IBM DB2 Connect 10.1

DB2 Connect Installing and Configuring DB2 Connect Servers

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> **Note**
>
> Before using this information and the product it supports, read the general information under Appendix B, "Notices," on page 111.

Contents

About this book

The *Installing and Configuring 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 1. About this book

The *Installing and Configuring 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.

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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®, IBM® i and IBM Power Systems™, 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 System z®
- DB2 Connect Unlimited Edition for System i®

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

System i and mainframe support for DB2 Connect

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

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

Table 1. Supported mainframe and IBM i data servers

Version	Recommended maintenance levels
DB2 for z/OS Version 8, Version 9, and Version 10.	See website for IBM z/OS Consolidated Service Test and the RSU (. http://www.ibm.com/servers/eserver/zseries/zos/servicetst/)).

In general, install the most recent Recommended Service Upgrade (RSU) to avoid encountering problems that are caused by software defects that IBM has corrected. |
| DB2 for i (formerly known as DB2 Universal Database for i5/OS®) V5R4 | II13348 (Informational APAR)

PTFs: MF53402 and MF53403

See website for System i Preventative Service Planning (. http://www.ibm.com/servers/eserver/zseries/zos/servicetst/). |
| DB2 for i V6R1 | PTFs: SI30564, SI30588, SI30611, SI30620, SI30621, SI30622, SI30825, SI30827, SI30920, SI30921, SI31019, SI31101, SI31125, SI31238, and SI31480.

See website for System i Preventative Service Planning (. http://www-912.ibm.com/s_dir/sline003.NSF/GroupPTFs?OpenView&view=GroupPTFs) |

Table 1. Supported mainframe and IBM i data servers (continued)

Version	Recommended maintenance levels
DB2 for i V7R1	PTFs: SI43890, SI43864, SI43863, SI43817, SI43807, SI43806, SI43805, SI43804, SI43803, SI43802, SI43801, SI43768, SI43757, SI43721, SI43658, SI43651, SI43577, SI43550, SI43544, SI43539, SI43532, SI43476, SI43466, SI43446, SI43386, SI43373, SI43111, SI43017, SI43016, SI42986, SI42954, SI42947, SI42928, SI42927, SI42906, SI42872, SI42783, SI42775, SI42769, SI42768, SI42745, SI42716, SI42700, SI42504, and SI42492. See website for System i Preventative Service Planning (. http://www-912.ibm.com/s_dir/ sline003.NSF/GroupPTFs?OpenView&view=GroupPTFs). **Important:** Use DB2 Connect V9.7 Fix Pack 4 or later to connect to DB2 for i V7R1.
DB2 Server for VM and VSE Version 7 and later	See website for DB2 Server for VSE & VM (http://www.ibm.com/software/data/db2/vse-vm/).

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 IBM mainframe 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 runtime 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.

DB2 Connect client using the IBM data client is supported on Linux, UNIX, and Windows operating systems.

Accessing DB2 host data from the web using Java

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

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

- SQLJ and JDBC are open standards, enabling you to easily port SQLJ or JDBC applications from other standards-compliant database systems to the DB2 database.
- All Java types representing composite data, and data of varying sizes, have a distinguished value, `null`, which can be used to represent the SQL NULL state, giving Java programs an alternative to NULL indicators that are a fixture of other host languages.
- Java is designed to support programs that, by nature, are heterogeneously portable (also called "super portable" or simply "downloadable"). Along with Java's type system of classes and interfaces, this feature enables component software. In particular, an SQLJ translator written in Java can call components that are specialized by database vendors in order to leverage existing database functions such as authorization, schema checking, type checking, transactional, and recovery capabilities, and to generate code optimized for specific databases.
- Java is designed for binary portability in heterogeneous networks, which promises to enable binary portability for database applications that use static SQL.
- You can run JDBC applets inside a web page on any system with a Java-enabled browser, regardless of the platform of your client. Your client system requires no additional software beyond this browser. The client and the server share the processing of JDBC and SQLJ applets and applications.
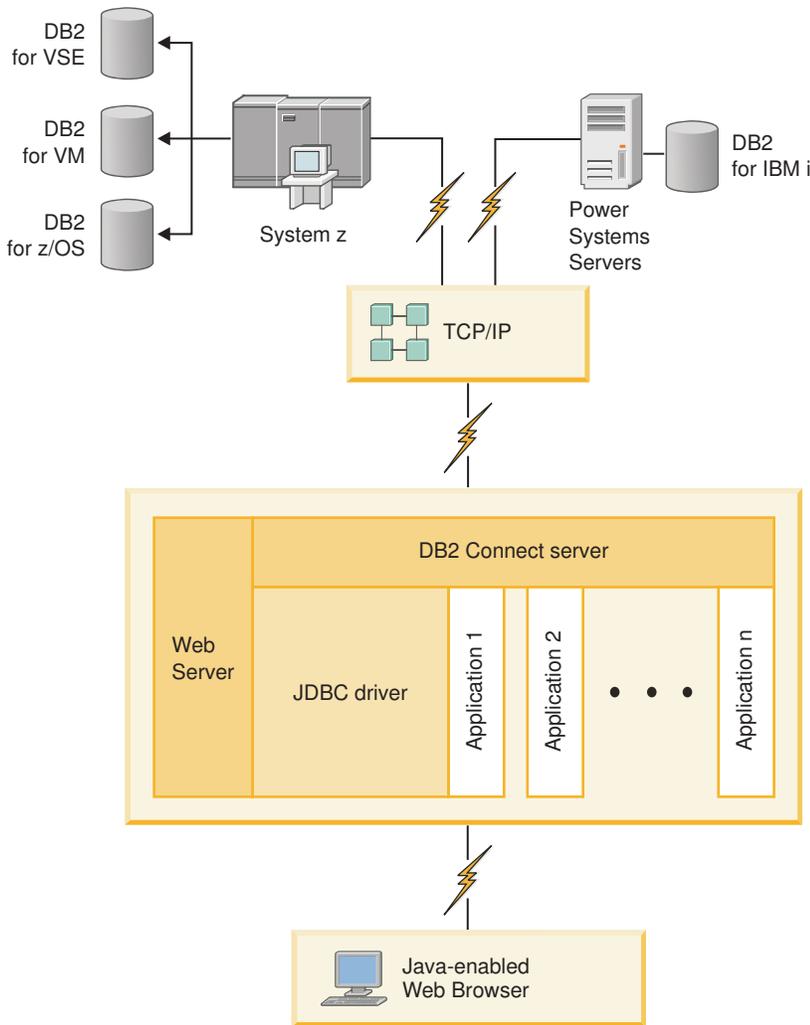
Figure 1. JDBC and DB2 Connect

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

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

Accessing IBM mainframe DB2 data using DB2 Connect

A DB2 Connect client or Server enables a IBM data server client on a LAN access to data that is stored on IBM mainframe systems.

In organizations with large amounts of data, IBM DB2 for IBM i, DB2 for z/OS, or DB2 Server for VM and VSE 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 client or Server is required for supporting applications which access IBM mainframe 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 the following environments:
- *Federation*.
- *Transaction monitors*, such as BEA Tuxedo and BEA Weblogic. (See Figure 2 on page 10.)

DB2 Connect provides transparent access to IBM mainframe 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 IBM mainframe databases without expensive IBM mainframe components or proprietary gateways.

Although DB2 Connect is often installed on an intermediate server machine, it is recommended to connect an IBM data server client to an IBM mainframe database directly by installing the appropriate DB2 Client such as one of the IBM data server client or driver. For more information about the DB2 Connect client, see the topic about IBM data server client types.

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 IBM mainframe data and can significantly reduce the effort that is required to establish and maintain access to enterprise data.

