

IBM[®] DB2 Universal Database[™]



Common Criteria Certification: Installing DB2 Universal Database Express Edition

Version 8.2 Revision 08

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Common Criteria certification of DB2 Universal Database products

For Version 8.2, DB2 Universal Database (DB2 UDB) products are certified according to the Common Criteria evaluation assurance level 4 (EAL4), augmented with Flaw remediation ALC_FLR.1. The following products are certified on the following operating systems:

Table 1. Certified DB2 Universal Database configurations

	Windows® 2000	Linux SuSE Enterprise Server V8	AIX® 5.2	Solaris Operating Environment, 8
Enterprise Server Edition Note: Single-partition environment only.	Yes (32-bit only)	Yes (32-bit only)	Yes (64-bit only)	Yes (64-bit only)
Workgroup Server Edition	Yes (32-bit only)	Yes (32-bit only)	Yes (64-bit only)	Yes (64-bit only)
Personal Edition	Yes (32-bit only)	Yes (32-bit only)	N/A	N/A
Express Edition	Yes (32-bit only)	Yes (32-bit only)	N/A	N/A

Notes:

1. DB2 UDB configurations on the Linux SuSE environment are Common Criteria certified on Intel-based hardware only.
2. In a Common Criteria certified DB2 UDB environment, DB2 UDB clients are supported on the following operating systems:
 - Windows 2000
 - Linux SuSE Enterprise Server V8
 - AIX 5.2
 - Solaris Operating Environment, 8

Only 32-bit clients are supported.

For more information about Common Criteria, see the Common Criteria web site at: <http://niap.nist.gov/cc-scheme/>.

For information about installing and configuring a DB2 UDB system that conforms to the Common Criteria EAL4, see the following books:

- *DB2 Universal Database Common Criteria Certification: Installing DB2 Universal Database Enterprise Server Edition and DB2 Universal Database Workgroup Server Edition*
- *DB2 Universal Database Common Criteria Certification: Installing DB2 Universal Database Personal Edition*
- *DB2 Universal Database Common Criteria Certification: Installing DB2 Universal Database Express Edition*
- *DB2 Universal Database Common Criteria Certification: Administration and User Documentation*

These books are available in PDF format from the DB2 Information Management Library.

Supported interfaces for a Common Criteria evaluated configuration

The set of DB2 Universal Database interfaces that are used in the Common Criteria evaluation of DB2 Universal Database are as follows:

- The DB2 Universal Database install program
- The command line processor
- DB2 commands
- DB2 application programming interfaces (APIs)
- SQL statements

You can use these DB2 Universal Database interfaces when installing and configuring a Common Criteria compliant DB2 Universal Database system.

| Other interfaces that are provided by DB2 Universal Database, such as the Control
| Center or Command Editor were not used during the Common Criteria evaluation
| of DB2 Universal Database, **and must not be used in the Common Criteria**
| **evaluation configuration.**

NOT FENCED routines are not supported.

| In the Common Criteria evaluation configuration, the installation procedures as
| documented in the following sections must be followed and the configuration
| options selected must not be modified while in the evaluation configuration:

- “Installing DB2 UDB Express Edition on Windows 2000 for a Common Criteria compliant installation” on page 33
- “Installing DB2 UDB Express Edition on Linux SuSE for a Common Criteria compliant installation” on page 61

About This Book

This book describes how to install DB2 Universal Database Express Edition for a Common Criteria evaluation. It includes detailed instructions on installing DB2 Universal Database Express Edition on the following operating systems:

- Windows 2000
- Linux SuSE Enterprise Server V8

If you need to install other DB2 Universal Database (DB2 UDB) products for evaluation, refer to the following books:

- *DB2 Universal Database Common Criteria Certification: Installing DB2 Universal Database Enterprise Server Edition and DB2 Universal Database Workgroup Server Edition*
- *DB2 Universal Database Common Criteria Certification: Installing DB2 Universal Database Personal Edition*

For information about security in a DB2 UDB environment, and for information on configuring DB2 UDB for the Common Criteria evaluation, refer to the following book:

- *DB2 Universal Database Common Criteria Certification: Administration and User Documentation*

Some topics in this book may link to topics that are not in any of the books listed above. Topics that are referenced outside of the Common Criteria certification documentation are for informational purposes only, and are not required for either installing or configuring a Common Criteria compliant environment.

Part 1. About DB2 Universal Database Express Edition

Chapter 1. DB2 UDB Express Edition

IBM® DB2® Universal Database Express (DB2 UDB Express) is the newest member of the DB2 Universal Database™ Version 8 product family. It combines the power, function, and reliability of IBM's award winning DB2 UDB relational database with simplicity in packaging, installation, and deployment at a minimal investment cost to meet the data management needs of small and medium businesses.

DB2 UDB Express is a specially tailored database offering for small and medium businesses (SMBs). DB2 UDB Express is designed for customers with minimal in house database skills who need an easy-to-install database integrated into their application software solutions. It is a multi-user version of DB2 that supports local and remote applications in standalone and local area network (LAN) environments.

DB2 UDB Express was developed in consultation with IBM Business Partners and delivers the following key functions:

Simplified deployment

The response file installation capability allows an application or solution provider to incorporate the installation of DB2 UDB Express as a transparent part of a solution. Combining response file installation with the ability to create databases and configure DB2 UDB Express using scripts supports the ability to create an up-and-running application solution.

DB2 UDB Express can be deployed on either Linux or Windows® operating systems, offering you flexibility in the choice of hardware and operating system for deployment.

Note: Response file installations are not supported in Common Criteria compliant environments.

Autonomic management capabilities

DB2 UDB Express incorporates a suite of advanced management and autonomic computing capabilities. These support the simplification and automation of administration tasks, eliminating many of the costs traditionally associated with managing relational databases.

The Configuration Advisor provides facilities to configure the DB2 UDB Express environment to optimize performance. The Health Center monitors your DB2 system, alerting you to potential operational issues, and providing advice about how to resolve them.

Autonomic maintenance can also be set up out of the box with a new Wizard. It creates a new database on the disk or directory of your choice, assigns disk space for your data, configures the new database for performance, and turns on automatic maintenance and configures notification by e-mail or pager if the database needs attention.

Note: These tools are not supported in Common Criteria compliant environments.

Designed for 24-hour availability

DB2 UDB Express is designed to support 24x7 operation; you do not need to shut down the database to perform maintenance. Database backups can be performed online or offline.

