Quick Beginnings for DB2 Connect Servers
Updated December, 2010
Note
Before using this information and the product it supports, read the general information under Appendix B, "Notices," on page 129.

Edition Notice
This document contains proprietary information of IBM. It is provided under a license agreement and is protected by copyright law. The information contained in this publication does not include any product warranties, and any statements provided in this manual should not be interpreted as such.

You can order IBM publications online or through your local IBM representative.
• To order publications online, go to the IBM Publications Center at www.ibm.com/shop/publications/order
• To find your local IBM representative, go to the IBM Directory of Worldwide Contacts at www.ibm.com/planetwide

To order DB2 publications from DB2 Marketing and Sales in the United States or Canada, call 1-800-IBM-4YOU (426-4968).

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
## Contents

### Part 1. About this book .......................... 1

### Part 2. Introduction to DB2 Connect .............. 3

**Chapter 1. About DB2 Connect** ................. 5
- DB2 Connect product offerings .................. 5
- IBM i and mainframe support for DB2 Connect .... 5

**Chapter 2. Common DB2 Connect scenarios** .......... 7
- Access DB2 data from remote clients .............. 7
- Accessing DB2 host data from the web using Java .... 7
- Accessing host or System i DB2 data using DB2 Connect ................................................................. 8
- Managing connections to databases using the Configuration Assistant (Linux and Windows) ......... 13
- Understanding the Administration Server ........ 14
- Administering local and remote instances and databases with the DB2 administration tools (available on Linux and Windows) ........ 14
- IBM Data Server Client support for database application development .......................................................... 16

### Part 3. Migrating DB2 Connect .................. 19

**Chapter 3. Migration to DB2 Connect Version 9.5** .......... 21
- Migration essentials for DB2 Connect .............. 22
- Pre-migration tasks for DB2 Connect servers ...... 23
- Migrating DB2 Connect servers ................... 24
- Post-migration tasks for DB2 Connect servers .... 25

### Part 4. Preinstallation tasks ..................... 27

**Chapter 4. Java software support for DB2 products** .......... 29

**Chapter 5. Kernel parameters (Linux and UNIX)** .......... 33
- Modifying kernel parameters (HP-UX) .............. 33
- Recommended kernel configuration parameters (HP-UX) ........ 33
- Modifying kernel parameters (Linux) .............. 33
- Modifying kernel parameters (Solaris Operating System) .................. 34

### Part 5. Installation and configuration tasks ........ 37

**Chapter 6. DB2 Connect server products: installation and configuration overview** .......... 39

**Chapter 7. Disk and memory requirements** .......... 41

**Chapter 8. Installing a DB2 Connect server product (AIX)** .......... 43
- Installation requirements for DB2 Connect server products (AIX) ...................................................... 45
- Mounting CDs or DVDs (AIX) ....................... 47

**Chapter 9. Installing a DB2 Connect server product (HP-UX)** .......... 49
- Installation requirements for DB2 Connect server products (HP-UX) ...................................................... 51
- Mounting CDs or DVDs (HP-UX) ....................... 51

**Chapter 10. Installing a DB2 Connect server product (Linux)** .......... 53
- Installation requirements for DB2 Connect server products (Linux) ...................................................... 55
- Preparing to install DB2 for Linux on zSeries ........ 55
- Mounting the CD or DVD (Linux) .................... 56

**Chapter 11. Installing a DB2 Connect server product (Solaris Operating System)** .......... 57
- Installation requirements for DB2 Connect products (Solaris Operating Environment) ........ 59
- Mounting CDs or DVDs (Solaris Operating Environment) ...................................................... 60

**Chapter 12. Installing a DB2 Connect server product (Windows)** .......... 61
- Installation requirements for DB2 Connect server products (Windows) ...................................................... 62
- Required user accounts for installation of DB2 server products (Windows) ...................................................... 63
- Extending the Active Directory Schema for LDAP directory services (Windows) ...................................................... 66
- Non-Administrator installation of DB2 Connect (Windows) ...................................................... 67
- Adding your user ID to the DB2ADMS and DB2USERS user groups (Windows) ...................................................... 68

**Chapter 13. Non-root installation overview (Linux and UNIX)** .......... 69
- Differences between root installations and non-root installations ...................................................... 69
- Limitations of non-root installations ...................................................... 70
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 iSeries

For detailed information about DB2 Connect product offerings, see www.ibm.com/software/data/db2/db2connect/

IBM i and mainframe support for DB2 Connect

Before you access DB2 data on System z® or IBM® i data servers using DB2 Connect products, ensure that the data server meets the necessary requirements.

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

Table 1. Supported System z and IBM i data servers

<table>
<thead>
<tr>
<th>Version</th>
<th>Recommended maintenance levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 for OS/390® and z/OS Version 7.1, 8 and 9</td>
<td>Refer to <a href="http://www.ibm.com/servers/eserver/zseries/zos/servicetst/">http://www.ibm.com/servers/eserver/zseries/zos/servicetst/</a> In general, IBM recommends the installation of the most recent RSU (Recommended Service Upgrade) to avoid encountering problems caused by software defects already known and corrected by IBM.</td>
</tr>
</tbody>
</table>

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.

© Copyright IBM Corp. 1993, 2010
JDBC and SQLJ applications can be run from any system that has an IBM data server client installed; a Web browser and a Web server are not required.


**Accessing host or System i DB2 data using DB2 Connect**

A DB2 Connect server enables an 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®, 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
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 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.


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. If you are connecting to a DB2 for z/OS server or a DB2 for IBM i server where euro support is required, set the

   DB2CONNECT_ENABLE_EURO_CODEPAGE registry variable to YES on all

   DB2 Connect clients and servers so that the current application code page is

   mapped to the equivalent coded character set ID (CCSID) that explicitly

   indicates support for the euro sign.

5. Optional: If you migrated any databases in your DB2 Connect server and changed the log space setting as recommended in the pre-migration tasks for DB2 Connect servers, 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.

6. Optional: Refer to the “Backing up databases before migration” topic in the Migration Guide after the migration is complete.

7. 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 9.5 to determine if you

   need to perform any tasks after you migrate your federated databases.

8. 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 Package.