To connect to an IBM mainframe database server you require a licensed DB2 Connect product. You cannot connect directly to an IBM mainframe Data Server using a IBM data server client.
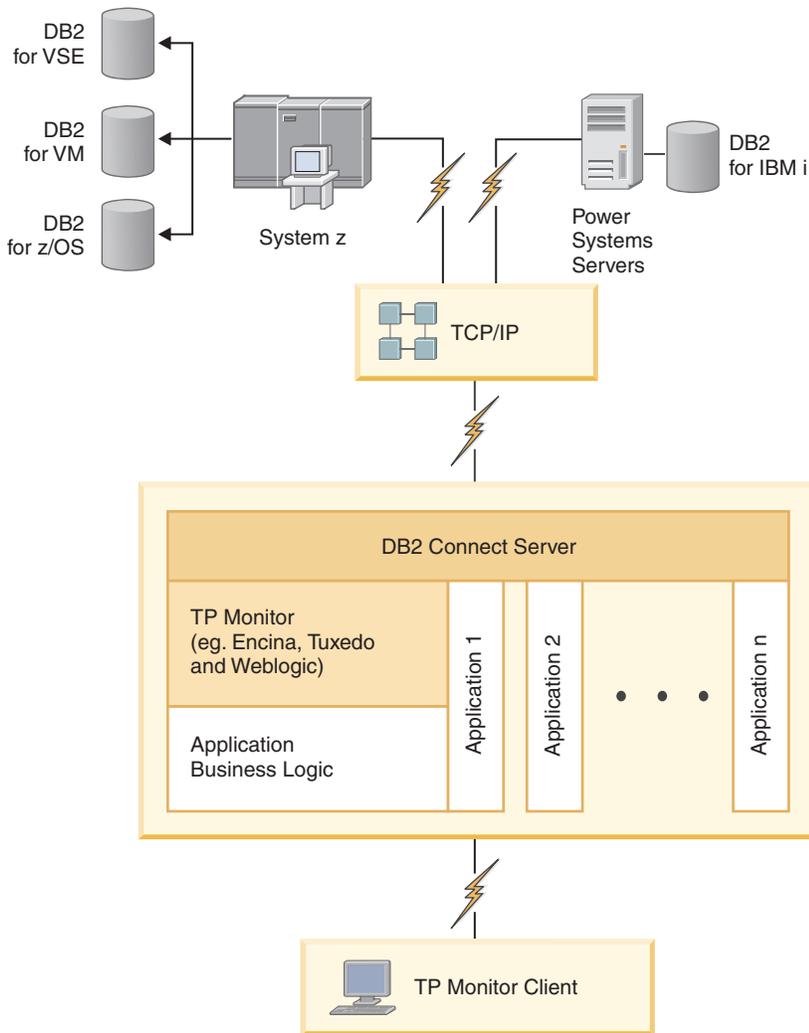
Figure 2. Transaction monitors working with DB2 Connect.

Understanding the Administration Server

The DB2 Administration Server (DAS) responds to requests from the DB2 Administration Tools. The DB2 Administration Tools, for example, allow you to start, stop, and set database manager configuration parameters for servers. The Administration Server is used 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 System z (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.

Important: The DB2 Administration Server (DAS) has been deprecated in Version 9.7 and might be removed in a future release. The DAS is not supported in DB2

pureScale® environments. Use software programs that use the Secure Shell protocol for remote administration. For more information, see " DB2 administration server (DAS) has been deprecated" at .

Part 3. Migrating DB2 Connect

Chapter 3. Upgrading to the latest version of DB2 Connect

Upgrading to a new version or release of DB2 Connect might require upgrading 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 an earlier version or release of DB2 Connect and you want to install the latest version or release of DB2 Connect, then you can upgrade your DB2 Connect server and you might need to upgrade other components in your environment.

DB2 Connect servers supports the upgrading of DB2 Connect instances, and any existing transaction manager and DB2 Connect federated databases created on previous versions of DB2 Connect servers.

The upgrade process consists of all the tasks that you need to perform to have your environment running successfully on a new release. The upgrading of each of the components in your environment to the latest version or release of DB2 Connect requires that you perform different tasks:

- "Upgrading DB2 Connect servers" on page 18 involves upgrading your existing instances, any existing DB2 Connect federated databases, and any existing transaction manager databases so that they can run in the latest version or release of DB2 Connect.
- Upgrading IBM Data Server client packages involves upgrading your client instances to keep the configuration of your existing IBM Data Server client packages.Refer to the "Clients upgrade" topic in the *Upgrading to DB2 Version 10.1*.
- Upgrading database applications involves testing them in the latest version or release of DB2 Connect and modifying them only when you need to support changes available in the latest version or release of DB2 Connect.

  Review changes in existing functionality and discontinued and deprecated functionality for DB2 Connect in the What's New for DB2 Version 10.1 to determine the changes that could impact your database applications. If your database applications connect to DB2 servers, you might need to upgrade your database applications. Refer to the "Database applications and routines upgrade" topic in the *Upgrading to DB2 Version 10.1*.
- Consideration toward DB2 Connect client, instead of DB2 Connect server, to receive equivalent or superior function. You can reduce complexity, improve performance, and deploy application solutions with smaller footprints. For details, see the topic about client/server connection options.

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

- Upgrade prerequisites that indicate all the requirements that you need to meet before upgrading.

- Pre-upgrade tasks which describe all the preparation tasks that you need to perform before upgrading.
- Upgrade tasks which describe step by step the basic upgrade process for a component and how to upgrade environments with special characteristics.
- Post-upgrade tasks which describe all the tasks that you need perform after upgrading to have your DB2 server running at the optimum level.
- Review the need to opt for DB2 Connect client, instead of DB2 Connect server, to receive equivalent or superior function.

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

Upgrade essentials for DB2 Connect

If you are upgrading your clients to the latest version or release of DB2 Connect, you need to consider the changes in support and resolve them before you upgrade.

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

> Upgrade support and restrictions for DB2 servers and clients also apply when you upgrade your DB2 Connect server.
>
> - Review upgrade essentials for DB2 servers to determine additional changes that impact your upgrade and how to address any issues. Refer to the "Upgrade essentials for DB2 Servers" topic in *Upgrading to DB2 Version 10.1* .
> - Review upgrade essentials for clients, especially connectivity support between clients and DB2 servers. Connections to the latest version or release of DB2 Connect servers from a client release two or more versions earlier are not supported. Refer to the "Upgrade essentials for clients" topic in *Upgrading to DB2 Version 10.1* .
> - Review the need to opt for DB2 Connect client, instead of DB2 Connect server, to receive equivalent or superior function. You can reduce complexity, improve performance, and deploy application solutions with smaller footprints. For details, see the topic about client/server connection options.

Upgrade recommendations for DB2 Connect

> The last two versions of the clients can connect to the latest version or release of DB2 Connect servers. The only restriction is that new features are not available to the clients from the previous versions and releases. 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 upgrade your clients first, you need to be aware that there are known limitations about the support for connectivity from a current version or release of the client to DB2 Connect servers from two versions ago. Check the current version or release of the incompatibilities with previous releases, see if these limitations apply to your application in order to take necessary actions.
>
> Perform the pre- and post-upgrade tasks to ensure a successful upgrade.

Pre-upgrade tasks for DB2 Connect servers

To successfully upgrade your DB2 Connect servers, preparation is required to address any issues that may exist.

Procedure

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

1. Review the "Upgrade essentials for DB2 Connect" on page 16 to identify the changes or restrictions that can affect your upgrade and learn how to address any issues before upgrading.
2. Refer to the "Backing up DB2 server configuration and diagnostic information" topic in *Upgrading to DB2 Version 10.1* to have a record of your current configuration that you can compare with the configuration after the upgrade. You can also use this information to create new instances or databases using the same configuration that you had before upgrading.
3. Optional: If you enabled the Syncpoint Manager (SPM) functionality on your DB2 Connect server, ensure that the DRDA sync point managers do not contain any indoubt transactions by using the **LIST DRDA INDOUBT TRANSACTIONS** command to get a list of indoubt transactions and to interactively resolve any indoubt transactions.
4. Optional: If you have transaction manager databases, perform the following pre-upgrade tasks to prepare your databases for upgrading:
   a. Ensure that the database to be upgraded does not contain any indoubt transactions by using the **LIST INDOUBT TRANSACTIONS** command to get a list of indoubt transactions and to interactively resolve any indoubt transactions.
   b. Refer to the "Verify that your databases are ready for upgrading" topic in the *Upgrading to DB2 Version 10.1* to identify and resolve any problems before the actual upgrade.
   c. Refer to the "Backing up databases before upgrading" topic in the *Upgrading to DB2 Version 10.1* to be able to upgrade them to a new upgraded system or restore them in the original pre-upgrade system.
   d. Review the "disk space requirements" topic in the *Upgrading to DB2 Version 10.1* to ensure that you have enough free disk space, temporary table space and log space for database upgrading and increase table space and log file sizes if necessary.
   e. Linux only: Review the "Changing raw devices to block devices (Linux)" topic in the *Upgrading to DB2 Version 10.1* .
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-upgrade 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 copy. Upgrading your current version or release of DB2 Connect copy removes these tables because standard code page tables are contained in a new version or release DB2 Connect library. You do not need to backup standard code page conversion tables.

7. Optional: Upgrade your DB2 Connect server in a test environment to identify upgrade issues and to verify that database applications and routines work as expected before upgrading your production environment.

8. If the `diaglevel` database manager configuration parameter is set to 2 or less, set it to 3 or higher before upgrading.

   Refer to the "Setting the diagnostic log file error capture level" topic in the *Troubleshooting and Tuning Database Performance* to set this database manager configuration parameter.

