databases through a DB2 Connect server product.

DB2 Connect Personal Edition

You can connect directly to host or System i 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 IBM data server 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.

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

Configuring a connection to host and System i database servers using the CLP

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

Prerequisites

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

- TCP/IP is functional on the DB2 Connect server and host or System i 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*)

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

1. Configure TCP/IP on the DB2 Connect server.
2. Refer to the “CATALOG TCPIP/TCPIP4/TCPIP6 NODE command” topic in the *Command Reference*.
3. Refer to the “CATALOG DCS DATABASE command” topic in the *Command Reference*.
4. Refer to the “CATALOG DATABASE command” topic in the *Command Reference*.
5. Bind utilities and applications to the host or System i database server.
6. Refer to the “CONNECT (Type 1) statement” topic in the *SQL Reference, Volume 2* to test the host or System i 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 System i. 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.

Part 8. Reference

Chapter 21. Configuring access to host and System i 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.

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.

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.

The search method feature might 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 might 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.

To configure a database connection by searching the network:

1. Log on to the system with a valid DB2 user ID.
2. Start the CA. The CA can be started from the Start menu on Windows or using the db2ca command on both Windows and UNIX systems.
3. On the CA menu bar, under **Selected**, choose **Add Database Using Wizard**. The **Add Database Wizard** opens.
4. Select the **Search the network** radio button and click **Next**.
5. Double-click on the folder beside **Known Systems** to list all the systems known to your client or double-click on the folder beside **Other Systems** to list all the systems on the network. If no systems are listed, you can click **Add System** to specify one. Once you add a system, it will appear in the **Known Systems** list.
6. Expand the entries for the system you are interested in until you see the database you want to add. Select the database. Click **Next**.
7. Type a local database alias name in the **Database alias** field and optionally type a comment that describes this database in the **Comment** field.

8. If you are planning to use ODBC, register this database as an ODBC data source. ODBC must be installed to perform this operation.
9. Click **Finish**. You can now use the database you added. Click **Close** to exit the CA.

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.

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.

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.

Testing a database connection using the Configuration Assistant

After configuration, your database connection should be tested.

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 might have incorrectly specified, select the database in the details view and select **Change Database** from the **Selected** menu item.

When setting up a server to work with development environments (such as IBM Data Studio), you might encounter error message SQL30081N at the initial DB2 connection. A possible root cause is that the firewall at the remote database server has prevented the connection from being established. In this case, verify the firewall is properly configured to accept connection requests from the client.

Removing a DCS (host database)

Use the DCS page of the Advanced Configuration Assistant notebook to remove a DCS (host database) entry.

1. If you are not in the Advanced view, from the **View** menu, select **Advanced View**.
2. Select the DCS entry that you want to remove.
3. From the **Selected** menu, click **Remove DCS**. A confirmation window opens where you verify your selection.

Chapter 22. 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 IBM Data Server 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 the DB2 product means the languages in which data can exist. These languages are a superset of languages supported by the DB2 interface.

Displaying the DB2 Setup wizard in your national language (Linux and UNIX)

The `db2setup` command queries the operating system to determine the existing language settings. If the language setting of your operating system is supported by `db2setup`, then that language will be used when displaying the DB2 Setup wizard.

If your system uses the same code pages but different locale names than those supported by the DB2 interface, you can still see the translated `db2setup` by setting your `LANG` environment variable to the appropriate value by entering the following command:

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

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

C shell:

```
setenv LANG <locale>
```

where *locale* is a locale supported by the DB2 interface.

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.

On Windows operating systems, you can run `setup.exe` with the `-i` parameter to specify the two-letter language code of the language the installation is to use.

On Linux and UNIX operating systems, it is recommended that you set the **LANG** environment variable to display the DB2 Setup wizard in your national language.

Table 12. Language identifiers

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

Changing the DB2 product 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 a DB2 product with languages supported by the DB2 interface. Languages supported by a DB2 product means the languages in which data can exist. These languages are a superset of languages supported by the DB2 interface.

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

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

To change the DB2 product interface language on Windows operating systems:

1. Through the Control Panel, select **Regional and Language Options**.
2. On the **Regional Options** tab under **Standards and formats**, select the appropriate language. On Windows Vista, use the **Formats** tab for this step.
3. On the **Regional Options** tab under **Location**, select the location that corresponds to the appropriate language.
4. On the **Advanced** tab under **Language for non-Unicode programs** select the appropriate language. On Windows Vista, on the **Administrative** tab, under **Language for non-unicode programs**, click **Change system locale** and select the appropriate language. You will then be asked to reboot, click **Cancel**.
5. On the **Advanced** tab under **Default user account settings**, check the **Apply all settings to the current user account and to the default user profile** box. On Windows Vista, on the **Administrative** tab under **reserved accounts**, click **Copy to reserved accounts** and check the accounts that you want to copy the language settings to.
6. You will be asked to reboot before these changes come into effect.