Application development support

DB2 UDB Express supports most industry standard application interfaces including SQL, X/Open, ODBC, .NET, JDBC, Java™, XML and Web services. DB2 UDB Express provides add-ins for popular IDEs, such as, WebSphere® Studio Application Developer, Microsoft® Visual Studio .NET, Microsoft Visual Basic, Microsoft Visual C++, Microsoft Visual InterDev.

Application developers can then leverage DB2 UDB Express's advanced functions in the programming model they are familiar with, leverage their existing skills, reduce time to market, cut overall application deployment costs, and accelerate time to value.

Investment protection

DB2 UDB Express offers the same core capabilities across the entire line of IBM database servers. You can benefit from the same reliability, security, application development interfaces and optimization as your data volumes, number of users, or utilization increase. You can leverage your investment with DB2 UDB Express through upgrades to other scalable editions of DB2 UDB to support more operating systems and higher throughput on larger hardware installations.

For more information, see the *Quick Beginnings for DB2 Universal Database Express Edition* book.

Part 2. Installing a DB2 UDB Express server

Chapter 2. Installation overview

Installation methods for DB2 UDB (Windows and UNIX)

This topic provides information about DB2[®] UDB installation methods. The following table shows the installation methods that are available by operating system.

Table 2. Installation method by operating system.

Installation method	Windows [®]	UNIX [®]
DB2 Setup wizard	Yes	Yes
db2_install script	No	Yes
Response file installation	Yes	Yes
Native installation tools	No	Yes

The following list describes installation methods for DB2 UDB.

DB2 Setup wizard

The DB2 Setup wizard is a GUI installer available on both UNIX and Windows operating systems. The DB2 Setup wizard provides an easy-to-use interface for installing DB2 UDB and for performing initial setup and configuration tasks. The DB2 Setup wizard can also be used to create instances and response files.

On UNIX systems, the DB2 Setup wizard replaces the text-based installer interface (db2setup).

Note: If you are installing a Common Criteria compliant environment, the DB2 Setup wizard is the only supported method for installing DB2 Universal Database. Other methods have not been evaluated.

db2_install script

The db2_install script uses the operating systems's native installation utility to install DB2 UDB. The db2_install script prompts for a DB2 product keyword. This script installs *all* components for the DB2 product you specify, in English only. You cannot select or deselect components or interface language support. The db2_install script does not perform user and group creation, instance creation, or configuration. It installs the DB2 components to your system. This method of installation might be preferred in cases where greater control over the installation setup process than the GUI installer provides is required.

Response file installation

A response file is an ASCII file that contains setup and configuration values. The file is passed to the DB2 setup program and the installation is performed according to the values that have been specified. There are a number of ways to create a response file:

- Using the response file generator (Windows)
- Using the DB2 Setup wizard (UNIX and Windows)
- By customizing sample response files that are provided for each DB2 product (UNIX and Windows)

Using the response file generator, you can create a response file that replicates an existing installation. For example, you might install a DB2 client, fully configure the client, then generate a response file to replicate the installation and configuration of the client to other computers. The response file generator is available only on Windows.

The DB2 Setup wizard can create a response file for both UNIX and Windows installations. The selections you make as you proceed through the DB2 Setup wizard are recorded in a response file that you can save to a location on your system.

For your convenience, you can create a response file without performing an installation. This feature can be useful in an environment where a DBA does not have the authority required to perform an installation. The DBA can create a response file for the installation and provide it to the system administrator who installs the product on the DBA's behalf.

An alternative to using the response file generator or the DB2 Setup wizard to create a response file is to manually modify a sample response file. Sample response files are provided on the DB2 product CD-ROM.

Native installation tools

Installing DB2 using your operating system's native installation provides the greatest control over the installation process, but it is also more difficult than the other installation methods. When installing a particular DB2 product, you have to ensure that the required components are installed and that component dependencies are maintained. Advanced knowledge of both DB2 and your operating environment is required. User and group creation, instance creation, and configuration must be performed manually.

Related tasks:

- "Installing a DB2 product manually" in the *Installation and Configuration Supplement*
- "Response file installation of DB2 overview (UNIX)" in the *Installation and Configuration Supplement*
- "Response file installation of DB2 overview (Windows)" in the *Installation and Configuration Supplement*

Single-partition installation (Windows)

This topic outlines the steps for installing DB2 Enterprise Server Edition or Workgroup Server Edition in a single-partition database environment on Windows.

Procedure:

To install DB2 Enterprise Server Edition or Workgroup Server Edition in a single-partition database environment on Windows:

1. Review the DB2 product prerequisites.
2. Install the DB2 product using the DB2 Setup wizard. DB2 Setup wizard features include:
 - A launchpad from which you can view installation notes and release notes, and learn about DB2 UDB Version 8 features.
 - Typical, compact, and custom installation types.
 - Multiple language selection in which to perform the installation.

- The user interface and product messages are available in several languages and are installed in the languages that you choose. By installing multiple languages, you can view the interface and messages in your preferred languages.
- DB2 Administration Server setup (including DAS user setup).
- Administration contact and health monitor notification setup.
- Instance setup and configuration (including instance user setup).
- DB2 tools metadata and data warehouse control database setup.
- Response file creation. You can save your installation choices in a response file for later installation or to duplicate the installation on another computer.

Related tasks:

- “Tools catalog database and DAS scheduler setup and configuration” in the *Administration Guide: Implementation*
- “Notification and contact list setup and configuration” in the *Administration Guide: Implementation*

Related reference:

- “UPDATE ADMIN CONFIGURATION Command” in the *Command Reference*
- “Installation requirements for DB2 servers (Windows)” on page 11
- “Required user accounts for installation of DB2 servers (Windows)” on page 16
- “Disk and memory requirements (Windows and UNIX)” on page 11
- “setup - Install DB2 Command” in the *Command Reference*

Single-partition installation (UNIX)

This topic outlines steps for installing DB2 Enterprise Server Edition in a single-partition database environment or DB2 Workgroup Server Edition on AIX, HP-UX, Linux, and Solaris Operating Environment.