   In the latest version or release of DB2 Connect, all significant upgrade events are logged in the `db2diag` log files when the `diaglevel` database manager configuration parameter is set to 3 (default value) or higher.

9. Take the DB2 Connect server offline for upgrading. For details, refer to the "Taking a DB2 server offline before upgrading" topic in the *Upgrading to DB2 Version 10.1*.

Upgrading DB2 Connect servers

The latest version or release of DB2 Connect servers supports the upgrade of DB2 Connect instances, and any existing transaction manager and DB2 Connect federated databases created on the two previously supported versions of DB2 Connect servers.

Before you begin

Before upgrading to the latest the version of DB2 Connect:
- Ensure that you have the proper operating system access:
  - Root user authority on UNIX
  - Local Administrator on Windows
- Ensure that you have SYSADM authority.
- Ensure that you meet the installation requirements for DB2 database products. Refer to the "Installation requirements for DB2 database products" topic in the *Installing DB2 Servers* . The requirements for Linux and UNIX operating systems have changed.
- Review the upgrade recommendations. Refer to the "Best practices for upgrading DB2 Servers" topic in the *Upgrading to DB2 Version 10.1*.
- Review the disk space requirements. Refer to the "Disk space requirements for DB2 Server upgrades" topic in the *Upgrading to DB2 Version 10.1*.
- Perform the pre-upgrade tasks, especially backing up your databases.

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

About this task

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 operating systems, you should manually upgrade your DB2 Connect instances after installing the latest version of DB2 Connect. 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 instances from the previous version.

On Windows operating systems, you have an option to automatically upgrade an existing, supported DB2 Connect copy during installation. Your DB2 Connect instances are automatically upgraded. Alternatively, you can install a new copy of the latest version of DB2 Connect and then manually upgrade your DB2 Connect instances.

This procedure describes how to upgrade by installing a new copy of the latest version of DB2 Connect and then upgrade instances and any existing databases. To automatically upgrade an existing, supported DB2 Connect copy on Windows, refer to "Upgrading a DB2 server (Windows)"in the *Upgrading to DB2 Version 10.1*.

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 *Upgrading to DB2 Version 10.1* for details.
- Additional upgrade restrictions for DB2 servers also apply to DB2 Connect servers. Refer to the "Upgrade restrictions for DB2 servers" topic in the *Upgrading to DB2 Version 10.1* .

Procedure

To upgrade your DB2 Connect server:
1. Export your connectivity configuration information for your existing, supported DB2 Connect 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 re-create your connectivity configuration if necessary.
2. Install DB2 Connect by running the DB2 Setup wizard and selecting the option **Install New** on the Install a Product panel. Refer to Chapter 6, "DB2 Connect server products: installation and configuration overview," on page 35.
3. Upgrade your DB2 Connect instances using the **db2iupgrade** command. Refer to the "Upgrading instances" topic in the *Upgrading to DB2 Version 10.1* .
4. Upgrade any existing transaction manager and DB2 Connect federated databases. You can also upgrade your databases by restoring a DB2 Connect backup from one of the two previous supported versions. Upgrade any existing transaction manager and DB2 Connect federated databases by referring to the "Upgrading databases" topic in the *Upgrading to DB2 Version 10.1*.

What to do next

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

Post-upgrade tasks for DB2 Connect servers

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

Procedure

Perform the following post-upgrade 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-upgrade tasks for DB2 Connect servers, reset this parameter to the value set before the upgrade.

2. Manage changes in DB2 server behavior. Refer to the "Manage changes in DB2 server behavior" topic in the *Upgrading to DB2 Version 10.1* . There are new registry variables, new configuration parameters, and new default values for registry variables and configuration parameters introduced in latest version or release of DB2 database products that can impact the behavior of the DB2 database 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 previous versions or releases, copy all of the files for those tables from the *DB2OLD*/conv to *DB2DIR*/conv, where *DB2OLD* is the location of your previous supported version of DB2 Connect copy and *DB2DIR* is the location of your new DB2 Connect copy. You do not need to copy standard code page conversion tables.

   If you upgraded your existing, supported DB2 Connect copy on Windows operating systems, you can restore the customized code page conversion tables that you backed up as part of the pre-upgrade tasks for DB2 Connect servers to the *DB2PATH*\conv directory, where *DB2PATH* is the location of your new DB2 Connect copy.

4. If you are connecting to a DB2 for z/OS server or a IBM 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 upgraded any databases in your DB2 Connect server and changed the log space setting as recommended in the pre-upgrade tasks for DB2 Connect servers, adjust the log space size. Refer to the "Adjusting the log space size in migrated databases" topic in the *Upgrading to DB2 Version 10.1* . Ensure that the amount of log space that you allocate is adequate for your DB2 Connect server.

6. Optional: Back up your databases after the upgrade is complete. Refer to the "Backing up databases before upgrading" topic in the *Upgrading to DB2 Version 10.1* .

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* to determine if you need to perform any tasks after you upgrade your federated databases.

8. Verify that your DB2 Connect server upgrade 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.

What to do next

At this point, you should resume all of your maintenance activities. You should also remove any previously supported versions or releases of DB2 Connect copies that you no longer need.

Related tasks:

"Pre-upgrade tasks for DB2 Connect servers" on page 17
To successfully upgrade your DB2 Connect servers, preparation is required to address any issues that may exist.

Part 4. Preinstallation tasks

Chapter 4. Java software support for DB2 Connect

You require the appropriate level of IBM Software Development Kit (SDK) for Java 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 IBM Data Server Runtime Client or IBM Data Server Driver Package.

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

Operating System Platform	SDK for Java level
AIX®	SDK 7
HP-UX for Itanium-based systems	SDK 6
Linux on x86	SDK 7
Linux on AMD64/EM64T	SDK 7
Linux on zSeries®	SDK 7
Linux on POWER®	SDK7
Solaris Operating System	SDK 7
Windows x86	SDK 7
Windows x64	SDK 7

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 . For a list of the supported levels of the SDK for Java, see the table later in this section entitled DB2 Database for Linux, UNIX, and Windows support for SDKs for Java.

   Note: For Windows operating system platforms, use the IBM Development Package for Eclipse downloads.
2. DB2 GUI tools only run on Linux on x86, Linux on AMD64/EM64T, Windows x86, and Windows x64.
3. On Windows x86 and Linux on x86:
   - the 32-bit SDK is installed
   - 32-bit applications and Java external routines are supported
4. On all supported platforms (except Windows x86, and Linux on x86):
   - 32-bit applications are supported
   - 32-bit Java external routines are not supported
   - 64-bit applications and Java external routines are supported

Supported Java application development software

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

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

Versions of SDK for Java, other than IBM SDK, are supported only for building and running stand-alone Java applications. For building and running new 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. For running Java stored procedures and user-defined functions that were built by prior DB2 releases, refer to Table 1, column "Java Stored Procedures and User Defined Functions" for details.

Table 2. DB2 Database for Linux, UNIX, and Windows supported levels of SDKs for Java

	Java applications using JDBC driver db2java.zip or db2jcc.jar	Java applications using JDBC driver db2jcc4.jar	Java Stored Procedures and User Defined Functions	DB2 Graphical Tools
AIX	1.4.2 to 7	6 and 7	$1.4.2^6$ to 7 [5]	N/A
HP-UX for Itanium-based systems	1.4.2 to 6[1]	6[1]	$1.4.2^6$ to 6	N/A
Linux on POWER	1.4.2 to 7[3,4]	6 and 7[3,4]	$1.4.2^6$ to 7	N/A
Linux on x86	1.4.2 to 7[2,3,4]	6 and 7[2,3,4]	$1.4.2^6$ to 7	5 to 7
Linux on AMD64 and Intel EM64T processors	1.4.2 to 7[2,3,4]	6 and 7[2,3,4]	$1.4.2^6$ to 7	N/A
Linux on zSeries	1.4.2 to 7[3,4]	6 and 7[3,4]	$1.4.2^6$ to 7	N/A
Solaris operating system	1.4.2 to 7[2]	6 and 7[2]	$1.4.2^6$ to 7	N/A
Windows on x86	1.4.2 to 7[2]	6 and 7[2]	$1.4.2^6$ to 7	5 to 7
Windows on x64, for AMD64 and Intel EM64T processors	1.4.2 to 7[2]	6 and 7[2]	$1.4.2^6$ to 7	5 to 7

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 Oracle are supported for building and running stand-alone applications with the IBM Data Server Driver for JDBC and SQLJ. However, if you set the IBM Data Server Driver for JDBC and SQLJ property securityMechanism for a type of security that uses encryption, the SDK for Java must support the type of encryption that you use. For example, the SDK for Java that you use might support 256-bit AES (strong) encryption, but not 56-bit DES (weak) encryption. You can specify the encryption algorithm by setting the IBM Data Server Driver

for JDBC and SQLJ property encryptionAlgorithm. To use 256-bit AES encryption, set encryptionAlgorithm to 2. When you use 256-bit AES encryption with the SDK for Java from Oracle, you might need to install the JCE Unlimited Strength Jurisdiction Policy File, which is available from Oracle.