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

<table>
<thead>
<tr>
<th>Operating System Platform</th>
<th>SDK for Java level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>For Fix Pack 5 and earlier: SDK 5 Service Release 5</td>
</tr>
<tr>
<td></td>
<td>For Fix Pack 6 and later: SDK 5 Service Release 11</td>
</tr>
<tr>
<td>HP-UX for Itanium-based systems</td>
<td>HP JRE for J2SE HP-UX 11i platform, adapted by IBM for IBM Software, Version 5.0</td>
</tr>
<tr>
<td>Linux on x86</td>
<td>SDK 5 Service Release 10</td>
</tr>
<tr>
<td>Linux on AMD64/EM64T</td>
<td>SDK 5 Service Release 10</td>
</tr>
<tr>
<td>Linux on zSeries</td>
<td>SDK 5 Service Release 10</td>
</tr>
<tr>
<td>Linux on POWER®</td>
<td>For Fix Pack 5 and earlier: SDK 5 Service Release 10</td>
</tr>
<tr>
<td></td>
<td>For Fix Pack 6 and later: SDK 5 Service Release 11</td>
</tr>
<tr>
<td>Solaris Operating System</td>
<td>IBM 64-bit SDK for Solaris, Java 2 Technology Edition, Version 5.0</td>
</tr>
<tr>
<td>Windows x86</td>
<td>SDK 5 Service Release 10</td>
</tr>
<tr>
<td>Windows x64</td>
<td>SDK 5 Service Release 10</td>
</tr>
</tbody>
</table>

Note:
1. The SDK for Java software can be downloaded from the developerWorks® web page at [http://www.ibm.com/developerworks/java/jdk/index.html](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

5. The JDK on the HP-UX platforms is maintained by HP which IBM licenses to redistribute. This JDK is a port conducted by HP of the Sun Hotspot JDK and the support of international character sets consequently follows that of the Sun Hotspot JDKs, not JDKs developed by IBM. Some of the code conversion tables such as CP290 are not supported on the HP-UX platform.

**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**

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Supported levels of the SDK for Java</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DB2 Version 9.5 and DB2 Version 9.5 Fix Pack 1</td>
</tr>
<tr>
<td>AIX</td>
<td>1.4.2 to 5</td>
</tr>
<tr>
<td>HP-UX for Itanium-based systems</td>
<td>1.4.2 to [5]</td>
</tr>
<tr>
<td>Linux on POWER</td>
<td>1.4.2 to [5]</td>
</tr>
<tr>
<td>Linux on x86</td>
<td>1.4.2 to [5]</td>
</tr>
<tr>
<td>Linux on AMD64 and Intel EM64T processors</td>
<td>1.4.2 to [5]</td>
</tr>
<tr>
<td>Linux on zSeries</td>
<td>1.4.2 to [5]</td>
</tr>
<tr>
<td>Solaris operating system</td>
<td>1.4.2 to [5]</td>
</tr>
<tr>
<td>Windows on x86</td>
<td>1.4.2 to [5]</td>
</tr>
<tr>
<td>Windows on x64, for AMD64 and Intel EM64T processors</td>
<td>1.4.2 to [5]</td>
</tr>
</tbody>
</table>

**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. SDK for Java 6 support on Linux requires SDK for Java 6 SR3 or later.
5. The Sun Java Runtime Environment (JRE) 6 is supported, for running stand-alone Java applications.
6. If SDK for Java 6 SR2 or later is used, set `DB2LIBPATH=java_home/jre/11b/ppc64`.
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

<table>
<thead>
<tr>
<th>DB2 version and fix pack level</th>
<th>IBM Data Server Driver for JDBC and SQLJ version</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 Version 9.1</td>
<td>3.1.xx</td>
</tr>
<tr>
<td>DB2 Version 9.1 Fix Pack 1</td>
<td>3.2.xx</td>
</tr>
<tr>
<td>DB2 Version 9.1 Fix Pack 2</td>
<td>3.3.xx</td>
</tr>
<tr>
<td>DB2 Version 9.1 Fix Pack 3</td>
<td>3.4.xx</td>
</tr>
<tr>
<td>DB2 Version 9.1 Fix Pack 4</td>
<td>3.6.xx</td>
</tr>
<tr>
<td>DB2 Version 9.1 Fix Pack 5 or later</td>
<td>3.7.xx</td>
</tr>
<tr>
<td>DB2 Version 9.5</td>
<td>3.50.xx, 4.0.xx</td>
</tr>
<tr>
<td>DB2 Version 9.5 Fix Pack 1</td>
<td>3.51.xx, 4.1.xx</td>
</tr>
<tr>
<td>DB2 Version 9.5 Fix Pack 2</td>
<td>3.52.xx, 4.2.xx</td>
</tr>
<tr>
<td>DB2 Version 9.5 Fix Pack 3 and Fix Pack 4</td>
<td>3.53.xx, 4.3.xx</td>
</tr>
<tr>
<td>DB2 Version 9.5 Fix Pack 5</td>
<td>3.57.xx, 4.7.xx</td>
</tr>
<tr>
<td>DB2 Version 9.5 Fix Pack 6</td>
<td>3.58.xx, 4.8.xx</td>
</tr>
<tr>
<td>DB2 Version 9.5 Fix Pack 7</td>
<td>3.61.xx, 4.11.xx</td>
</tr>
</tbody>
</table>

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.

You can find more detailed information about IBM Data Server Driver for JDBC and SQLJ and DB2 Database for Linux, UNIX, and Windows versions at the following URL:

http://www.ibm.com/support/docview.wss?uid=swg21363866
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)

Starting with Version 9.5 Fix Pack 6, you no longer need to update Linux kernel parameters related to interprocess communication (IPC). For Version 9.5 Fix Pack 5 or earlier fix packs, the enforced minimum settings for particular kernel parameters might not be sufficient to run a DB2 database system and you might need to update them before installing a DB2 database product.

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 to list the current kernel parameter settings.
2. Analyze the command output to determine whether you have to change kernel settings or not by comparing the current values with the enforced minimum settings for Version 9.5 Fix Pack 6 or later fix packs at http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/topic/com.ibm.db2.luw.qb.server.doc/doc/c0057140.html. The following text is an example of the ipcs command output with comments added after // 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
```

3. Modify the kernel parameters that you have to adjust by editing 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:

```
#Example for a computer with 16GB of RAM:
kernel.shmmni=4096
kernel.shmmax=17179869184
kernel.shmall=8388608