Procedure:

To install DB2 Enterprise Server Edition in a single-partition database environment or DB2 Workgroup Server Edition on AIX, HP-UX, Linux, and Solaris Operating Environments:

1. Review the DB2 product prerequisites.
2. Mount the DB2 product CD-ROM.
3. Modify kernel parameters on HP-UX, Linux, and Solaris Operating Environment.
4. Install the DB2 product using the DB2 Setup wizard. DB2 Setup wizard features include:
 - A launchpad from which you can view installation notes and release notes, and learn about DB2 Version 8 features
 - Typical, Compact, and Custom installation types
 - Multiple language selection in which to perform the installation.
 - The user interface and product messages are available in several languages and are installed in the languages that you choose. By installing multiple languages, you can view the interface and messages in your preferred languages.
 - DB2 Administration Server setup (including DAS user setup)

- Administration contact and health monitor notification setup
- Instance setup and configuration (including instance user setup)
- DB2 tools metadata and data warehouse control database setup
- Response file creation

Related reference:

- “Installation requirements for DB2 servers (AIX)” in the *Quick Beginnings for DB2 Servers*
- “Installation requirements for DB2 servers (HP-UX)” in the *Quick Beginnings for DB2 Servers*
- “Installation requirements for DB2 servers (Linux)” on page 20
- “Installation requirements for DB2 servers (Solaris Operating Environment)” in the *Quick Beginnings for DB2 Servers*
- “db2setup - Install DB2 Command” in the *Command Reference*

Chapter 3. Installation requirements

Disk and memory requirements (Windows and UNIX)

Disk requirements:

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

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

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

Memory requirements:

At a minimum, DB2 UDB requires 256 MB of RAM. 512MB of RAM memory is recommended if you use the GUI tools. When determining memory requirements, be aware of the following:

- For DB2 client support, these memory requirements are for a base of 5 concurrent client connections. You will need an additional 16 MB of RAM per 5 client connections.
- Additional memory is required for other software that is running on your system.
- Additional memory might be required to improve the performance of the DB2 GUI tools.
- Specific performance requirements can determine the amount of memory needed.
- Memory requirements are affected by the size and complexity of your database system.
- Memory requirements are affected by the extent of database activity and the number of clients accessing your system.
- On Linux, a SWAP space of at least twice as large as your RAM is recommended, but not required.

Windows installation requirements

Installation requirements for DB2 servers (Windows)

To install a DB2 UDB server, the following operating system, software, hardware, and communications requirements must be met:

Operating system requirements

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

DB2 UDB Workgroup Server Edition runs on:

- Windows NT Version 4 with Service Pack 6a or later
- Windows 2000 Professional, Standard Server, Advanced Server, and Datacenter Servers
- Windows XP (32-bit)
- Windows Server 2003 (32-bit)

DB2 UDB Enterprise Server Edition runs on:

- Windows NT Version 4 with Service Pack 6a or later
- Windows 2000 Professional, Standard Server, Advanced Server, and Datacenter Servers. Windows 2000 Service Pack 2 or later is required for Windows Terminal Server.
- Windows Server 2003 (32-bit and 64-bit)

Windows 2000 Service Pack 3 and Windows XP Service Pack 1 are required for running DB2 applications in either of the following environments:

- Applications that have COM+ objects using Open Database Connectivity (ODBC).
- Applications that use OLE DB Provider for ODBC with OLE DB resource pooling disabled

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

For more information about COM+, see the following Microsoft Knowledge Base article:

- <http://support.microsoft.com/default.aspx?scid=KB;EN-US;306414>

The Windows 2000 Service Pack 3 and Windows XP Service Pack 1 are not required for the DB2 server or any of the applications that are shipped as part of the DB2 products.

Note: Windows 2000 is the only supported Windows-based platform for Common Criteria compliant environments.

Hardware requirements

For 32-bit DB2 products, a Pentium or Pentium compatible CPU is required. For 64-bit DB2 products, an Itanium or Itanium compatible CPU is required.

Note: For Common Criteria compliant environments, only 32-bit configurations are supported. 64-bit configurations are not certified.

Software requirements

- MDAC 2.7 is required. The DB2 Setup wizard will install MDAC 2.7 if it is not already installed.
- You require the appropriate SDK to use Java-based tools like the DB2 Control Center, and to create and run Java applications, including stored procedures and user-defined functions.
- A browser is required to view online help.

Windows 2000 Terminal Server installation limitation:

You cannot install DB2 Version 8 from a network mapped drive using a remote session on Windows 2000 Terminal Server edition. The available workaround uses Universal Naming Convention (UNC) paths to launch the installation or run the installation from the console session.

For example, if the directory `c:\pathA\pathB\...\pathN` on a serverA is shared as `serverdir`, you can open `\\serverA\serverdir\filename.ext` to access the file `c:\pathA\pathB\...\pathN\filename.ext` on the server.

Communication requirements

You can use APPC, TCP/IP, MPTN (APPC over TCP/IP), Named Pipes, and NetBIOS. To administer a Version 8 DB2 UDB database remotely, you must connect using TCP/IP. DB2 Version 8 servers, using the DB2 Connect server support feature, support only outbound client APPC requests; there is no support for inbound client APPC requests.

Note: For Common Criteria compliant environments, only TCP/IP is supported.

- For TCP/IP, Named Pipes, and NetBIOS connectivity, no additional software is required.
- For APPC (CPI-C) connectivity, through the DB2 Connect server support feature, one of the communication products shown in the following table is required.

Table 3. Supported SNA (APPC) products

Operating system	SNA (APPC) communication product
Windows NT	IBM Communications Server Version 6.1.1 or later IBM Personal Communications for Windows Version 5.0 with CSD 3 Microsoft SNA Server Version 3 Service Pack 3 or later
Windows 2000	IBM Communications Server Version 6.1.1 or later IBM Personal Communications for Windows Version 5.0 with CSD 3 Microsoft SNA Server Version 4 Service Pack 3 or later
Windows XP	IBM Personal Communications for Windows Version 5.5 with APAR IC23490
Windows Server 2003	Not supported.

- If you plan to use LDAP (Lightweight Directory Access Protocol), you require either a Microsoft LDAP client or an IBM SecureWay LDAP client V3.2.1 or later.

Windows (64-bit) considerations

- Local 32-bit applications are supported.
- 32-bit UDFs and stored procedures are supported.
- SQL requests from remote 32-bit downlevel clients are supported.

- DB2 Version 8 Windows 64-bit servers support connections from DB2 Version 6 and Version 7 32-bit clients only for SQL requests. Connections from Version 7 64-bit clients are not supported.

Related tasks:

- “Single-partition installation (Windows)” on page 8

Related reference:

- “IBM Software Development Kit for Java levels for DB2 UDB (Windows and UNIX)” in the *Quick Beginnings for DB2 Servers*

Security issues when installing DB2 Universal Database

Security issues are important to the DB2[®] administrator from the moment the product is installed.