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. If SDK for Java 6 SR2 or later is used, set DB2LIBPATH=*java_home*/jre/lib/ppc64.

6. Support for Java stored procedures and user-defined functions built by IBM SDK for Java 1.4.2 was deprecated in Version 9.7 and might be removed in a future release. IBM SDK for Java 1.4.2 has an End of Service date of September 2011. It is recommended to remove SDK for Java 1.4.2 dependency well before this date. Removing this dependency can be done by rebuilding Java stored procedures and user-defined functions with the SDK for Java included in DB2 Version 9.1, DB2 Version 9.5, DB2 Version 9.7 or DB2 Version 10.1 .

Chapter 5. Kernel parameters (Linux and UNIX)

Kernel configuration parameters may need to be updated to allow DB2 Connect (and other DB2 database 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 for DB2 Connect (HP-UX)

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

Before you begin

You must have root user authority to modify kernel parameters.

Procedure

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

Results

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

Recommended kernel configuration parameters for DB2 Connect (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 database product.

Modifying kernel parameters for DB2 Connect (Linux)

Before installing a DB2 database system, update your Linux kernel parameters. The default values for particular kernel parameters on Linux are not sufficient when running a DB2 database system.

Before you begin

You must have root user authority to modify kernel parameters.

Procedure

To update kernel parameters on Red Hat and SUSE Linux:

1. Run the **ipcs -l** command.
2. Analyze the output to determine if there are any necessary changes required for your system. Comments have been added following the // to show what the parameter names are.

```
# ipcs -l

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

------ Semaphore Limits --------
max number of arrays = 1024                // SEMMNI
max semaphores per array = 250             // SEMMSL
max semaphores system wide = 256000        // SEMMNS
max ops per semop call = 32                // SEMOPM
semaphore max value = 32767

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

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

  - It is recommended to set the SHMMAX value to be equal to the amount of physical memory on your system. However, the minimum required on x86 systems is 268435456 (256 MB) and for 64-bit systems, it is 1073741824 (1 GB).

  - SHMALL is set to 8 GB by default (8388608 KB = 8 GB). If you have more physical memory than this, and it is to be used for the DB2 database system, then this parameter increases to approximately 90% of your computer's physical memory For instance, if you have a computer system with 16 GB of memory to be used primarily for the DB2 database system, then SHMALL should be set to 3774873 (90% of 16 GB is 14.4 GB; 14.4 GB is then divided by 4 KB, which is the base page size). The ipcs output has converted SHMALL into kilobytes. The kernel requires this value as a number of pages. If you are upgrading to DB2 Version 10.1 and you are not using the default SHMALL setting, you must increase the SHMALL setting by an additional 4 GB. This increase in memory is required by the fast communication manager (FCM) for additional buffers or channels.

- The next section covers the amount of semaphores available to the operating system. The kernel parameter sem consists of 4 tokens, SEMMSL, SEMMNS, SEMOPM and SEMMNI. SEMMNS is the result of SEMMSL multiplied by SEMMNI. The database manager requires that the number of arrays (SEMMNI) be increased as necessary. Typically, SEMMNI should be twice the maximum number of agents expected on the system multiplied by the number of logical partitions on the database server computer plus the number of local application connections on the database server computer.
- The third section covers messages on the system.
  - MSGMNI affects the number of agents that can be started, MSGMAX affects the size of the message that can be sent in a queue, and MSGMNB affects the size of the queue.
  - MSGMAX should be change to 64 KB (that is, 65535 bytes), and MSGMNB should be increased to 65535.
3. To modify these kernel parameters, edit the /etc/sysctl.conf file. If this file does not exist, create it. The following lines are examples of what should be placed into the file:

```
kernel.sem=250 256000 32 1024
#Example shmmax for a 64-bit system
kernel.shmmax=1073741824
#Example shmall for 90 percent of 16 GB memory
kernel.shmall=3774873
kernel.msgmax=65535
kernel.msgmnb=65535
kernel.msgmni=2048
```

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 for DB2 Connect (Solaris)

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), consult your Solaris documentation.

Before you begin

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 database product.

You must restart your system after modifying kernel parameters.

Procedure

To set a kernel parameter:

Add a line at the end of the /etc/system file as follows:

```
set parameter_name = value
```

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