#kernel.sem=<SEMMSL> <SEMMNS> <SEMOPM> <SEMMNI>
kernell.sem=250 256000 32 4096
kernel.msgmni=16384
kernel.msgmax=65536
kernel.msgmnb=65536
```

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.

On Windows operating systems the following free space is recommended in addition to that of your DB2 product:
- 40MB in the system drive
- 60MB in the temporary folder specified by the temp environment variable.

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/disk1) 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*

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX Version 5.3</td>
<td>64-bit Common Hardware Reference Platform (CHRP) architecture¹</td>
</tr>
<tr>
<td>• 64-bit AIX kernel is required</td>
<td>All processors that are capable of running the supported AIX operating systems.</td>
</tr>
<tr>
<td>• AIX 5.3 Technology Level (TL) 6 and Service Pack (SP) 2 plus APAR IZ03063</td>
<td></td>
</tr>
<tr>
<td>• Minimum C++ runtime level requires the xlC.rte 9.0.0.1 and xlC.aix50.rte 9.0.0.1 filesets. These filesets are included in the August 2007 IBM C++ Runtime Environment Components for AIX package.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX Version 6.1</td>
<td>64-bit AIX kernel is required</td>
</tr>
<tr>
<td>• Minimum C++ runtime level requires the xlC.rte 9.0.0.1 and xlC.aix61.rte 9.0.0.1 filesets. These filesets are included in the October 2007 IBM C++ Runtime Environment Components for AIX package.</td>
<td></td>
</tr>
<tr>
<td>Note: POWER7® systems² require AIX 6.1 TL4.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX Version 7.1³</td>
<td>64-bit AIX kernel is required</td>
</tr>
<tr>
<td>• AIX 7.1.0 General Availability (GA)</td>
<td></td>
</tr>
<tr>
<td>• Minimum C++ runtime level requires the xlC.rte 11.1.0.0 and xlC.aix61.rte 11.1.0.0 (or later) filesets. These filesets are included in the April 2010 IBM C++ Runtime Environment Components for AIXV11.1 package.</td>
<td></td>
</tr>
</tbody>
</table>

- ¹To verify that it is a CHRP architecture system, issue the command lscfg and look for the following output: Model Architecture: chrp
- ²Additional considerations for POWER7 systems:
  - If you have IBM Tivoli® System Automation for Multiplatforms (SA MP) 2.2.x or SA MP 3.1.x Reliable Scalable Cluster Technology (RSCT) 2.5.4.0 installed, you must update the RSCT level to a minimum level of RSCT 2.5.4.2. Version 9.5 Fix Pack 6 and later fix packs include an updated version of SA MP which includes an RSCT level that supports POWER7 Systems.
  - DB2 products running on POWER7 systems support Active Memory Expansion.
To use the High Availability (HA) Feature, you need to apply Version 9.5 Fix Pack 6 or a later fix pack. These fix packs contain an updated version of IBM Tivoli System Automation for Multiplatforms (SA MP) Base Component.

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
  ```

- For application development and runtime considerations, see the topics in Supported programming languages and compilers for database application development.

- You can download the latest IBM C++ Runtime Environment Components for AIX from the IBM AIX XL C and C++ 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](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.


### Mounting CDs or DVDs (AIX)

To mount your DB2 database product CD or DVD on AIX operating systems, use the System Management Interface Tool (SMIT).

#### Before you begin

Depending on your system configuration, you might need to log on with root user authority to mount discs.

#### Procedure

To mount the CD or DVD on AIX using 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.
5. In the Add a File System window:
   a. 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 this example, `/dev/cd0` is the device name.
   b. Enter the disc mount point directory in the MOUNT POINT window. In this example, the mount point is `/disc`.
   c. In the **Mount AUTOMATICALLY at system restart** field, select yes to enable automatic mounting of the file system.
   d. Click **OK** to close the window, then click **Cancel** three times to exit SMIT.
6. Mount the CD or DVD file system by entering the `smit mountfs` command.
7. In the Mount a File System window:
   a. Enter the device name for this CD or DVD file system in the **FILE SYSTEM name** field. In this example, the device name is `/dev/cd0`.
   b. Enter the disc mount point in the **Directory over which to mount** field. In this example, the mount point is `/disc`.
   c. Enter `cdrfs` in the **Type of Filesystem** field. To view the other kinds of file systems you can mount, click **List**.
   d. In the **Mount as READ-ONLY system** field, select yes.
   e. Accept the remaining default values and click **OK** to close the window.
Results

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:

**Note:** Support for 32-bit HP-UX applications has been deprecated.

### Installation requirements

#### Table 5. HP-UX installation requirements

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP-UX 11i v2 (11.23.0505) with:</td>
<td>Itanium based HP Integrity Series Systems</td>
</tr>
<tr>
<td>• May 2005 Base Quality (QPKBASE) bundle</td>
<td></td>
</tr>
<tr>
<td>• May 2005 Applications Quality (QPKAPPS) bundle</td>
<td></td>
</tr>
<tr>
<td>• PHCO_38637 - libc cumulative patch</td>
<td></td>
</tr>
<tr>
<td>HP-UX 11i v3 (11.31) with PHCO_38658 - libc cumulative patch</td>
<td></td>
</tr>
</tbody>
</table>

**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](http://www.ibm.com/support/docview.wss?&uid=swg21257602)

**Communication requirements**

You can use TCP/IP

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

**Note:** Starting in Fix Pack 5 and later, DB2 products installed on the HP-UX operating system support long hostnames. The length has been extended to 255 bytes, in any combination of characters or digits. The minimum operating system requirement is HPUX 11iv2 (and above).

To enable long hostname support, complete the following tasks:

1. Turn on the kernel tunable parameter expanded_node_host_name.
   
   `kctune expanded_node_host_name=1`

2. Compile applications requiring long hostname support with the `-D_HPUX_API_LEVEL=20040821` option.

### Mounting CDs or DVDs (HP-UX)

To mount your DB2 database product CD or DVD on HP-UX operating systems, issue the mount command.

**Before you begin**

Depending on your system configuration, you might need root user authority to mount discs.
Procedure

To mount your DB2 database product CD or DVD on HP-UX:
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.

Results

Your CD or DVD file system is now mounted. To view the contents of the CD or DVD, place 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:

   ```bash
   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

**Operating System requirements**
The minimum supported operating systems for Linux include:
- Red Hat Enterprise Linux (RHEL) 4 Update 4
- Red Hat Enterprise Linux (RHEL) 5
- SUSE Linux Enterprise Server (SLES) 9 Service Pack 3
- SUSE Linux Enterprise Server (SLES) 10 Service Pack 1
- SUSE Linux Enterprise Server (SLES) 11
- Ubuntu 8.04
- Ubuntu 7.04
- Ubuntu 7.10
- Turbolinux 11
- Asianux Server 3

**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 database 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 database
     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 database 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)

To mount a CD-ROM on Linux operating systems, issue the mount command.

**Before you begin**

Depending on your system configuration, you might need root user authority to
mount discs.

**Procedure**

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.

**Results**

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 6. Solaris installation requirements

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Hardware</th>
</tr>
</thead>
</table>
| Solaris 10       | Solaris x64 (Intel 64 or AMD64)
  - 64-bit kernel  |
  - Patch 118855-33
  - If raw devices are used, patch 125101-07 |
| Solaris 9        | UltraSPARC or SPARC64 processors
  - 64-bit kernel
  - Patches 111711-12 and 111712-12
  - If raw devices are used, patch 122300-11 |
| Solaris 10       | Solaris x64 (Intel 64 or AMD64)
  - 64-bit kernel
  - If raw devices are used, patch 125100-07 |

1. Support is only for DB2 to be installed on local zones. Installation on the global zone is not supported by DB2 at this time.

2. 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](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](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/](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](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](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 Environment)

If the CD-ROM is not automatically mounted when you insert it into the drive on Solaris Operating Environment, issue the mount command.

#### Before you begin

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.

#### Procedure

To mount the CD or DVD on Solaris:

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:
      ```bash
      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:
      ```bash
      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.

3. Log out.

#### Results

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.

Before you begin

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).

Restrictions

DB2 Connect products cannot be installed in the same path as any of the following products:
- IBM Data Server Runtime Client
- IBM Data Server Driver Package
- DB2 Information Center

Procedure

- 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_Abrreviation-Date_Time.log, such as DB2-CEE-10-06-2006_17_23_42.log. By default, the log file is located in the My Documents\DB2LOG directory.

- To invoke the DB2 Setup wizard manually:
  1. Click Start and select the Run option.
  2. In the Open field, enter the following command:
     
     \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 database 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)
- Windows 7
  - Professional Edition (32-bit and x64)
  - Enterprise Edition (32-bit and x64)
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 User, user ID, and group naming rules.

If you use an installation user account that contains non-English characters which are not specified in DB2 naming rules, the DB2 installation will fail.

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 have to extend the Active Directory schema to contain DB2 object classes and attribute definitions using the db2schex command.

Extending the directory schema prior to installing DB2 products and creating databases provide the following benefits:

• The default DB2 instance, created during the installation, is cataloged as a DB2 node in Active Directory, provided that the installation user ID had sufficient privileges to write to Active Directory.

• Any databases created after installation is automatically cataloged into Active Directory.

To extend the directory schema:

1. Log onto any machine that is part of the Windows domain with a Windows user account that has Schema Administration authority.

2. Run the db2schex command from the installation DVD. You can run this command 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 completes, you can proceed with the installation of your DB2 product; or if you have already installed DB2 products or created databases, you have to manually register the node and catalog the databases. For more information, see the "Enabling LDAP support after DB2 installation is complete" topic.
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 you 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 operating systems.

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 database product without root privileges.

The non-root installation of a DB2 database 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 database product without consuming a system administrator's time
- Application developers who are not typically system administrators but use DB2 database products to develop applications
- Independent Software Vendors (ISVs) who develop software that does not require root user authority yet embeds a DB2 database 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 7. Differences between root installations and non-root installations

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

### 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 database 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 user 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: dascr, 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 database 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 user authority can be updated or dropped only by a user with root user authority.

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 database product.

- **db2idrop**
  The instance that gets automatically created during non-root installations cannot be dropped. The DB2 database 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 database 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 operating systems 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 operating systems, 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 user authority.

Authentication type in non-root installations

Operating system-based authentication is the default authentication type for DB2 database 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 database 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 database products can be installed as a non-root user.

Before you begin

Before you install any DB2 database 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. For more information on non-root installation, see “Non-root installation overview (Linux and UNIX)”.

Prerequisites for installing a DB2 database 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

About this task

Installing DB2 database 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 database product, other than being logged in as a non-root user.

Procedure

To perform a non-root installation:
1. Log in as a non-root user
2. Install your DB2 database 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 database products are installed, any FILE keyword in your response file is ignored.
3. After the DB2 database 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 set up the 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.

What to do next
After the DB2 database 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 a the db2rfe command

Before you begin

This task requires root user authority.

Procedure

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 configured

   where $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 with root user authority.
5. Navigate to the $HOME/sqllib/instance directory, where $HOME represents 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

What to do next

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 you begin**

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.

**Procedure**

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 user 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 database products using db2_deinstall (Linux and UNIX)

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

Before you begin

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

About this task