To complete the installation of DB2 Universal Database[™] (DB2 UDB), a user ID, a group name, and a password are required. The GUI-based DB2 UDB install program creates default values for different user IDs and the group. Different defaults are created, depending on whether you are installing on UNIX[®] or Windows[®] platforms:

- On UNIX platforms, the DB2 UDB install program creates different default users for the DAS (dasusr), the instance owner (db2inst), and the fenced user (db2fenc).

The DB2 UDB install program appends a number from 1-99 to the default user name, until a user ID that does not already exist can be created. For example, if the users db2inst1 and db2inst2 already exist, the DB2 UDB install program creates the user db2inst3. If a number greater than 10 is used, the character portion of the name is truncated in the default user ID. For example, if the user ID db2fenc9 already exists, the DB2 UDB install program truncates the c in the user ID, then appends the 10 (db2fen10). Truncation does not occur when the numeric value is appended to the default DAS user (for example, dasusr24).

- On Windows platforms, the DB2 UDB install program creates the default user db2admin for the DAS user, the instance owner, and fenced users. Unlike UNIX platforms, no numeric value is appended to the user ID.

To minimize the risk of a user other than the administrator from learning of the defaults and using them in an improper fashion within databases and instances, change the defaults during the install to a new or existing user ID of your choice.

Note: Response file installations do not use default values for user IDs or group names. These values must be specified in the response file.

Passwords are very important when authenticating users. If no authentication requirements are set at the operating system level and the database is using the operating system to authenticate users, users will be allowed to connect. For example on UNIX operating systems, undefined passwords are treated as NULL. In this situation, any user without a defined password will be considered to have a NULL password. From the operating system’s perspective, this is a match and the user is validated and able to connect to the database. Use passwords at the operating system level if you want the operating system to do the authentication of users for your database.

Note: You cannot use undefined passwords if you want your database environment to adhere to Common Criteria requirements.

After installing DB2 Universal Database also review, and change (if required), the default privileges that have been granted to users. By default, the installation process grants system administration (SYSADM) privileges to the following users on each operating system:

Windows 9x

Any Windows 98, or Windows ME user.

Other Windows environments

On Windows NT®, Windows 2000, Windows XP, or Windows Server 2003, a valid DB2 UDB username that belongs to the Administrators group.

UNIX platforms

A valid DB2 UDB username that belongs to the primary group of the instance owner.

The SYSADM authority level provides the most powerful set of privileges available within DB2 Universal Database. As a result, you may not want all of these users to have SYSADM authority by default. DB2 UDB provides the administrator with the ability to grant and revoke privileges to groups and individual user IDs.

By updating the database manager configuration parameter *sysadm_group*, the administrator can control which group of users possesses SYSADM authority. You must follow the guidelines below to complete the security requirements for both DB2 UDB installation and the subsequent instance and database creation.

Any group defined as the system administration group (by updating *sysadm_group*) must exist. The name of this group should allow for easy identification as the group created for instance owners. User IDs and groups that belong to this group have system administrator authority for their respective instances.

The administrator should consider creating an instance owner user ID that is easily recognized as being associated with a particular instance. This user ID should have as one of its groups the name of the SYSADM group created above. Another recommendation is to use this instance-owner user ID only as a member of the instance owner group and not to use it in any other group. This should control the proliferation of user IDs and groups that can modify the instance, or any object within the instance.

The created user ID must be associated with a password to provide authentication before being permitted entry into the data and databases within the instance. The recommendation when creating a password is to follow your organization's password naming guidelines.

Related concepts:

- "Naming rules in an NLS environment" in the *Administration Guide: Implementation*
- "Naming rules in a Unicode environment" in the *Administration Guide: Implementation*
- "Windows NT platform security considerations for users" in the *Administration Guide: Implementation*
- "UNIX platform security considerations for users" in the *Administration Guide: Implementation*
- "Authentication" in the *Administration Guide: Planning*

- “Authorization” in the *Administration Guide: Planning*
- “Location of the instance directory” in the *Administration Guide: Implementation*
- “General naming rules” in the *Administration Guide: Implementation*
- “User, user ID and group naming rules” in the *Administration Guide: Implementation*

Required user accounts for installation of DB2 servers (Windows)

If you are installing on Windows NT, Windows 2000, Windows XP, or Windows Server 2003, you require the following DB2 server user accounts:

- an installation user account and
- one or more setup user accounts
 - a DB2 Administration Server (DAS) user account
 - a DB2 instance user account.

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

Note: In a Common Criteria compliant installation, the user accounts are created before DB2 is installed.

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

DB2 enhanced security on Windows:

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

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

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

Note: In a Common Criteria compliant installation of DB2, these groups are not used.

DB2 server user accounts:

Installation user account

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

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

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

DB2 Administration Server (DAS) user account

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

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

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

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

Note: In a Common Criteria compliant installation of DB2, the DAS user account is created before DB2 is installed.

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

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

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

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

DB2 instance user account

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

You may also use the built-in LocalSystem account to run the installation for all products except DB2 UDB 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. The user account must belong to the *Administrators* group on the machine where you will perform the installation. This account will be granted the following user rights:

Note: In a Common Criteria compliant installation of DB2, the instance user account is created before DB2 is installed.

- 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

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

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

Related concepts:

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

Related tasks:

- "Single-partition installation (Windows)" on page 8
- "Partitioned installation (Windows)" in the *Quick Beginnings for DB2 Servers*

Granting user rights (Windows)

This topic describes the steps required to grant user rights on Windows operating systems. Specific user rights are recommended for user accounts required to install and set up DB2.

Prerequisites:

To grant advanced user rights on Windows you must be logged on as a local Administrator.

Procedure:

Windows NT

1. Click **Start** and select **Programs** —> **Administrative Tools (Common)** —> **User Manager for Domains**.
2. In the User Manager window, select **Policies** —> **User Rights** from the menu bar.
3. In the User Rights Policy window, select the **Show Advanced User Rights** check box then in the **Right** drop down box, select the user right you want to grant. Click **Add**.
4. In the Add Users and Groups window select the user or the group you want to grant the right to and click **OK**.
5. In the User Rights Policy window, select the user or the group you have added from the **Grant To** list box and click **OK**.