```
set msgsys:msginfo_msgmax = 65535
```

What to do next

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 IBM mainframe database servers. For this reason, it is recommended to use a test installation. 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 IBM mainframe 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 IBM mainframe 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 IBM mainframe database system. DB2 Connect can locate and configure all TCP/IP connections for you. You can use the DB2 command line processor (CLP) commands to configure IBM mainframe databases.
6. Bind the programs and utilities provided with DB2 Connect to your IBM mainframe 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 about 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 IBM mainframe database servers, as well as to test applications that use this connectivity.
11. Use the CLP commands to connect the client to the IBM mainframe system through DB2 Connect.
12. Install a IBM data server client on all end-user workstations that will use applications that connect to IBM mainframe 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 for z/OS or DB2 Database for Linux, UNIX, and Windows, install the IBM data server client.

Chapter 7. DB2 Connect disk and memory requirements

Ensure that an appropriate amount of disk space is available for your DB2 Connect environment, and allocate memory accordingly.

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. Ensure that the file system is not mounted with concurrent I/O (CIO) option.

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

Memory requirements

Memory requirements are affected by the size and complexity of your database system, the extent of database activity, and the number of clients accessing your system. At a minimum, a DB2 database system requires 256 MB of RAM[1]. 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. For IBM data server client support, these memory requirements are for a base of five concurrent client connections. For every additional five client connections, an additional 16 MB of RAM is required.

For DB2 server products, the self-tuning memory manager (STMM) 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.

Paging space requirements

DB2 requires paging, also called swap to be enabled. This configuration is required to support various functions in DB2 which monitor or depend on knowledge of swap/paging space utilization. The actual amount of swap/paging space required varies across systems and is not solely based on memory utilization by application software. It is only strictly required by DB2 on the Solaris and HP platforms due to their use of early paging space allocation.

A reasonable minimum swap/paging space configuration for most systems is 25-50% of RAM. Solaris and HP systems with many small databases or multiple databases tuned by STMM might require a paging space configuration of 1 x RAM or higher. These higher requirements are due to virtual memory pre-allocated per

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1. DB2 products that run on HP-UX Version 11i for Itanium-based systems require a minimum of 512 MB of RAM.

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database / instance, and retained virtual memory in the case of STMM tuning multiple databases. Additional swap/paging space might be wanted to provision for unanticipated memory overcommitment on a system.

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.

Before you begin

Before you begin your installation:
- You can install DB2 Connect using either root or non-root user authority.
- Ensure that your system meets:
  - Disk and memory requirements
  - Hardware and software requirements. Refer to "Installation requirements for DB2 Connect server products (AIX)" on page 41.
- The DB2 database 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 database products already installed on your system, use the **db2ls** command. Refer to the "Listing DB2 products installed on your system (Linux and UNIX)" topic in *Installing 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.

  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.

About this task

The DB2 Installer program is a Java-based installation tool that automates the installation and configuration of any DB2 database 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 **db2setup** command. You *cannot* manually install a DB2 database 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.

Procedure

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

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

       cd /db2dvd

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

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

   a. Decompress the product file:

       gzip -d product.tar.gz

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

   b. Untar the product file:

       tar xvf product.tar

   c. Change directory:

       cd ./product/disk1

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

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

4. Once you have initiated the installation, proceed through the DB2 Setup wizard installation panels and make your selections. Installation help is available to guide you through the DB2 Setup wizard. Click **Help** to invoke the online help. You can click **Cancel** at any time to exit the installation. DB2 files will only be copied to your system once you have clicked **Finish** on the last DB2 Setup wizard installation panel. Once completed, the DB2 Connect server product is installed using the /opt/IBM/db2/V9.8 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.

Results

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 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. See the "Installing the DB2 Information Center using the DB2 Setup wizard (UNIX)" topic in *Installing 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 3. AIX installation requirements

Operating System	Hardware
AIX Version 6.1[2] • 64-bit AIX kernel is required • AIX 6.1 Technology Level (TL) 6 and Service Pack (SP) 5 • Minimum C++ runtime level requires the xlC.rte 11.1.0.1 and xlC AIX rte 11.1.0.1 (or later) filesets. AIX Version 7.1 • 64-bit AIX kernel is required • AIX 7.1 Technology Level (TL) 0 and Service Pack (SP) 3 • Minimum C++ runtime level requires the xlC.rte 11.1.0.1 and xlC AIX rte 11.1.0.1 (or later) filesets.	64-bit Common Hardware Reference Platform (CHRP) architecture, excluding POWER3 processor-based systems.[1] All processors that are capable of running the supported AIX operating systems.

- [1]To verify that it is a CHRP architecture system, issue the command **lscfg** and look for the following output: `Model Architecture: chrp`. For POWER3 processor-based systems, first upgrade to POWER4 processor-based systems before installing DB2 Version 10.1. POWER3 processor-based systems are not supported in DB2 Version 10.1.
- [2]In AIX 6.1 there are two types of Workload Partitions (WPARs): system WPARs and application WPARs. DB2 installation is supported only on a system WPAR. AIX 6.1 also supports the ability to encrypt a JFS2 file system or set of files.

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 website.
- One of the following browsers is required to view online help and to run First Steps (**db2fs**):
  - Firefox 3.0 and later
  - Google Chrome
  - Safari 4.0
- For details regarding known AIX issues, see www.ibm.com/support/docview.wss?&uid=swg21165448

Communication requirements

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

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

DB2 product installation on NFS (Network File System)

The installation of DB2 products on NFS (Network File System) is not recommended. Running DB2 products on NFS (for example, NFS mounting `/opt/IBM/db2/V10.1` and then running off code that was physically installed on a remote system) requires several manual setup steps. There are also a number of potential issues with setting up NFS for a DB2 server. These include possible problems that involve:

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

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

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

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

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.
4. After SMIT starts, select **File Systems** > **Add / Change / Show / Delete File Systems** > **CDROM File Systems** > **Add CDROM File System**.
5. In the Add a File System window:
   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 directory 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.

Before you begin

Before you begin your installation:
- You can install DB2 Connect using either root or non-root user authority.
- Ensure that your system meets:
  - Disk and memory requirements
  - Hardware, distribution and software requirements. Refer to "Installation requirements for DB2 Connect server products (AIX)" on page 41.
- The DB2 database 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 database products already installed on your system, use the **db2ls** command. Refer to the "Listing DB2 products installed on your system (Linux and UNIX)" topic in *Installing 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.

  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.

About this task

The DB2 Installer program is a Java-based installation tool that automates the installation and configuration of any DB2 database 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 **db2setup** command. You *cannot* manually install a DB2 database 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.

Procedure

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/V10.1 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.

Results

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 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. See the "Installing

the DB2 Information Center using the DB2 Setup wizard (UNIX)" topic in *Installing 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: A 64-bit HP-UX operating system is required to support DB2 Connect.

Installation requirements

Table 4. HP-UX installation requirements

Operating System	Hardware
HP-UX 11i v3 (11.31) with: • PHSS_37202 • PHKL_41481 • PHKL_42035 • PHKL_42335 • PHKL_41588 HP-UX 11i v4 (11.31)	Itanium based HP Integrity Series Systems

Software requirements
- A browser is required to view online help.
- For details regarding known HP-UX issues, see www.ibm.com/support/docview.wss?&uid=swg21257602

Communication requirements
You can use TCP/IP
- For TCP/IP connectivity, no additional software is required.

Note: DB2 products installed on the HP-UX operating system support long host names. The length has been extended to 255 bytes, in any combination of characters or digits.

To enable long host name 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 host name support with the `-D_HPUX_API_LEVEL=20040821` option.

Mounting CDs or DVDs for DB2 Connect (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 file name will be something similar to /dev/dsk/c1t2d0.
4. Mount the CD or DVD drive to the mount-point directory:

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

Results

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

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

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

Before you begin

Before you begin your installation:
- You can install DB2 Connect using either root or non-root user authority.
- Ensure that your system meets:
  - Disk and memory requirements
  - Hardware, distribution and software requirements. Refer to "Installation requirements for DB2 Connect server products (Linux)" on page 51.
- The DB2 database 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 database products already installed on your system, use the **db2ls** command.
- 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.

  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.

About this task

The DB2 Setup wizard is a Java-based installation tool that automates the installation and configuration of any DB2 database 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 **db2setup** command. You *cannot* manually install a DB2 database 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.

Procedure

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition, on Linux using the DB2 Setup wizard:
1. Change to the directory where the DVD is mounted:

```
cd /db2dvd
```

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

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

    a. Decompress the product file:

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

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

    b. Untar the product file:

        ```
        tar xvf product.tar
        ```

    c. Change directory:

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

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

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

4. Once you have initiated the installation, proceed through the DB2 Setup wizard installation panels and make your selections. Installation help is available to guide you through the DB2 Setup wizard. Click **Help** to invoke the online help. You can click **Cancel** at any time to exit the installation. DB2 files will only be copied to your system once you have clicked **Finish** on the last DB2 Setup wizard installation panel. Once completed, the DB2 Connect server product is installed using the `/opt/IBM/db2/V9.8` 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.

Results

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 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. See the "Installing the DB2 Information Center using the DB2 Setup wizard (UNIX)" topic in *Installing 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)
- x64 (Intel EM64T and AMD64)
- POWER (any Power Systems Servers, pSeries®, System i, System p®, and POWER Systems that support Linux)
- System z (formerly eServer™ zSeries)

Distribution requirements

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

You might be required to update your kernel configuration parameters. The kernel configuration parameters are set in /etc/sysctl.conf. See the Modifying kernel parameters (Linux) section of the DB2 Information Center. Refer to your operating system manual for information about setting and activating these parameters using the **sysctl** command.

Software requirements

- An X Window System software capable of rendering a graphical user interface is required if you want to use the DB2 Setup wizard to install DB2 Connect or if you want to use any DB2 graphical tools.
- A browser is required to view online help.

Communication requirements

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

Preparing to install DB2 Connect for Linux on zSeries

To install a DB2 database 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.

Before you begin

You have already obtained your DB2 database product installation image.

Procedure

- 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
    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 host name 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 for DB2 Connect (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)

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

Before you begin

Before you begin your installation:
- You can install DB2 Connect using either root or non-root user authority.
- Ensure that your system meets:
  - Disk and memory requirements
  - Hardware, distribution and software requirements. Refer to "Installation requirements for DB2 Connect server products (AIX)" on page 41.
- The DB2 database 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 database products already installed on your system, use the **db2ls** command. Refer to the "Listing DB2 products installed on your system (Linux and UNIX)" topic in *Installing 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.

  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.

About this task

The DB2 Setup wizard is a Java-based installation tool that automates the installation and configuration of any DB2 database 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 **db2setup** command. You *cannot* manually install a DB2 database 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.

Procedure

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/V9.8` 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.

Results

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 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. See the "Installing

the *DB2 Information Center* using the DB2 Setup wizard (UNIX)" topic in *Installing DB2 Servers* .

Installation requirements for DB2 Connect products (Solaris)

Before you install DB2 Connect products on the Solaris Operating System, ensure that the system you choose meets the necessary operating system, hardware, software, and communications requirements. The installation requirements are same for both the DB2 Connect Enterprise Edition and the DB2 Connect Personal Edition.

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

Table 5. Solaris installation requirements

Operating System	Hardware
Solaris 10 Update 9 • 64-bit kernel	Solaris x64 (Intel 64 or AMD64)
Solaris 10 Update 9 • 64-bit kernel	UltraSPARC or SPARC64 processors

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

Operating system requirements

"Recommended & Security Patches" needs to be obtained.

The J2SE Solaris Operating System Patch Clusters are also required.

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

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

DB2 database products support Solaris ZFS filesystems and Logical Domains (LDoms).

For details about virtualization technology supported by DB2 products, see http://www.ibm.com/developerworks/wikis/display/im/DB2+Virtualization+Support.

Software requirements
• SUNWlibC software is required to install DB2 Connect on Solaris.
• 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 for DB2 Connect (Solaris)

If the CD-ROM is not automatically mounted when you insert it into the drive on Solaris Operating System, 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:

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

      This command returns the name of the CD or DVD device. In this example, the command returns the string /dev/dsk/c0t6d0s2.

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

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

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

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)

To install a DB2 Connect server product, such as DB2 Connect Enterprise Edition on Windows operating systems, use 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. Refer to "Installation requirements for DB2 Connect server products (Windows)" on page 58.
- If you are planning to use LDAP, you must extend the directory schema. Refer to the "Extending the Active Directory Schema for LDAP directory services (Windows)" topic in *Installing 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 database 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)".

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 autostart, 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.

                                                                57

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

- To invoke the DB2 Setup wizard manually:
  1. Click **Start** and select the **Run** option.
  2. In the **Open** field, enter the following command:

     `x:\setup /i language`

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

What to do next

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 3 or later
  - Windows 2003 with Service Pack 2 or later:
    - Standard Edition (32–bit and 64–bit)
    - Enterprise Edition (32–bit and 64–bit)
    - Datacenter Edition (32–bit and 64–bit)
  - Windows Vista:
    - Business Edition (32–bit and 64–bit)
    - Enterprise Edition (32–bit and 64–bit)
    - Ultimate Edition (32–bit and 64–bit)
  - Windows 7 Service Pack 1
    - Professional Edition (32-bit and x64)
    - Enterprise Edition (32-bit and x64)
  - Windows Server 2008 Service Pack 2 or later

- Standard Edition (32–bit and 64–bit)
- Enterprise Edition (32–bit and 64–bit)
- Datacenter Edition (32–bit and 64–bit)
- Windows Server 2008 R2 Service Pack 2 or later
  - Standard Edition (64–bit)
  - Enterprise Edition (64–bit)
  - Datacenter Edition (64–bit)

Software requirements
- 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.

Required user accounts for installation of DB2 Connect 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 before running the DB2 Setup wizard. The setup user accounts can be defined before 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 database products offer extended Windows security. If the extended security feature is selected, you must add the users who will administer or use the DB2 database 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 group names.

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 2008 and Windows Vista or higher, 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).

Important: The DB2 Administration Server (DAS) has been deprecated in Version 9.7 and might be removed in a future release. The DAS is not supported in DB2 pureScale environments. Use software programs that use the Secure Shell protocol for remote administration. For more information, see " DB2 administration server (DAS) has been deprecated" at .

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, the DB2ADMNS group will have all these privileges. You can 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 database systems within your environment so that it can start or stop other instances if required. By default, any user that is part of the *Administrators* 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 because the instance is run as a Windows service and the service will be executing in the security context of the user account. When you use a domain user account to perform a database operation (such as, creating a database) against a DB2 instance, the DB2 service needs to access the domain to authenticate and search for the user's group membership. By default, a domain will only allow a domain user to query the domain and hence, the DB2 service needs to be running in the security context of a domain user. An error will occur if you use a domain user account to perform a database operation against a DB2 service running with either a Local user account or a LocalSystem 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 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.

About this task

Extending the directory schema before installing DB2 database 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.

Procedure

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.

What to do next

When **db2schex** completes, you can proceed with the installation of your DB2 database product; or if you have already installed DB2 database 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)

There are some additional considerations when you install DB2 Connect on Windows operating systems using a non-Administrator user account.

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 a 32-bit DB2 Connect Personal Edition product can be successfully installed.

Note: If a non-Administrator user account is going to do the product installation, then the VS2010 runtime library must be installed before attempting to install a DB2 product. The VS2010 runtime library is needed on the operating system before the DB2 product can be installed. The VS2010 runtime library is available from the Microsoft runtime library download website. 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 scenarios are installation situations that 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. This process is also applicable to instance based clients.

Before you begin

- You must have installed a DB2 database 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 database product.

Procedure

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**.

What to do next

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.

Part 6. Postinstallation tasks

Chapter 13. 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.

Registering a DB2 Connect license key using the db2licm command

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).

To connect to a z/OS server or a System i server, you must register a DB2 Connect license key. (Retrieve the license file from your Passport Advantage® distribution, for example db2conpe.lic, then copy the license file to the license directory under the directory where the driver was installed.)

If you are using DB2 Connect Unlimited Edition for z/OS, then use a server based license key. This one step will prevent the need for client based license keys. For details, see the topic about activating the license key for DB2 Connect Unlimited Edition for System z.

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, 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 file 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/V10.1/adm on AIX, HP-UX or Solaris operating systems or /opt/ibm/db2/V10.1/adm on Linux operating systems, if you use the default installation directory.

Setting the DB2 Connect license policy using the db2licm command

To set your license policy, issue the **db2licm** command with the command parameters that are appropriate for the license.

Before you begin

Before you set your license policy, you need to know 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.

About this task

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 InfoSphere® Replication Server or InfoSphere Federation Server, the license policy controls and monitors the number of connectors to a data source that is not a part of DB2.

Procedure

To set your license policy:

Perform *one* of the following depending on the type of licenses that you purchased:

* If you purchased a InfoSphere Replication Server or InfoSphere Federation Server Concurrent Connector policy, enter the following command:

  ```
  db2licm -c isrs concurrent
  ```

  or

  ```
  db2licm -c isfs concurrent
  ```

* If you purchased a DB2 Connect server Concurrent User policy, enter the following command:

  ```
  db2licm -p db2consv concurrent
  ```

Chapter 14. Applying fix packs to DB2 Connect

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 preinstallation 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 ftp:// ftp.software.ibm.com/ps/products/db2/fixes/english-us/aparlist/.

Fix packs are cumulative. This means that the latest fix pack for any given version of DB2 database contains all of the updates from previous fix packs for the same version of DB2 database.

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 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.

  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.

  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 10.1 fix pack can only be applied to DB2 Version 10.1 general availability (GA) or DB2 Version 10.1 fix pack 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, before 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 updated 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 applications 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 database files. You must ensure no DB2 files are loaded and provide an override option to install the fix pack. On UNIX, the **fuser** command is required to check for loaded files. On Linux, either the **fuser** command or **lsof** command is required.

    For details on the override option, see the **installFixPack** command.
- On client applications, after a fix pack has been applied, to perform autobind of applications, the user must have bind authority.
- Installation of a DB2 fix pack will not service IBM Data Studio Administration Console or IBM Data Studio.

Procedure

To install a fix pack:
1. Check fix pack prerequisites.
2. Perform the necessary tasks before 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.

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

Chapter 15. Preparing IBM DB2 for IBM i for connections from DB2 Connect

DB2 Connect gives remote system applications access to data on your IBM DB2 for IBM i system.

Procedure

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

1. The local network name. You can get this information by entering **DSPNETA**.

2. The local adapter address. You can get this information by entering the **WRKLIND** command in one of the following ways:

   WRKLIND (*elan)
   > Lists Ethernet adapters

   WRKLIND (*trlan)
   > Lists token ring adapters

   WRKLIND (*all)
   > Lists all adapters

3. The hostname. You can get this information by entering **DSPNETA**.

4. The TCP/IP port or service name. The default is X'07'6DB (X'07F6C4C2'). The default is always used by DB2 for i. If entering a hexadecimal number is not convenient, an alias is QCNTEDDM.

5. The relational database name. You can get this information by entering **DSPRDBDIRE**. This will display a list. The line containing *LOCAL in the Remote Location column identifies the RDBNAME which must be defined to the client. If there is no *LOCAL entry, you can add one, or use the system name obtained from the **DSPNETA** command on the server.

Results

Here is an example:

```
                 Display Relational Database Directory Entries

Position to  . . . . . .

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

                 Relational                Remote
Option           Database                  Location Text