- This task applies to DB2 database products that were installed without root user authority. A separate task exists for uninstalling DB2 database products that were installed with root user authority.
- As with root users, non-root users can use the db2_deinstall command to uninstall DB2 database 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 database product and drops the non-root instance. This is different than root installations, where running db2_deinstall only uninstalls the DB2 database program files.
- You cannot remove DB2 database products using a native operating system utility, such as rpm or SMIT.

Procedure

To uninstall a DB2 database product that was installed by a non-root user:
1. Log in with the user ID that was used to install the DB2 database 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 database 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.
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

From the License Center, use the Add License window to add new licenses on Linux or Windows operating systems. This action is also referred to as applying license entitlement certificates or adding a license.

Before you begin

To complete this task, you must have the appropriate license file (*.lic). Refer to “DB2 license files” in Quick Beginnings for DB2 Servers. On Linux operating systems, the instance owner must have read and write privileges on the directory where the license files are located.

Procedure

To register a DB2 license key:

1. Click in the Control Center to open the License Center. Select the system for which you want to add a new license.
2. Select an instance.
3. The Installed Products field will display the name of the products that you have installed. Select a product.
4. Select Add from the License menu. The Add License dialog opens.
5. Select the license key (*.lic) that you want to add.
6. Click OK to add the license key.

Results

The license information is refreshed immediately in the License Center.

Setting the DB2 license policy using the License Center

For DB2 Connect Enterprise 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

By default, when you install a DB2 database product or feature, only a base license key is applied. You can use the db2licm command to apply the license entitlement certificate (also referred to as registering a license key).

**Before you begin**

To complete this task, you must have the appropriate license file (*.lic). Refer to “DB2 license files” in *Quick Beginnings for DB2 Servers*.

On Windows operating systems, you must belong to the local Administrators or Power Users group to use the db2licm command with the `-a` command parameter.

**Procedure**

- 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 path name and file name for the license file that corresponds to the product or feature you have purchased.

- On Linux or UNIX operating systems, register a DB2 license key by entering the following command:

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

  where `INSTHOME` represents the home directory of the instance owner and `filename` is the full path name and file name for the license key that corresponds to the product or feature you have purchased.

The db2licm command can also be found in the path where the DB2 database product is installed. For example, `/opt/IBM/db2/V9.5/adm/db2licm` on AIX, HP-UX or Solaris operating systems or `/opt/ibm/db2/V9.5/adm/db2licm` on Linux operating systems, if you use the default installation directory.

---

**Setting the DB2 license policy using the db2licm command**

For DB2 Connect Enterprise 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 database 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.

About this task

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. The **APARLIST.TXT** file describes the fixes contained in each fix pack and it is available for download at [http://www-01.ibm.com/support/docview.wss?rs=71&uid=swg21293566](http://www-01.ibm.com/support/docview.wss?rs=71&uid=swg21293566).

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

  The single server fix pack image contains DB2 try-and-buy licenses for all DB2 server products. When you select a new DB2 server product to install or a previously installed DB2 server product to update, the try-and-buy licenses are installed. The try-and-buy licenses do not affect any valid licenses already installed in the same DB2 installation path. Regarding DB2 Connect Server products, if you run the `db2licm -l` command to query valid licenses, the try-and-buy license for DB2 Connect Server product might display as an invalid license. However, if you do not need to use the DB2 Connect functionality, you can ignore the report. To remove the try-and-buy license for DB2 Connect Server, use the `db2licm` command.

- 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 DB2 Query Patroller.
Do not use this type of fix pack if the installed DB2 database products are only DB2 database 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 database 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 database products are only DB2 database server products or a Data Server Client. In this case, the single server image fix pack should be used.

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.

**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.
- In a partitioned database environment, prior to installing the fix pack, you must stop the database manager on all database partition servers. You must install the fix pack on the instance-owning database partition server and all other database partition servers. 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 database 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 lsod 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.

**Procedure**

To install a fix pack:
1. Check fix pack prerequisites.
2. Perform the necessary tasks prior to installing a fix pack.
3. Choose a fix pack installation method and install the fix pack.
4. Perform the necessary tasks after installing the fix pack.
5. Apply the appropriate DB2 database product license.
   If a previously licensed copy of a DB2 database server product does not already exist on the machine, a single server fix pack image can be used to install any of the DB2 database server products. In this case, the DB2 database product installed is treated as a try and buy license, and will stop working after a 90 day trial period unless you upgrade the try and buy license.

**What to do next**

Check the log file for any post-installation steps, or error messages and recommended actions.

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 database product, you must rerun the db2rfe command each time a fix pack is applied in order to re-enable those features.

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 “Installing IBM data server clients (Linux and UNIX)” and “Installing IBM data server clients (Windows)” in Quick Beginnings for IBM Data Server Clients.
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 (*elan)
     Lists Ethernet adapters
   - WRKLIND (*tlan)
     Lists token ring adapters
   - WRKLIND (*all)
     Lists all adapters
3. The hostname. You can get this information by entering DSPNETA.
4. The TCP/IP port or service name. The default is X'07'6DB (X'07F6C4C2'). The default is always used by DB2 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 DSPRDIRE. 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:
When you have obtained these parameters from your System i server, enter your values into the worksheet that follows:

**Table 8. Configuration parameters from System i**

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

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

Before you begin

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 “Enabling Multisite Updates using the Control Center” in DB2 Connect User’s Guide.

Procedure

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

- “Configuring TCP/IP for DB2 Universal Database for OS/390 and z/OS” on page 96
- “Configuring DB2 Universal Database for OS/390 and z/OS” on page 98

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 9. User Information**

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
<th>Sample Value</th>
<th>Your Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP-1</td>
<td>User name</td>
<td>A.D.B.User</td>
<td></td>
</tr>
<tr>
<td>TCP-2</td>
<td>Contact info</td>
<td>(123)-456-7890</td>
<td></td>
</tr>
</tbody>
</table>
Table 9. User Information (continued)

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
<th>Sample Value</th>
<th>Your Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP-5</td>
<td>User ID</td>
<td>ADBUSER</td>
<td></td>
</tr>
<tr>
<td>TCP-6</td>
<td>Database type</td>
<td>db2390</td>
<td></td>
</tr>
<tr>
<td>TCP-7</td>