Windows 2000, Windows XP, and Windows Server 2003

1. Click **Start** and select **Settings** —> **Control Panel** —> **Administrative Tools**.

Note: On Windows XP and Windows Server 2003 computers, for some Windows Themes, this will be: **Settings** —> **Control Panel** —> **Performance and Maintenance** —> **Administrative Tools**.

2. Select **Local Security Policy**.
3. In the left window pane, expand the **Local Policies** object, then select **User Rights Assignment**.
4. In the right window pane, select the user right that you want to assign.
5. From the menu, select **Action** —> **Security...**
6. Click **Add**, then select a user or group to assign the right to, and click **Add**.
7. Click **OK**.

Note: If your computer belongs to a Windows 2000 or Windows Server 2003 domain, the domain user rights may override your local settings. In this case, your Network Administrator will have to make the changes to the user rights.

Related concepts:

- “User, user ID and group naming rules” in the *Administration Guide: Implementation*

Related tasks:

- “Installing DB2 Personal Edition - overview (Windows)” in the *Quick Beginnings for DB2 Personal Edition*

Related reference:

- “Required user accounts for installation of DB2 servers (Windows)” on page 16

DB2 UDB system administrator group (Windows)

By default, system administrative (SYSADM) authority is granted to any valid DB2[®] user account that belongs to the Administrators group on the computer where the account is defined. If the account is a local account, then it must belong to the local Administrators group. If the account is a domain account, then it must belong to the Administrators group at the domain controller.

For example, if a user logs on to a domain account and tries to access a DB2 database, DB2 goes to a domain controller to enumerate groups (including the Administrators group). You can force DB2 to always perform group lookup on the local computer by setting the registry variable `DB2_GRP_LOOKUP=local` and adding the domain accounts (or global groups) to the local group.

For a domain user to have SYSADM authority, it must belong to the Administrators group on the domain controller. Since DB2 always performs authorization at the machine where the account is defined, adding a domain user to the local Administrators group on the server does not grant the domain user SYSADM authority to this group.

To avoid adding a domain user to the Administrators group at the domain controller, create a global group and add the domain users to which you want to grant SYSADM authority to it, and then update the DB2 configuration parameter `SYSADM_GROUP` with the name of the global group. To do so, enter the following commands:

```
db2stop
db2 update dbm cfg using sysadm_group global_group
db2start
```

Related tasks:

- “Installing DB2 Personal Edition - overview (Windows)” in the *Quick Beginnings for DB2 Personal Edition*

Linux installation requirements

Installation requirements for DB2 servers (Linux)

This topic lists the hardware, distribution, package, software, and communication requirements for DB2 Enterprise Server Edition, DB2 Workgroup Server Edition, and DB2 Workgroup Server Unlimited Edition on Linux.

Hardware requirements

DB2 Workgroup Server Edition and DB2 Workgroup Server Unlimited Edition are supported on:

- Intel 32-bit
- IBM eServer iSeries that support Linux
- IBM eServer pSeries that support Linux

DB2 Enterprise Server Edition, in either a single-partition or partitioned environment, is supported on:

- Intel 32-bit and 64-bit
- AMD 64-bit
- PowerPC 64-bit
- DB2 31-bit requires S/390 9672 Generation 5 or later, Multiprise 3000 or eServer zSeries.
- DB2 64-bit requires eServer zSeries.
- IBM eServer iSeries that support Linux
- IBM eServer pSeries that support Linux

Note: If you are installing a Common Criteria compliant environment, only Linux SuSE Enterprise Server V8 on 32-bit Intel based hardware is a certified configuration. Other Linux configurations are not evaluated.

Distribution requirements

For the latest information on supported distribution and kernel levels, point your browser to <http://www.ibm.com/db2/linux/validate>

Package requirements

The following tables list the package requirements for SuSE and RedHat distributions for DB2 partitioned servers (Linux) Version 8. The pdksh package is required for all DB2 systems. The rsh-server and nfs-utils packages are required for partitioned database systems. Both packages should be installed and running to continue with the setup of DB2 on partition database systems. To have the rsh-server running, inetd (or xinetd) must be installed and running as well.

For more information, see your Linux distribution documentation.

Package requirements for SuSE

Package name	Description
pdksh	Korn Shell. This package is required for partitioned database environments.
rsh-server	This package contains a set of server programs which allow users to run commands on remote computers, login in to other computers, and copy files between computers (rsh, rexec, rlogin, and rcp).
nfs-utils	Network File System support package. It allows access for local files to remote computers.

Package requirements for RedHat

Directory	Package name	Description
/System Environment/Shell	pdksh	Korn Shell. This package is required for partitioned database environments.
/System Environment/Daemons	rsh-server	This package contains a set of programs which allow users to run commands on a remote computer. Required for partitioned database environments.
/System Environment/Daemons	nfs-utils	Network File System support package. It allows access for local files to remote computers.

Software requirements

- You require the appropriate SDK to use Java-based tools like the DB2 Control Center, and to create and run Java applications, including stored procedures and user-defined functions.
- A web browser is required to view online help.
- X Window System software capable of rendering a graphical user interface is required. You require this software if you want to use the DB2 Setup wizard to install DB2 Enterprise Server Edition or if you want to use any DB2 graphical tools.

Communication requirements

TCP/IP is required to access remote databases. Your particular Linux

distribution provides TCP/IP connectivity if it is selected during the installation. If your Linux computer is installed on an existing network and is required to use a static IP address, then information similar to that found in the following table should be collected from your network administrator:

Example of TCP/IP settings

Name	Example number
Host IP address	191.72.1.3
Subnet mask	255.255.255.0
Gateway	191.72.1.1
Domain name	191.72.3.1

This information should be specified either during the installation of your Linux distribution, or after the installation is finished using your distribution's setup utility.

DB2 Administration Server (DAS) requirements

The following requirements must be met:

- A DAS must be created on each physical system for the Control Center and the Task Center to work properly.
- Each DAS must be created under a userID (same as an instance).
- If the same userID is to be used on all physical systems, then that userID's home directory cannot be shared (cross mounted) with the other systems.
- If a different userID is used for each DAS, then the home directories of the userIDs that are used can be shared (cross mounted).
- As long as a DAS is created on each system, it does not matter whether:
 - A different userID is used for each DAS, or
 - The same userID is used and that the userID's home directory is not shared.

Installing DB2 products or sharing instance directory on NFS (Network File System)

The installation of DB2 products on NFS (Network File System) is not supported. Installing DB2 on NFS (for example, NFS mounting /usr/opt/db2_08_01 or /opt/IBM/db2/V8.1) can be error prone and these errors can be difficult to diagnose.