        _        _____

        _        DLHX                      RCHAS2FA

        _        JORMT2FA                  JORMT2FA

        _        JORMT4FD                  JORMT4FD

        _        JOSNAR7B                  RCHASR7B

        _        RCHASR7B                  *LOCAL

        _        RCHASR7C                  RCHASR7C

        _        R7BDH3SNA                 RCH2PDH3

        _        RCHASDH3                  RCHASDH3
```

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

Table 6. Configuration parameters from IBM Power Systems

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

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

Chapter 16. Preparing DB2 for z/OS for connections from DB2 Connect

DB2 Connect gives remote system applications access to data on your DB2 for z/OS system.

Before you begin

If you anticipate that DB2 for z/OS will participate in a multisite update transaction (two-phase commit) then refer to the topic that discusses enabling multisite updates in the *DB2 Connect User's Guide*.

About this task

This topic provides instructions for establishing TCP/IP network connections between DB2 Connect Server or DB2 Connect client and DB2 for z/OS.

Procedure

To prepare DB2 for z/OS to receive connection requests from DB2 Connect, you need to configure your protocol by:
* "Configuring TCP/IP for DB2 for z/OS" on page 78
*
* "Configuring DB2 for z/OS" on page 80

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:

System z

DB2 for z/OS. A DB2 for z/OS subsystem identified by its LOCATION NAME. Use the z/OS **-display ddf** command to get the DB2 server location name, domain name, IP address and port.

A DB2 for z/OS location is the unique name of a database server. An application uses the location name to access a DB2 for z/OS subsystem or a DB2 for z/OS data sharing group. A data sharing group enables applications on different DB2 subsystems to read from and write to the same data concurrently. The application uses a DB2 data sharing group network address to access a DB2 data sharing location. The accessed DB2 subsystem is transparent to the application.

Since DB2 for z/OS supports multiple databases at the same DB2 location, the location name is analogous to a Linux, UNIX, and Windows database alias name. A database alias can be used to override the location or location alias name when accessing a location. A location alias is another name for a location. It is used to control which subsystems in a data sharing group are accessed by an application.

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.

IBM Power Systems Servers
IBM DB2 for IBM i, an integral part of the IBM i operating system. Only one database can exist on an IBM Power Systems server unless the system is configured to use independent auxiliary storage pools.

Configuring TCP/IP for DB2 for z/OS

To configure TCP/IP communications between your DB2 Connect workstation and DB2 for z/OS Version 8 or later, you must first collect network details about the host database server.

Before you begin

The instructions assume the following conditions:

- You are connecting to a single host database server or location 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. Use the group IP address to connect to a group location.
- The target database resides on DB2 for z/OS Version 8 or later.
- All the necessary software prerequisites are installed.
- DB2 clients have been set up as required.

Procedure

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 for z/OS host.
   - The TCP/IP port number defined to DB2 for z/OS.

     Note: The associated service name information is not exchanged between the DB2 Connect workstation and DB2 for z/OS.
     Port number 446 has been registered as the default for communication from a DB2 Connect workstation.
   - The TCP/IP addresses and host names for both the host and the DB2 Connect workstation.
   - The LOCATION NAME of the DB2 for z/OS database server.

- The user ID and password to be used when issuing CONNECT requests to the database at the IBM mainframe server.
2. Refer to your local network administrator and your DB2 for 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 7. User Information

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

Table 8. Network Elements at the Host

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

Note:

a. To obtain the host's IP address TCP-9, enter at the host:

    `TSO NETSTAT HOME`

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

Table 9. Network Elements at the DB2 Connect client and server

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

Table 10. DB2 Directory Entries at the DB2 Connect server

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

3. Complete a copy of the worksheet example for each TCP/IP host:
    a. Fill in the values to be used for the host name and IP address of the DB2 for z/OS 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 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 System z 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 for z/OS 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 for z/OS 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
    ```

Support for your System z server is available at http://www.ibm.com/servers/eserver/support/zseries/

Configuring DB2 for z/OS

Before you can use DB2 Connect, your DB2 for z/OS Administrator must configure DB2 for z/OS to permit connections from DB2 Connect workstations.

About this task

This section indicates the *minimum* updates required to permit a DB2 Connect client to make a connection to the DB2 for z/OS database server. For more detailed examples, refer to the DB2 for z/OS installation documentation: http://publib.boulder.ibm.com/infocenter/imzic or refer to the DDF installation steps in the DB2 for z/OS installation manual.

Chapter 17. Preparing DB2 for VSE & VM for connections from DB2 Connect

About this task

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

Chapter 18. 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 command line processor (CLP).

Configuring connections to IBM mainframe database servers

You can manually configure your TCP/IP connection between a DB2 Connect server and a IBM mainframe database using the DB2 command line processor (CLP). For details on configuring connection using `db2dsdriver.cfg`, see the topic about db2dsdriver configuration file.

Before you begin

Before you manually configure a TCP/IP connection between DB2 Connect and a IBM mainframe database server, ensure that:
- TCP/IP is functional on the DB2 Connect server and IBM mainframe system.
- You have identified the following parameter values:
    – Hostname (*hostname*) or IP address (*ip_address*)
    – Connection Service name (*svcename*) or Port number/Protocol (*port_number/tcp*)
    – Target database name (*target_dbname*)
    – Local database name (*local_dcsname*)
    – Node name (*node_name*)

Procedure

To manually configure TCP/IP communications between your DB2 Connect server and an IBM mainframe database:
1. Configure TCP/IP on the DB2 Connect server. Refer to "Configuring TCP/IP for DB2 for z/OS" on page 78.
2. Catalog the TCP/IP node. Refer to the "CATALOG TCPIP/TCPIP4/TCPIP6 NODE command" topic in the *Command Reference*.
3. Catalog the IBM mainframe database as a Database Connection Service (DCS) database. Refer to the "CATALOG DCS DATABASE command" topic in the *Command Reference*.
4. Catalog the IBM mainframe database. Refer to the "CATALOG DATABASE command" topic in the *Command Reference*.
5. Bind utilities and applications to the IBM mainframe database server. Refer to "Binding database utilities on DB2 Connect" on page 95.
6. Test the IBM mainframe connection. Refer to the "CONNECT (Type 1) statement" topic in the *SQL Reference Volume 2* .

Results

Note: Due to the characteristics of the TCP/IP protocol, TCP/IP might not be immediately notified of a partner's failure on another IBM mainframe. 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 19. Configuring access to IBM mainframe 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 DB2 command line processor (CLP) to find, connect, and bind to a database server.

Chapter 20. Supported DB2 Connect 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 database product with languages supported by the DB2 interface. Languages supported by the DB2 database 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 11. Language identifiers

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

Changing the DB2 Connect product interface language (Windows)

The DB2 interface language is the language that appears in messages, help, and graphical tool interfaces. When installing your DB2 database product, you have the option of installing support for one or more languages. After installation, you can change the DB2 interface language to one of the other installed interface languages.

About this task

Do not confuse languages supported by a DB2 database product with languages supported by the DB2 interface. Languages supported by a DB2 database 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 database product interface languages are selected and installed when you install a DB2 database product using the DB2 Setup wizard. If you change the interface language of a DB2 database product to a supported interface language that has not been installed, the DB2 database 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 database product on Windows requires that you change the default language setting for your Windows operating system.

Procedure

To change the DB2 database 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 2008 and Windows Vista or higher, 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 2008 and Windows Vista or higher, 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 2008 and Windows Vista or higher, 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.

What to do next

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

Changing the DB2 Connect interface language (Linux and UNIX)

The interface language of the DB2 database product is the language that appears in messages, help, and graphical tool interfaces. When installing your DB2 database 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.

Before you begin

Do not confuse languages supported by the DB2 database product with languages supported by the DB2 interface. Languages supported by the DB2 database 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 a DB2 database product using the DB2 Setup wizard. If you change the interface language of the DB2 database 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 database product using the DB2 Setup wizard or by using the National Language Package.

About this task

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

Procedure

To change the DB2 interface language:

Set the **LANG** environment variable to the locale you want.
- 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 database product in French, you must have the French language support installed and you must set the **LANG** environment variable to a French locale, for example, fr_FR.

Conversion of character data

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

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

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

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

1. DB2 Connect sends an SQL statement and input data to System z.
2. DB2 for z/OS converts the SQL statement and data to the host server's code page and then processes the data.
3. DB2 for z/OS 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 21. Developing database applications

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

Binding database utilities on DB2 Connect

You must bind the database utilities (import, export, reorg, the Command Line Processor) and CLI bind files to each database before they can be used with that database.

About this task

In a network environment, if you are using multiple clients that run on different operating systems or are at different versions or service levels of DB2, you must bind the utilities once for each operating system and DB2 version combination.

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

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

Procedure

- To bind the utilities and applications to the IBM mainframe database server, connect to the IBM mainframe 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 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 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 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 CLI or ODBC driver, the CLI packages will be bound automatically. If the applications that you are using require binding to the database, you can use the **BIND** command 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 CLI
* ODBC applications
* Java applications using the JDBC or SQLJ interfaces
* PHP applications
* Ruby or Ruby on Rails applications
* Perl applications