<td>Connection type (must be TCPIP)</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
</tr>
</tbody>
</table>

Table 10. Network Elements at the Host

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
<th>Sample Value</th>
<th>Your Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP-8</td>
<td>Host name</td>
<td>MVSHOST</td>
<td></td>
</tr>
<tr>
<td>TCP-9</td>
<td>Host IP address</td>
<td>9.21.152.100</td>
<td></td>
</tr>
<tr>
<td>TCP-10</td>
<td>Service name</td>
<td>db2inst1c</td>
<td></td>
</tr>
<tr>
<td>TCP-11</td>
<td>Port number</td>
<td>446</td>
<td>446</td>
</tr>
<tr>
<td>TCP-12</td>
<td>LOCATION NAME</td>
<td>NEW_YORK3</td>
<td></td>
</tr>
<tr>
<td>TCP-13</td>
<td>User ID</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCP-14</td>
<td>Password</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:

a. To obtain the host’s IP address TCP-9, enter at the host:
   `T50 NETSTAT HOME`

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

Table 11. Network Elements at the DB2 Connect Workstation

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
<th>Sample Value</th>
<th>Your Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP-18</td>
<td>Host name</td>
<td>mcook02</td>
<td></td>
</tr>
<tr>
<td>TCP-19</td>
<td>IP address</td>
<td>9.21.27.179</td>
<td></td>
</tr>
<tr>
<td>TCP-20</td>
<td>Service name</td>
<td>db2inst1c</td>
<td></td>
</tr>
<tr>
<td>TCP-21</td>
<td>Port number</td>
<td>446</td>
<td>446</td>
</tr>
</tbody>
</table>

Table 12. DB2 Directory Entries at the DB2 Connect Workstation

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
<th>Sample Value</th>
<th>Your Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP-30</td>
<td>Node name</td>
<td>MVSIPNOD</td>
<td></td>
</tr>
<tr>
<td>TCP-31</td>
<td>Database name</td>
<td>nyc3</td>
<td></td>
</tr>
<tr>
<td>TCP-32</td>
<td>Database alias</td>
<td>mvsipdb1</td>
<td></td>
</tr>
<tr>
<td>TCP-33</td>
<td>DCS database name</td>
<td>nyc3</td>
<td></td>
</tr>
</tbody>
</table>

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.

Before you begin

Note: In previous releases, the DB2 Administration Tools, such as the CA, were supported on all platforms. As of DB2 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.

• 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.

About this task

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.

Procedure

The following methods can be used to configure a connection to a database using the CA:

• Connecting to a database using a client profile.
  
  See “Configuring database connections using a client profile with the Configuration Assistant” in Quick Beginnings for IBM Data Server Clients.
• Connecting to a database using a client profile
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:
• It is used in a cluster environment.
• 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 13. Language identifiers

<table>
<thead>
<tr>
<th>Language</th>
<th>Language identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic (available on Windows platforms only)</td>
<td>ar</td>
</tr>
<tr>
<td>Brazilian Portuguese</td>
<td>br</td>
</tr>
<tr>
<td>Bulgarian</td>
<td>bg</td>
</tr>
<tr>
<td>Chinese, Simplified</td>
<td>cn</td>
</tr>
<tr>
<td>Chinese, Traditional</td>
<td>tw</td>
</tr>
<tr>
<td>Croatian</td>
<td>hr</td>
</tr>
<tr>
<td>Czech</td>
<td>cz</td>
</tr>
<tr>
<td>Danish</td>
<td>dk</td>
</tr>
<tr>
<td>Dutch</td>
<td>nl</td>
</tr>
<tr>
<td>English</td>
<td>en</td>
</tr>
<tr>
<td>Finnish</td>
<td>fi</td>
</tr>
<tr>
<td>French</td>
<td>fr</td>
</tr>
<tr>
<td>German</td>
<td>de</td>
</tr>
<tr>
<td>Greek</td>
<td>el</td>
</tr>
<tr>
<td>Hungarian</td>
<td>hu</td>
</tr>
<tr>
<td>Italian</td>
<td>it</td>
</tr>
<tr>
<td>Japanese</td>
<td>jp</td>
</tr>
<tr>
<td>Korean</td>
<td>kr</td>
</tr>
<tr>
<td>Norwegian</td>
<td>no</td>
</tr>
<tr>
<td>Polish</td>
<td>pl</td>
</tr>
<tr>
<td>Portuguese</td>
<td>pt</td>
</tr>
<tr>
<td>Romanian</td>
<td>ro</td>
</tr>
<tr>
<td>Russian</td>
<td>ru</td>
</tr>
<tr>
<td>Slovak</td>
<td>sk</td>
</tr>
<tr>
<td>Slovenian</td>
<td>sl</td>
</tr>
<tr>
<td>Spanish</td>
<td>es</td>
</tr>
<tr>
<td>Swedish</td>
<td>se</td>
</tr>
<tr>
<td>Turkish</td>
<td>tr</td>
</tr>
</tbody>
</table>

### 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

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 db2switch 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 database product (Linux and UNIX)**

This task provides steps for removing a DB2 database product from your Linux or UNIX operating system.

**About this task**

This task is not required to install a new version of a DB2 database product. Each version of a DB2 database product on Linux or UNIX has a different installation path and can therefore coexist on the same computer.

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

**Procedure**

To remove your DB2 database 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 database 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. Access the DB2 Information Management software library site at [http://www.ibm.com/software/data/sw-library/](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.

If you would like to help IBM make the IBM Information Management products easier to use, take the Consumability Survey at [http://www.ibm.com/software/data/info/consumability-survey/](http://www.ibm.com/software/data/info/consumability-survey/)

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 in the following table.

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

### Table 14. DB2 technical information

<table>
<thead>
<tr>
<th>Name</th>
<th>Form Number</th>
<th>Available in print</th>
<th>Last updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative API Reference</td>
<td>SC23-5842-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Administrative Routines and Views</td>
<td>SC23-5843-03</td>
<td>No</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Call Level Interface Guide and Reference, Volume 1</td>
<td>SC23-5844-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Call Level Interface Guide and Reference, Volume 2</td>
<td>SC23-5845-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Command Reference</td>
<td>SC23-5846-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Data Movement Utilities Guide and Reference</td>
<td>SC23-5847-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Data Recovery and High Availability Guide and Reference</td>
<td>SC23-5848-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Data Servers, Databases, and Database Objects Guide</td>
<td>SC23-5849-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Database Security Guide</td>
<td>SC23-5850-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Developing ADO.NET and OLE DB Applications</td>
<td>SC23-5851-02</td>
<td>Yes</td>
<td>April, 2009</td>
</tr>
<tr>
<td>Developing Embedded SQL Applications</td>
<td>SC23-5852-02</td>
<td>Yes</td>
<td>April, 2009</td>
</tr>
<tr>
<td>Developing Java Applications</td>
<td>SC23-5853-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Developing Perl and PHP Applications</td>
<td>SC23-5854-02</td>
<td>No</td>
<td>April, 2009</td>
</tr>
<tr>
<td>Developing User-defined Routines (SQL and External)</td>
<td>SC23-5855-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Name</td>
<td>Form Number</td>
<td>Available in print</td>
<td>Last updated</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>-------------------</td>
<td>--------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Getting Started with Database Application Development</td>
<td>GC23-5856-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Getting Started with DB2 installation and administration on Linux and Windows</td>
<td>GC23-5857-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Internationalization Guide</td>
<td>SC23-5858-02</td>
<td>Yes</td>
<td>April, 2009</td>
</tr>
<tr>
<td>Message Reference, Volume 1</td>
<td>GI11-7855-00</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Message Reference, Volume 2</td>
<td>GI11-7856-00</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Migration Guide</td>
<td>GC23-5859-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Net Search Extender Administration and User’s Guide</td>
<td>SC23-8509-02</td>
<td>Yes</td>
<td>April, 2009</td>
</tr>
<tr>
<td>Partitioning and Clustering Guide</td>
<td>SC23-5860-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Query Patroller Administration and User’s Guide</td>
<td>SC23-8507-01</td>
<td>Yes</td>
<td>April, 2009</td>
</tr>
<tr>
<td>Quick Beginnings for IBM Data Server Clients</td>
<td>GC23-5863-03</td>
<td>No</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Quick Beginnings for DB2 Servers</td>
<td>GC23-5864-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Spatial Extender and Geodetic Data Management Feature User’s Guide and Reference</td>