Only the DB2 installation image can be NFS-mounted (located on a system other than the one DB2 runs on, or a remote filesystem or partition). DB2 must be installed to a local drive and not an NFS-mounted drive.

For example, you can copy your DB2 product CD onto system A (for example, an NFS server), and install on systems B, C, and D using NFS to launch the DB2 installation code from system A. However, you cannot install your DB2 product on system A, and then use DB2 on systems B, C, or D. Additionally, you cannot launch the DB2 installation process on system B, install the code on system A, and use it on system B. The DB2 code must be local to the system running DB2.

Related tasks:

- "Preparing to install DB2 UDB for Linux on zSeries" in the *Quick Beginnings for DB2 Servers*
- "Modifying kernel parameters (Linux)" on page 28

Related reference:

- “IBM Software Development Kit for Java levels for DB2 UDB (Windows and UNIX)” in the *Quick Beginnings for DB2 Servers*

NIS installation considerations

In environments that include security software, such as NIS or NIS+, there are some installation considerations. The DB2 installation scripts attempt to update objects that are under the control of the security packages, such as users and groups, and will not be able to do so if NIS or NIS+ is installed.

At instance creation, without a security component present, the instance-owning user’s group properties are automatically modified to add the administrative server’s group as a secondary group, and the administrative server’s group properties are modified to include the instance owner’s group. If the instance creation program is unable to modify these properties (it will not if NIS/NIS+ is controlling the group), it reports that it could not. The warning message provides the necessary information to manually make the changes.

These considerations hold true for any environment in which an external security program does not allow the DB2 installation or instance creation programs to modify user characteristics.

If the DB2 Setup wizard detects NIS on your computer, you are not given the option of creating new users during the installation. Instead, you must choose existing users.

Consider the following restrictions if you are using NIS or NIS+:

- Groups and users must be created on the NIS server before running the DB2 Setup wizard.
- Secondary groups must be created for the DB2 instance owner and the DB2 Administration Server on the NIS server. You must then add the primary group of the instance owner to the secondary DB2 Administration Server group. Likewise, you must add the primary DB2 Administration Server group to the secondary group for the instance owner.
- On a DB2 ESE system, before you create an instance, there must be an entry for the instance in the `etc/services` file. For example, if you want to create an instance for the user `db2inst1`, you require an entry similar to the following:

```
DB2_db2inst1    50000/tcp
```

Related tasks:

- “Installing DB2 Personal Edition - overview (Linux)” in the *Quick Beginnings for DB2 Personal Edition*
- “Manually creating required groups and users for DB2 Personal Edition (Linux)” on page 27

Chapter 4. Preinstallation tasks

Installing the IBM Developer Kit for Java (UNIX)

Depending upon your operating system, the IBM® Developer Kit for Java™ (SDK) 1.3.1, SDK 1.4.1, or SDK 1.4.2 is required for DB2® to use the DB2 Control Center or to create and run Java applications, including stored procedures and user-defined functions. The IBM Software Developer's Kit (SDK) is supported, as well as the HP-UX JDK and the Solaris Operating Environment JDK.

A hybrid platform is a platform where you get 32-bit and 64-bit instance support in the same install. On hybrid platforms, the 32-bit version of the SDK is installed during the DB2 product installation, but not the 64-bit version of the SDK. The 64-bit version of the SDK is shipped on another CD-ROM. On non-hybrid platforms, the correct 31-bit, 32-bit, or 64-bit SDK is installed during the DB2 product installation.

The 64-bit SDK is part of the DB2 product CD-ROM on non-hybrid 64-bit platforms. For hybrid 64-bit platforms the 64-bit SDK is available on a separate CD-ROM and is not shipped as part of the DB2 product CD-ROM.

The SDK is installed whenever a component that requires Java is being installed. However, if the installer detects that SDK is already installed, it will not install it again. The SDK is installed in its own directory and does not overwrite any previous levels of the SDK.

In cases where 64-bit Java is required, a message appears telling you that Java 64-bit is required. If this message appears, you must install Java 64-bit. This applies to hybrid platforms only.

Restrictions:

The installation of the Java SDK is attempted only if you use one of the following DB2 installation methods:

- GUI install program (db2setup)
- Response file installation (db2setup -r response_file)

Other methods, either using SMIT or db2_install script, will not install the Java SDK.

Procedure:

To install the SDK manually:

1. Run the command appropriate for your operating system from the /cdrom/db2/<platform>/Java-1.4 directory, where <platform> represents your operating system (for example, aix or solaris).

Operating System	Command	Installation directory
AIX® 32-bit (SDK 1.3.1)	installp -acgqX -d . Java131.adt	/usr/java131

Operating System	Command	Installation directory
AIX 64-bit (SDK 1.3.1)	<code>installp -acgqX -d . Java131_64.adt</code>	<code>/usr/java13_64</code>
AIX 32-bit	<code>installp -acgqX -Y -d . Java14.sdk</code>	<code>/usr/java141</code>
AIX 64-bit	<code>installp -acgqX -Y -d . Java14_64.sdk</code>	<code>/usr/java14_64</code>
HP-UX 32-bit and 64-bit	<pre>swinstall -x allow_incompatible=true -x mount_all_filesystems=false -s <path_to_depot_dir>/sdk14_1420_1100.depot T1456AA</pre> <p>Note: path_to_depot_dir must be the actual path to the directory which contains the depot fileset, starting from the "/". For example, path_to_depot_dir on the HP-UX 32-bit CD would be <code>/cdrom/db2/hpux/Java-1.4/</code>.</p>	<code>/opt/java1.4</code>
HP Itanium 32-bit and 64-bit	<pre>swinstall -x allow_incompatible=true -x mount_all_filesystems=false -s <path_to_depot_dir>/sdk14_14201_1122.depot T1458AA</pre> <p>Note: path_to_depot_dir must be the actual path to the directory which contains the depot fileset, starting from the "/". For example, path_to_depot_dir on the HP-UX 32-bit CD would be <code>/cdrom/db2/hpux/Java-1.4/</code>.</p>	<code>/opt/java1.4</code>
Linux IA32	<code>rpm -ivh IBMJava2-SDK-1.4.1-2.0.i386.rpm</code>	<code>/opt/IBMJava2-141</code>
Linux IA64	<code>rpm -ivh IBMJava2-SDK-1.4.1-2.0.ia64.rpm</code>	<code>/opt/IBMJava2-141</code>
Linux 390	<code>rpm -ivh IBMJava2-SDK-1.4.1-2.0.s390.rpm</code>	<code>/opt/IBMJava2-s390-141</code>
Linux 390 64-bit	<code>rpm -ivh IBMJava2-SDK-1.4.1-2.0.s390x.rpm</code>	<code>/opt/IBMJava2-s390-141</code>
Linux PPC 32-bit	<code>rpm -ivh IBMJava2-SDK-1.4.1-2.0.ppc.rpm</code>	<code>/opt/IBMJava2-ppc-141</code>
Linux PPC 64-bit	<code>rpm -ivh IBMJava2-SDK-1.4.1-2.0.ppc64.rpm</code>	<code>/opt/IBMJava2-ppc64-141</code>
SUN 32-bit	<code>pkgadd -d . SUNWj3rt SUNWj3dev SUNWj3man SUNWj3dmo</code>	<code>/usr/j2se</code>
SUN 64-bit	<code>pkgadd -d . SUNWj3rt SUNWj3dev SUNWj3man SUNWj3dmo SUNWj3rtx SUNWj3dmx SUNWj3dvx</code>	<code>/usr/j2se</code>