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

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.

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. If the operating system language is not supported, English is used as the DB2 interface language.

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.

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`.

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 System i 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 SQL statement and 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.

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.

Refer to the supported territory codes and code pages topic for the supported conversions between code pages on the DB2 Connect and CCSIDs on the host or System i server.

Chapter 23. Developing database applications

Binding and running your applications in an environment that uses DB2 Connect has specific considerations which are presented here.

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.

- To bind the utilities and applications to the host or System i database server, connect to the host or System i 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.

- To bind database utilities to a DB2 database, use one of the following methods, depending on your workstation's operating system:
 - The Configuration Assistant (CA):
 1. Start the 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**.
 - 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.

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`

Note:

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.

Running your own applications

You can build and run DB2 applications with an IBM Data Server Client installed.

Various types of applications can access DB2 databases:

- Applications developed using the IBM data server client that include embedded SQL, APIs, stored procedures, user-defined functions or calls to the DB2 CLI
- ODBC applications
- Java applications using the JDBC or SQLJ interfaces
- PHP applications Ruby/Ruby on Rails applications
- Ruby or Ruby on Rails applications
- Perl applications

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

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

To run an 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. (Optionally) Bind the necessary files to support the database application driver being used.
5. Run the application program.

Chapter 24. Uninstalling DB2 Connect

At some point in the future you may need to remove your DB2 Connect products from your system. The requirements for removing or uninstalling your DB2 Connect products are presented based on the operating system you are using.

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.

To remove your DB2 product from Windows:

1. (Optional) Drop all databases using the Control Center or drop database command. Be sure that you no longer need these databases. 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.

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.

Note: This task applies to DB2 products that were installed with root authority. A separate topic explains how to uninstall DB2 products that were installed as a non-root user.

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. Refer to the *Quick Beginnings for DB2 Servers* manual.
3. Remove the DB2 Administration Server, or run the `dasupdt` command to update the DB2 Administration Server to another installation path. To remove the DB2 Administration Server, refer to the *Quick Beginnings for DB2 Servers* manual.
4. Stop all DB2 instances. Refer to the *Quick Beginnings for DB2 Servers* manual.
5. Remove the DB2 instances, or run the `db2iupdt` command to update the instances another installation path. To remove the DB2 instances, refer to the *Quick Beginnings for DB2 Servers* manual.
6. Remove the DB2 products. Refer to the *Quick Beginnings for DB2 Servers* manual.

Part 9. Appendixes

Appendix A. Overview of the DB2 technical information

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

- DB2 Information Center
 - Topics (Task, concept and reference topics)
 - Help for DB2 tools
 - Sample programs
 - Tutorials
- DB2 books
 - PDF files (downloadable)
 - PDF files (from the DB2 PDF DVD)
 - printed books
- Command line help
 - Command help
 - Message help

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

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

Documentation feedback

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

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

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. English DB2 Version 9.5 manuals in PDF format and translated versions can be downloaded from www.ibm.com/support/docview.wss?rs=71&uid=swg2700947.

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

The form number increases each time a manual is updated. Ensure that you are reading the most recent version of the manuals, as listed below.

Note: The DB2 Information Center is updated more frequently than either the PDF or the hard-copy books.

Table 13. DB2 technical information

Name	Form Number	Available in print
<i>Administrative API Reference</i>	SC23-5842-01	Yes
<i>Administrative Routines and Views</i>	SC23-5843-01	No
<i>Call Level Interface Guide and Reference, Volume 1</i>	SC23-5844-01	Yes
<i>Call Level Interface Guide and Reference, Volume 2</i>	SC23-5845-01	Yes
<i>Command Reference</i>	SC23-5846-01	Yes
<i>Data Movement Utilities Guide and Reference</i>	SC23-5847-01	Yes
<i>Data Recovery and High Availability Guide and Reference</i>	SC23-5848-01	Yes
<i>Data Servers, Databases, and Database Objects Guide</i>	SC23-5849-01	Yes
<i>Database Security Guide</i>	SC23-5850-01	Yes
<i>Developing ADO.NET and OLE DB Applications</i>	SC23-5851-01	Yes
<i>Developing Embedded SQL Applications</i>	SC23-5852-01	Yes
<i>Developing Java Applications</i>	SC23-5853-01	Yes
<i>Developing Perl and PHP Applications</i>	SC23-5854-01	No
<i>Developing User-defined Routines (SQL and External)</i>	SC23-5855-01	Yes
<i>Getting Started with Database Application Development</i>	GC23-5856-01	Yes
<i>Getting Started with DB2 installation and administration on Linux and Windows</i>	GC23-5857-01	Yes
<i>Internationalization Guide</i>	SC23-5858-01	Yes
<i>Message Reference, Volume 1</i>	GI11-7855-00	No
<i>Message Reference, Volume 2</i>	GI11-7856-00	No
<i>Migration Guide</i>	GC23-5859-01	Yes
<i>Net Search Extender Administration and User's Guide</i>	SC23-8509-01	Yes
<i>Partitioning and Clustering Guide</i>	SC23-5860-01	Yes
<i>Query Patroller Administration and User's Guide</i>	SC23-8507-00	Yes
<i>Quick Beginnings for IBM Data Server Clients</i>	GC23-5863-01	No