* Python applications

On Windows operating systems, the following routines or objects 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. Bind the necessary files to support the database application driver being used.
5. Run the application program.

Chapter 22. 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 DB2 Connect (Windows)

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

About this task

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

Procedure

To remove your DB2 database product from Windows:
1. Optional: Drop all databases using the **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 database product, you will receive a warning containing a list of processes and services that are holding DB2 DLLs in memory. If you will use Add/Remove Programs to remove your DB2 database product, this step is optional.
3. You have two options for removing your DB2 database product:
   * Add/Remove Programs

     Accessible through the Windows Control Panel, use the Add/Remove Programs window to remove your DB2 database 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 from the *DB2DIR*\bin directory to remove your DB2 database products, features, or languages. Using this command, you can uninstall multiple DB2 database products at the same time using the **/p** parameter. You can use a response file to uninstall DB2 database products, features, or languages using **/u** parameter.

What to do next

Unfortunately, your DB2 database 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 must ONLY be attempted if the previous 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. Before running this command with the **/f** parameter, see the **db2unins** command for details.

Uninstalling DB2 Connect (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 **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 *Installing 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 *Installing DB2 Servers* manual.
4. Stop all DB2 instances. Refer to the *Installing DB2 Servers* manual.
5. Remove the DB2 instances, or run the **db2iupdt** command to update the instances to another installation path. To remove the DB2 instances, refer to the *Installing DB2 Servers* manual.
6. Remove the DB2 database products. Refer to the *Installing DB2 Servers* manual.

Part 9. Appendixes

Appendix A. Overview of the DB2 technical information

DB2 technical information is available in multiple formats that can be accessed in multiple ways.

DB2 technical information is available through the following tools and methods:
- DB2 Information Center
  - Topics (Task, concept and reference topics)
  - 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 hardcopy 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/.

Documentation feedback

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

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

DB2 technical library in hardcopy or PDF format

The following tables describe the DB2 library available from the IBM Publications Center at www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss. English and translated DB2 Version 10.1 manuals in PDF format can be downloaded from www.ibm.com/support/docview.wss?rs=71&uid=swg2700947.

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

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

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

Table 12. DB2 technical information

Name	Form Number	Available in print	Last updated
Administrative API Reference	SC27-3864-00	Yes	April, 2012
Administrative Routines and Views	SC27-3865-00	No	April, 2012
Call Level Interface Guide and Reference Volume 1	SC27-3866-00	Yes	April, 2012
Call Level Interface Guide and Reference Volume 2	SC27-3867-00	Yes	April, 2012
Command Reference	SC27-3868-00	Yes	April, 2012
Database Administration Concepts and Configuration Reference	SC27-3871-00	Yes	April, 2012
Data Movement Utilities Guide and Reference	SC27-3869-00	Yes	April, 2012
Database Monitoring Guide and Reference	SC27-3887-00	Yes	April, 2012
Data Recovery and High Availability Guide and Reference	SC27-3870-00	Yes	April, 2012
Database Security Guide	SC27-3872-00	Yes	April, 2012
DB2 Workload Management Guide and Reference	SC27-3891-00	Yes	April, 2012
Developing ADO.NET and OLE DB Applications	SC27-3873-00	Yes	April, 2012
Developing Embedded SQL Applications	SC27-3874-00	Yes	April, 2012
Developing Java Applications	SC27-3875-00	Yes	April, 2012
Developing Perl, PHP, Python, and Ruby on Rails Applications	SC27-3876-00	No	April, 2012
Developing User-defined Routines (SQL and External)	SC27-3877-00	Yes	April, 2012
Getting Started with Database Application Development	GI13-2046-00	Yes	April, 2012

Table 12. DB2 technical information (continued)

Name	Form Number	Available in print	Last updated
Getting Started with DB2 Installation and Administration on Linux and Windows	GI13-2047-00	Yes	April, 2012
Globalization Guide	SC27-3878-00	Yes	April, 2012
Installing DB2 Servers	GC27-3884-00	Yes	April, 2012
Installing IBM Data Server Clients	GC27-3883-00	No	April, 2012
Message Reference Volume 1	SC27-3879-00	No	April, 2012
Message Reference Volume 2	SC27-3880-00	No	April, 2012
Net Search Extender Administration and User's Guide	SC27-3895-00	No	April, 2012
Partitioning and Clustering Guide	SC27-3882-00	Yes	April, 2012
pureXML Guide	SC27-3892-00	Yes	April, 2012
Spatial Extender User's Guide and Reference	SC27-3894-00	No	April, 2012
SQL Procedural Languages: Application Enablement and Support	SC27-3896-00	Yes	April, 2012
SQL Reference Volume 1	SC27-3885-00	Yes	April, 2012
SQL Reference Volume 2	SC27-3886-00	Yes	April, 2012
Text Search Guide	SC27-3888-00	Yes	April, 2012
Troubleshooting and Tuning Database Performance	SC27-3889-00	Yes	April, 2012
Upgrading to DB2 Version 10.1	SC27-3881-00	Yes	April, 2012
What's New for DB2 Version 10.1	SC27-3890-00	Yes	April, 2012
XQuery Reference	SC27-3893-00	No	April, 2012

Table 13. DB2 Connect-specific technical information

Name	Form Number	Available in print	Last updated
DB2 Connect Installing and Configuring DB2 Connect Personal Edition	SC27-3861-00	Yes	April, 2012
DB2 Connect Installing and Configuring DB2 Connect Servers	SC27-3862-00	Yes	April, 2012
DB2 Connect User's Guide	SC27-3863-00	Yes	April, 2012

Displaying SQL state help from the command line processor

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

Procedure

To start 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

Documentation for other versions of DB2 products is found in separate information centers on ibm.com®.

About this task

For DB2 Version 10.1 topics, the *DB2 Information Center* URL is http://publib.boulder.ibm.com/infocenter/db2luw/v10r1.

For DB2 Version 9.8 topics, the *DB2 Information Center* URL is 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/.

For DB2 Version 9.5 topics, the *DB2 Information Center* URL is 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/.

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

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

A locally installed DB2 Information Center must be updated periodically.

Before you begin

A DB2 Version 10.1 Information Center must already be installed. For details, see the "Installing the DB2 Information Center using the DB2 Setup wizard" topic in *Installing DB2 Servers*. All prerequisites and restrictions that applied to installing the Information Center also apply to updating the Information Center.

About this task

An existing DB2 Information Center can be updated automatically or manually:

- Automatic updates update existing Information Center features and languages. One benefit of automatic updates is that the Information Center is unavailable for a shorter time compared to during a manual update. In addition, automatic updates can be set to run as part of other batch jobs that run periodically.
- Manual updates can be used to update existing Information Center features and languages. Automatic updates reduce the downtime during the update process, however you must use the manual process when you want to add features or languages. For example, a local Information Center was originally installed with both English and French languages, and now you want to also install the German language; a manual update will install German, as well as, update the existing Information Center features and languages. However, a manual update requires you to manually stop, update, and restart the Information Center. The Information Center is unavailable during the entire update process. In the automatic update process the Information Center incurs an outage to restart the Information Center after the update only.

This topic details the process for automatic updates. For manual update instructions, see the "Manually updating the DB2 Information Center installed on your computer or intranet server" topic.

Procedure

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

1. On Linux operating systems,
   a. Navigate to the path where the Information Center is installed. By default, the DB2 Information Center is installed in the `/opt/ibm/db2ic/V10.1` directory.
   b. Navigate from the installation directory to the `doc/bin` directory.
   c. Run the `update-ic` script:

      ```
      update-ic
      ```

2. On Windows operating systems,
   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 10.1` 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 `update-ic.bat` file:

      ```
      update-ic.bat
      ```

Results

The DB2 Information Center restarts automatically. If updates were available, the Information Center displays the new and updated topics. If Information Center updates were not available, a message is added to the log. The log file is located in `doc\eclipse\configuration` directory. The log file name is a randomly generated number. For example, `1239053440785.log`.

Manually 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.

About this task

Updating your locally installed *DB2 Information Center* manually 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. The Workstation version of the DB2 Information Center always runs in stand-alone mode. .

2. Use the Update feature to see what updates are available. If there are updates that you must 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, mirror the update site to a local file system by 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 2008, Windows Vista (and higher), the commands listed later in this section must be run as an administrator. To open a command prompt or graphical tool with full administrator privileges, right-click the shortcut and then select **Run as administrator**.

Procedure

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 **DB2 Information Center** service and select **Stop**.
   - On Linux, enter the following command:
     ```
     /etc/init.d/db2icdv10 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 10.1 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/V10.1` 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 opens to display the stand-alone Information Center.

3. Click the **Update** button (   ). (JavaScript must be enabled in your browser.) On the right panel of the Information Center, click **Find Updates**. A list of updates for existing documentation displays.

4. To initiate the installation process, check that 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 `doc\bin` directory within the installation directory, and run the `help_end.bat` file:
     ```
     help_end.bat
     ```

     Note: The `help_end` batch file contains the commands required to safely stop the processes that were started with the `help_start` batch file. Do not use `Ctrl-C` or any other method to stop `help_start.bat`.
   - On Linux, navigate to the `doc/bin` directory within the installation directory, and run the `help_end` script:
     ```
     help_end
     ```

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

7. Restart the *DB2 Information Center*.
   - On Windows, click **Start** > **Control Panel** > **Administrative Tools** > **Services**. Then right-click **DB2 Information Center** service and select **Start**.
   - On Linux, enter the following command:
     ```
     /etc/init.d/db2icdv10 start
     ```

Results

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

DB2 tutorials

The DB2 tutorials help you learn about various aspects of DB2 database 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/db2luw/v10r1/.

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 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.

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 *Troubleshooting and Tuning Database Performance* or the Database fundamentals section of the *DB2 Information Center*, which contains:
>
> - Information about how to isolate and identify problems with DB2 diagnostic tools and utilities.
> - Solutions to some of the most common problem.
> - Advice to help solve other problems you might encounter with your DB2 database products.

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