- To verify that the IBM SDK is installed, run the `<path>/jre/bin/java -version` command, where `<path>` represents the path where the SDK was installed. Refer to the installation directory for each platform listed above.

You should receive output similar to the following, which is for AIX:

```
java version "1.4.1"
Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.1)
Classic VM (build 1.4.1, J2RE 1.4.1 IBM AIX build ca141-20030930
(JIT enabled: jitc))
```

The IBM SDK is also available from the IBM developerWorks® web site at:

- <http://www.ibm.com/developerworks/java/jdk/index.html>

RPM-based installation of DB2 on Linux:

When you install DB2 Universal Database™ Version 8 on Linux, the RPM-based installation attempts to install the IBM Java RPM (IBM SDK 1.4.1 SR2). If a later level of the RPM, such as IBM SDK 1.5.1 SR1, already exists, the back-level RPM is not installed.

However, in this case, the installation leaves the `JDK_PATH` database configuration parameter pointing to the back-level path. As a result, none of the Java-dependant functionality, including the installation of the DB2 Tools Catalog, will work.

To solve this problem, run the following command as the instance owner:

```
db2 update dbm cfg using JDK_PATH <existing SDK path> <back-level SDK path>
```

This update will point DB2 Universal Database to the correct IBM Developer Kit.

Related reference:

- “IBM Software Development Kit for Java levels for DB2 UDB (Windows and UNIX)” in the *Quick Beginnings for DB2 Servers*

Java SDK levels for DB2

You require the appropriate level of the SDK listed below to use Java-based tools like the DB2 Control Center, and to create and run Java applications, including stored procedures and user-defined functions.

If the correct level of the SDK is required by some other component being installed and the SDK is not already installed, the SDK will be installed if you use either the DB2 Setup wizard or a response file to install the product.

The appropriate level of the SDK is not installed with the DB2 Run-Time client.

For the most up-to-date SDK information, see the DB2 UDB system requirements web page at <http://www.ibm.com/software/data/db2/udb/sysreqs.html>.

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

Operating System	SDK level
Windows 32-bit	SDK 1.4.1 Service Release 1
Linux 32-bit	SDK 1.4.1 Service Release 2
Linux Intel 64-bit	SDK 1.4.1 Service Release 2
Linux AMD 64-bit	SDK 1.4.1 Service Release 2

Manually creating required groups and users for DB2 Personal Edition (Linux)

Three users and groups are required to operate DB2. The user and group names used in the following instructions are documented in the following table. You may specify your own user and group names as long as they adhere to your system naming rules and DB2 naming rules.

Table 4. Required users and groups

Required user	User name	Group name
Instance owner	db2inst1	db2iadm1
Fenced user	db2fenc1	db2fadm1
Administration server user	db2as	db2asgrp

Prerequisites:

You must have root authority to create users and groups.

Procedure:

To create groups on Linux, enter the following commands:

```
groupadd -g 999 db2iadm1
groupadd -g 998 db2fadm1
groupadd -g 997 db2asgrp
```

Create users for each group:

```
useradd -u 1004 -g db2iadm1 -m -d /home/db2inst1 db2inst1
useradd -u 1003 -g db2fadm1 -m -d /home/db2fenc1 db2fenc1
useradd -u 1002 -g db2asgrp -m -d /home/db2as db2as
```

After creating the users, use the `passwd username` command to set the password for each new user:

```
passwd db2inst1
passwd db2fenc1
passwd db2as
```

Modifying kernel parameters (Linux)

Before installing DB2 UDB, you may want to update your Linux kernel parameters. DB2 UDB automatically raises the IPC limits where necessary. You might still want to raise these limits further depending on your particular needs.

Prerequisites:

You must have root authority to modify kernel parameters.

Procedure:

To update kernel parameters:

RedHat and SuSE

Systems using a 2.4.x series kernel have a default value for the message queue parameter (`msgmni`), which allows only a few simultaneous connections to DB2. Semaphore array parameters also have to be changed for DB2 to run successfully. To check shared memory segment, semaphore array, and message queue limits, issue the `ipcs -l` command.

The following is the output from the `ipcs -l` command.

```
# ipcs -l

----- Shared Memory Limits -----
max number of segments = 4096           // SHMMNI
max seg size (kbytes) = 32768
```

```
max total shared memory (kbytes) = 8388608
min seg size (bytes) = 1

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

----- Messages: Limits -----
max queues system wide = 1024        // MSGMNI
max size of message (bytes) = 65536
default max size of queue (bytes) = 16384 // MSGMAX
```

Modify the kernel parameters by adding the following entries to the default system control configuration file, `/etc/sysctl.conf`:

```
kernel.msgmni = 1024
kernel.sem = 250 256000 32 1024
```

where

```
max semaphores system wide =
max number of arrays x max semaphores/array
```

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

```
sysctl -p
```

The entries from the `sysctl.conf` file are read during startup by the network initialization script.

On some distributions you may be required to add `sysctl -p` in one of the system initialization files (for example, `rc.local`) so that kernel parameters are set after each reboot.

Chapter 5. Installation

Windows installation

Installing DB2 servers in a single-partition database environment (Windows)

This task describes how to start the DB2 Setup wizard on Windows. You will use the DB2 Setup wizard to define your installation and install DB2 to your system.