<td>SC23-8508-02</td>
<td>Yes</td>
<td>April, 2009</td>
</tr>
<tr>
<td>SQL Reference, Volume 1</td>
<td>SC23-5861-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>SQL Reference, Volume 2</td>
<td>SC23-5862-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>System Monitor Guide and Reference</td>
<td>SC23-5865-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Text Search Guide</td>
<td>SC23-5866-02</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Troubleshooting Guide</td>
<td>GI11-7857-03</td>
<td>No</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Tuning Database Performance</td>
<td>SC23-5867-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Visual Explain Tutorial</td>
<td>SC23-5868-00</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>What’s New</td>
<td>SC23-5869-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Workload Manager Guide and Reference</td>
<td>SC23-5870-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>pureXML Guide</td>
<td>SC23-5871-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>XQuery Reference</td>
<td>SC23-5872-02</td>
<td>No</td>
<td>April, 2009</td>
</tr>
</tbody>
</table>
**Table 15. DB2 Connect-specific technical information**

<table>
<thead>
<tr>
<th>Name</th>
<th>Form Number</th>
<th>Available in print</th>
<th>Last updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick Beginnings for DB2 Connect Personal Edition</td>
<td>GC23-5839-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>Quick Beginnings for DB2 Connect Servers</td>
<td>GC23-5840-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
<tr>
<td>DB2 Connect User’s Guide</td>
<td>SC23-5841-03</td>
<td>Yes</td>
<td>December, 2010</td>
</tr>
</tbody>
</table>

**Table 16. Information Integration technical information**

<table>
<thead>
<tr>
<th>Name</th>
<th>Form Number</th>
<th>Available in print</th>
<th>Last updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Integration: Administration Guide for Federated Systems</td>
<td>SC19-1020-01</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Information Integration: ASNCLP Program Reference for Replication and Event Publishing</td>
<td>SC19-1018-02</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Information Integration: Configuration Guide for Federated Data Sources</td>
<td>SC19-1034-01</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Information Integration: SQL Replication Guide and Reference</td>
<td>SC19-1030-01</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Information Integration: Introduction to Replication and Event Publishing</td>
<td>GC19-1028-01</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

**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/](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/](http://www.ibm.com/shop/)
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 worldwide contacts at [www.ibm.com/planetwide](http://www.ibm.com/planetwide)
       You will need to select your country, region, or language to access the 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 120.

### 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 9.8 topics, the DB2 Information Center URL is [http://publib.boulder.ibm.com/infocenter/db2luw/v9r8/](http://publib.boulder.ibm.com/infocenter/db2luw/v9r8/)
- For DB2 Version 9.7 topics, the DB2 Information Center URL is [http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/](http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/)
- For DB2 Version 9.5 topics, the DB2 Information Center URL is [http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/](http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/)
- For DB2 Version 9.1 topics, the DB2 Information Center URL is [http://publib.boulder.ibm.com/infocenter/db2luw/v9/](http://publib.boulder.ibm.com/infocenter/db2luw/v9/)
- For DB2 Version 8 topics, go to the DB2 Information Center URL at: [http://publib.boulder.ibm.com/infocenter/db2luw/v8/](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 ((IDC)). 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/](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 database products.

**DB2 documentation**

Troubleshooting information can be found in the DB2 Troubleshooting Guide or the Database fundamentals 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 database 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.


---

**Terms and Conditions**

Permissions for the use of these publications is granted subject to the following terms and conditions.

**Personal use:** You may reproduce these Publications for your personal, non-commercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative work of these Publications, or any portion thereof, without the express consent of IBM.

**Commercial use:** You may reproduce, distribute and display these Publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these Publications, or reproduce, distribute or display these Publications or any portion thereof outside your enterprise, without the express consent of IBM.

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the Publications or any information, data, software or other intellectual property contained therein.

IBM reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the Publications is detrimental to its interest or, as determined by IBM, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

IBM MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.
Appendix B. Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

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

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

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country/region or send inquiries, in writing, to:

IBM World Trade Asia Corporation
Licensing
1623-14, Shimotsuruma, Yamato-shi
Kanagawa 242-8502 Japan

The following paragraph does not apply to the United Kingdom or any other country/region where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

This document may provide links or references to non-IBM Web sites and resources. IBM makes no representations, warranties, or other commitments whatsoever about any non-IBM Web sites or third-party resources that may be referenced, accessible from, or linked from this document. A link to a non-IBM Web site does not mean that IBM endorses the content or use of such Web site or
its owner. In addition, IBM is not a party to or responsible for any transactions you may enter into with third parties, even if you learn of such parties (or use a link to such parties) from an IBM site. Accordingly, you acknowledge and agree that IBM is not responsible for the availability of such external sites or resources, and is not responsible or liable for any content, services, products, or other materials on or available from those sites or resources. Any software provided by third parties is subject to the terms and conditions of the license that accompanies that software.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

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

IBM Canada Limited
U59/3600
3600 Steeles Avenue East
Markham, Ontario L3R 9Z7
CANADA

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

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems, and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements, or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM’s future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

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

COPYRIGHT LICENSE:
This information may contain sample application programs, in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM for the purposes of developing, using, marketing, or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.

Each copy or any portion of these sample programs or any derivative work must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. _enter the year or years_. All rights reserved.

**Trademarks**

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

The following terms are trademarks or registered trademarks of other companies

- Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.
- Java and all Java-based trademarks and logos are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.
- UNIX is a registered trademark of The Open Group in the United States and other countries.
- Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.
- Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.
Index

A
about this book 1
ActiveX data objects 16
adding databases manually 106
administration server 14
AIX
installation requirements for DB2 Connect server products 45
installing DB2 Connect server products 43
mounting CDs or DVDs 47
application development
IBM Data Server Client support 16