Table 13. DB2 technical information (continued)

Name	Form Number	Available in print
<i>Quick Beginnings for DB2 Servers</i>	GC23-5864-01	Yes
<i>Spatial Extender and Geodetic Data Management Feature User's Guide and Reference</i>	SC23-8508-01	Yes
<i>SQL Reference, Volume 1</i>	SC23-5861-01	Yes
<i>SQL Reference, Volume 2</i>	SC23-5862-01	Yes
<i>System Monitor Guide and Reference</i>	SC23-5865-01	Yes
<i>Troubleshooting Guide</i>	GI11-7857-01	No
<i>Tuning Database Performance</i>	SC23-5867-01	Yes
<i>Visual Explain Tutorial</i>	SC23-5868-00	No
<i>What's New</i>	SC23-5869-01	Yes
<i>Workload Manager Guide and Reference</i>	SC23-5870-01	Yes
<i>pureXML Guide</i>	SC23-5871-01	Yes
<i>XQuery Reference</i>	SC23-5872-01	No

Table 14. DB2 Connect-specific technical information

Name	Form Number	Available in print
<i>Quick Beginnings for DB2 Connect Personal Edition</i>	GC23-5839-01	Yes
<i>Quick Beginnings for DB2 Connect Servers</i>	GC23-5840-01	Yes
<i>DB2 Connect User's Guide</i>	SC23-5841-01	Yes

Table 15. Information Integration technical information

Name	Form Number	Available in print
<i>Information Integration: Administration Guide for Federated Systems</i>	SC19-1020-01	Yes
<i>Information Integration: ASNCLP Program Reference for Replication and Event Publishing</i>	SC19-1018-02	Yes
<i>Information Integration: Configuration Guide for Federated Data Sources</i>	SC19-1034-01	No
<i>Information Integration: SQL Replication Guide and Reference</i>	SC19-1030-01	Yes
<i>Information Integration: Introduction to Replication and Event Publishing</i>	SC19-1028-01	Yes

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 DVD* 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 DVD* 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 DVD* 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/db2luw/v9r5>.

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:
 1. 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.
 2. When you call, specify that you want to order a DB2 publication.
 3. Provide your representative with the titles and form numbers of the books that you want to order. For titles and form numbers, see "DB2 technical library in hardcopy or PDF format" on page 115.

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.

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.

Accessing different versions of the DB2 Information Center

For DB2 Version 9.5 topics, the DB2 Information Center URL is <http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/>

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/>

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.

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

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

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

If you have installed the DB2 Information Center locally, you can obtain and install documentation updates from IBM.

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 apply updates. Non-Administrative and Non-Root DB2 Information Centers always run in stand-alone mode. .
2. Use the Update feature to see what updates are available. If there are updates that you would like to install, you can use the Update feature to obtain and install them

Note: If your environment requires installing the DB2 Information Center updates on a machine that is not connected to the internet, you have to mirror the update site to a local file system using a machine that is connected to the internet and has the DB2 Information Center installed. If many users on your network will be installing the documentation updates, you can reduce the time required for individuals to perform the updates by also mirroring the update site locally and creating a proxy for the update site.

If update packages are available, use the Update feature to get the packages. However, the Update feature is only available in stand-alone mode.

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

Note: On Windows Vista, the commands listed below must be run as an administrator. To launch a command prompt or graphical tool with full administrator privileges, right-click on the shortcut and then select **Run as administrator**.

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

1. Stop the DB2 Information Center.
 - 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/db2icdv95 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 <Program Files>\IBM\DB2 Information Center\Version 9.5 directory, where <Program Files> represents the location of the Program Files directory.
 - c. Navigate from the installation directory to the doc\bin directory.
 - d. Run the help_start.bat file:

```
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/V9.5 directory.
- b. Navigate from the installation directory to the doc/bin directory.
- c. Run the help_start script:


```
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 installation process, check the selections you want to install, then click **Install Updates**.
5. After the installation process has completed, click **Finish**.
6. Stop the stand-alone Information Center:

- On Windows, navigate to the installation directory's doc\bin directory, and run the help_end.bat file:

```
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, navigate to the installation directory's doc/bin directory, and run the help_end script:

```
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.
 - 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/db2icdv95 start
```

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

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.

“pureXML™” in *pureXML Guide*

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

“Visual Explain” in *Visual Explain Tutorial*

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

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>

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