JDBC 7, 114
using ODBC 114
applications
ODBC 113

B
bidirectional CCSID support
language support 112
binding
utilities 113
books
printed ordering 122

C
call level interface (CLI)
DB2 AD Client support 16
CCSID (coded character set identifier)
bidirectional languages 112
CDs
mounting on AIX 47
mounting on HP-UX 51
mounting on Linux 56
mounting on Solaris Operating Environment 60
changing Windows default language setting 111
clients
overview 7, 13
remote 7
code pages
conversion
exceptions 112
supported 109
command line processor (CLP) 105
DB2 AD Client support 16
commands
db2licm 82
db2osconf 33
db2rfe - enabling root features 70, 74
db2secv82 68
db2setup 109
communication protocols
DRDA host access configuration 96

communications
Control Center 14
Configuration Assistant (CA) 105
configuring
connection to the host database server 101
connection to the System i database server 101
database connection 106
Discovery feature 105
testing
database connections 107
configuring
connectivity
using the Configuration Assistant 101
DB2 Connect server products 39
TCP/IP 102
connection configuration 101
connections
Configuration Assistant 13
DRDA hosts through communications server 96
overview 13
Control Center
overview 14

D
DAS (DB2 administration server)
See DB2 administration server (DAS) 14
data
access
DB2 Connect 8
JDBC 7
data conversion
character 112
database administration tools
overview 14
database applications 113
databases
connections
configuring 105, 106
testing 107
host databases 95
DB2 administration server (DAS)
overview 14
DB2 Connect
DB2 for VSE & VM 99
host support 5
installing
non-Administrator 67
prerequisites 89
migrating
overview 21, 22
procedure 24
overview 8
products 5
server products
configuring 39
installing (AIX) 43, 45
installing (HP-UX) 49, 51
installing (Linux) 53, 55
installing (overview) 39
installing (Solaris Operating System) 57, 59

© Copyright IBM Corp. 1993, 2010
DB2 Connect (continued)
server products (continued)
installing (Windows) 61, 62
post-migration tasks 25
pre-migration tasks 23
System i support 5
zSeries support 5
DB2 for z/OS
administering using Control Center 14
DB2 Information Center
languages 124
updating 124
versions 123
viewing in different languages 124
DB2 license key
registering 82
using the License Center 81
DB2 Setup wizard
language identifiers 109
DB2 Universal Database for OS/390 and z/OS
updating system tables 98
DB2ADMNS group
adding users 68
db2licm command
registering licenses 82
setting license policy 82
db2osconf command
determining kernel configuration parameter values 33
db2rfe command
enabling root features 70, 74
db2setup command
language setting 109
DB2USERS user group
adding users 68
DCS entry
removing 107
default language setting
Windows 111
directory schema
extending
Windows 66
directory structures
root installations compared to non-root installations 69
Discovery feature
configuring database connection 105
disk space requirements 41
documentation
overview 119
PDF 120
printed 120
terms and conditions of use 127
dropping
non-root instances 76
DVDs
mounting
AIX 47
HP-UX 51
Linux 56
Solaris Operating Environment 60
E
embedded SQL applications
IBM Data Server Client support 16
examples 7
F
fix packs
applying 85
non-root installations 75
H
help
configuring language 124
SQL statements 123
host databases
client connections 89
configuring TCP/IP 102
HP-UX
installing
DB2 Connect servers 49, 51
kernel configuration parameters
modifying 33
recommended values 33
mounting media 51
I
i5/OS
configuring DB2 Connect 93
configuring DB2 for DB2 Connect 93
DSPNETA 93
DSPRDBDIRE 93
WRKLIND 93
IBM data server clients
connecting to
host databases 89
IBM Data Server Driver for JDBC and SQLJ level
by DB2 version level 29
installing
DB2 Connect server products 39
DB2 database user accounts (Windows) 63
DB2 for Linux on S/390 55
DB2 products as a non-root user 72
Linux on zSeries 55
instances
removing non-root 76
interface languages 109
changing
UNIX 111
Windows 111
iSeries
configuring DB2 Connect 93
configuring DB2 for DB2 Connect 93
DSPNETA 93
DSPRDBDIRE 93
WRKLIND 93
J
Java
DB2 product support 29
host database access 7
IBM Data Server Client support 16
Java Database Connectivity (JDBC)
drivers
versions 29
IBM Data Server Client support 16
K
kernel configuration parameters 33
db2osconf command (HP-UX) 33
modifying kernel parameters on Linux 33
modifying on HP-UX 33
modifying on Solaris Operating System 34
recommended (HP-UX) 33

L
LANG environment variable
setting 109, 111
languages
bidirectional support 112
DB2 Setup wizard for language identifiers 109
supported 109
License Center
registering licenses 81
setting license policy 81
licenses
activation 81
adding 81
registering
db2licm command 82
License Center 81
setting policies
db2licm command 82
License Center 81
limitations
non-root installations 70
Linux
installation requirements
DB2 Connect server products 55
installing
DB2 Connect server products 53
DB2 databases on zSeries 55
modifying kernel parameters 33
mounting CDs or DVDs 56
removing
DB2 (root) 116
DB2 non-root instances 76
locales
supported DB2 interface languages 109

M
mainframe connection configuration 101
manually adding databases
Configuration Assistant (CA) 106
memory requirements 41
midrange connection configuration 101
migrating
DB2 Connect 24
DB2 Connect Version 9.5 21
support
DB2 Connect 22
modifying
kernel parameters (HP-UX) 33
modifying kernel parameters
HP-UX 33
Linux 33
Solaris Operating System 34
mounting
CDs or DVDs
AIX 47
HP-UX 51

N
national language support (NLS)
converting character data 112
displaying db2setup 109
NLS (national language support)
converting character data 112
non-root installations
differences 69
directory structure 69
enabling root-based features 74
fix packs 75
installing 72
limitations 70
overview 69
uninstalling 76
non-root instances
dropping 76
removing 76
notices 129

O
Object Linking and Embedding (OLE)
DB2 AD Client support 16
ODBC (open database connectivity)
enabled applications 113
ordering DB2 books 122
OS/390
configuring DB2 database systems 98
overview
DB2 Connect 5

P
post-migration tasks
DB2 Connect servers 25
pre-migration tasks
DB2 Connect servers 23
precompilers
IBM Data Server Client support 16
problem determination
information available 126
tutorials 126

R
removing 115
DB2 (root)
Linux 116
UNIX 116
DB2 database
Windows 115
dcs entry 107
non-root instances 76
requirements
disk 41
memory 41
root installations
differences 69
root installations (continued)
directory structure 69
root-based features
   non-root installation 74

S
S/390
   installing 55
scenarios 7
SDK
   Java
      product levels 29
security
   user groups 68
servers
   communications 14
setting
   LANG environment variable 109, 111
Solaris Operating Environment
   mounting CDs or DVDs 60
Solaris Operating System
   installation
      requirements, DB2 Connect server products 59
      installing
         DB2 Connect server products 57
      modifying kernel parameters 34
SQL (Structured Query Language)
   viewing with Visual Explain 14
SQL statements
   displaying help 123
SQLJ
   DB2 AD Client support 16
system configuration
   with DB2 Connect 8
System i
   database server
      configuring TCP/IP 102
      DB2 Connect support 5

T
TCP/IP
   configuration
      host connections 96
      configuring manually
         host database server 102
         System i database server 102
   DB2 UDB for OS/390 and z/OS configuration 95
terms and conditions
   use of publications 127
territory codes
   page support 112
testing
   database connections 107
troubleshooting
   online information 126
tutorials 126
tutorials
   problem determination 126
troubleshooting 126
Visual Explain
   overview 14
tutorial 126
VSE and VM for connections
   preparing DB2 from DB2 Connect 99
VTAM
   preparing OS/390 or z/OS for DB2 Connect 95

W
Windows operating systems
   default language setting
      changing 111
      installing
         DB2 Connect (with non-Administrator access) 67
         DB2 Connect server products (procedure) 61
         DB2 Connect server products (requirements) 62
   uninstalling DB2 115
   user accounts
      DB2 server product installation 63

Z
z/OS
   configuring DB2 database systems 98
zSeries
   installing DB2 Database for Linux 55
   support for DB2 Connect 5

U
uninstalling (continued)
   DB2 database
      Windows 115
      non-root 76
      root installations 116
   UNIX
      changing the DB2 interface language 111
      removing
         DB2 (root) 116
         DB2 non-root instances 76
   updates
      DB2 Information Center 124
   user accounts
      DB2 Administration Server (Windows) 63
      instance user (Windows) 63
      required for installation (Windows) 63
   user groups
      DB2ADMNS 68
      DB2USERS 68
      security 68
   utilities
      binding 113