Prerequisites:

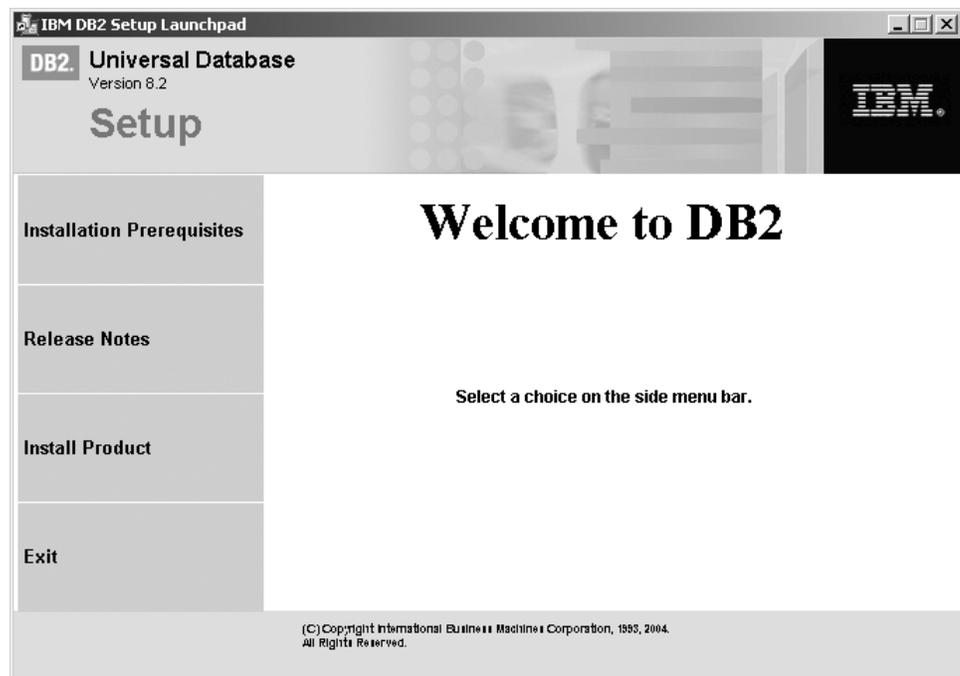
Before you start the DB2 Setup wizard:

- Ensure that your system meets installation, memory, and disk requirements.
- If you are planning to use LDAP on Windows 2000 or Windows Server 2003 to register the DB2 server in Active Directory, you must extend the directory schema before you install.
- You must have a local *Administrator* user account with the recommended user rights to perform the installation.
- Close all programs so the installation program can update files as required.

Procedure:

To start the DB2 Setup wizard:

1. Log on to the system with the Administrator account that you have defined for DB2 installation.
2. Insert the CD-ROM into the drive. If enabled, the auto-run feature automatically starts the DB2 Setup launchpad:



From this window, you can view installation prerequisites and the release notes, or you can proceed directly to the installation. You may want to review the installation prerequisites and release notes for late-breaking information. Select **Install Products** and select the DB2 product to install.

3. The DB2 Setup wizard will determine the system language, and launch the setup program for that language. If you want to run the setup program in a different language, or the setup program failed to auto-start, you can start the DB2 Setup wizard manually.

To start the DB2 Setup wizard manually:

- a. Click **Start** and select the **Run** option.
- b. In the **Open** field, enter the following command:

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

where:

- *x*: represents your CD-ROM drive
- *language* is the territory identifier for your language (for example, EN for English).

If the */i* flag is not specified, the installation program will run in the default language of the operating system.

- c. Click **OK**.
4. Launch the installation and proceed by following the setup program's prompts. Online help is available to guide you through the remaining steps. To invoke the online help, click Help or press F1. You can click **Cancel** at any time to end the installation.

If you want to verify your installation using the sample database, be sure to install the sample database component under the Getting Started component group. The sample database is included as part of a Typical installation.

For information on errors encountered during installation, see the db2.log and db2wi.log files located in the 'My Documents'\DB2LOG\ directory. The location of the 'My Documents' directory will depend on the settings on your computer.

The db2wi.log file captures the most recent DB2 installation information. The db2.log captures the history of DB2 installations.

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

Note: The DB2 Information Center was not evaluated in the Common Criteria certification of DB2 Universal Database. If you are installing DB2 Universal Database to be Common Criteria compliant, do not install the DB2 Information Center.

Related concepts:

- "DB2 Information Center" in the *Infrastructure Topics (DB2 Common Files)*
- "DB2 Information Center installation scenarios" in the *Infrastructure Topics (DB2 Common Files)*

Related tasks:

- “Installing the DB2 Information Center using the DB2 Setup wizard (Windows)” in the *Infrastructure Topics (DB2 Common Files)*
- “Installing DB2 Personal Edition - overview (Windows)” in the *Quick Beginnings for DB2 Personal Edition*
- “Installing database partition servers on participating computers (Windows)” in the *Quick Beginnings for DB2 Servers*
- “Tools catalog database and DAS scheduler setup and configuration” in the *Administration Guide: Implementation*
- “Notification and contact list setup and configuration” in the *Administration Guide: Implementation*

Related reference:

- “UPDATE ADMIN CONFIGURATION Command” in the *Command Reference*
- “Installation requirements for DB2 servers (Windows)” on page 11
- “Language identifiers for running the DB2 Setup wizard in another language” on page 135
- “Disk and memory requirements (Windows and UNIX)” on page 11

Installing DB2 UDB Express Edition on Windows 2000 for a Common Criteria compliant installation

This task provides detailed instructions on installing DB2 UDB Express Edition on Windows 2000 for a Common Criteria compliant installation.

Prerequisites:

- Windows 2000 must be configured to disable remote access services (such as terminal server and filesystem shares) before DB2 Universal Database is installed. For information on performing this task, refer to the operating system documentation.
- The computer on which you install DB2 Universal Database must be physically protected from untrusted users.
- Windows 2000 must be installed on the computer.
- The domain, user name, and password for the DB2 Administration Server user, and the DB2 instance user. If you do not have these values, obtain them from the system administrator. For more information, see “Required user accounts for installation of DB2 servers (Windows)” on page 16.
- The “IBM DB2 Setup Launchpad” should be open.

Procedure:

Use the following steps to install DB2 UDB Express Edition on Windows 2000 for a Common Criteria compliant environment.

1. From the “IBM DB2 Setup Launchpad”, select **Install Product**.

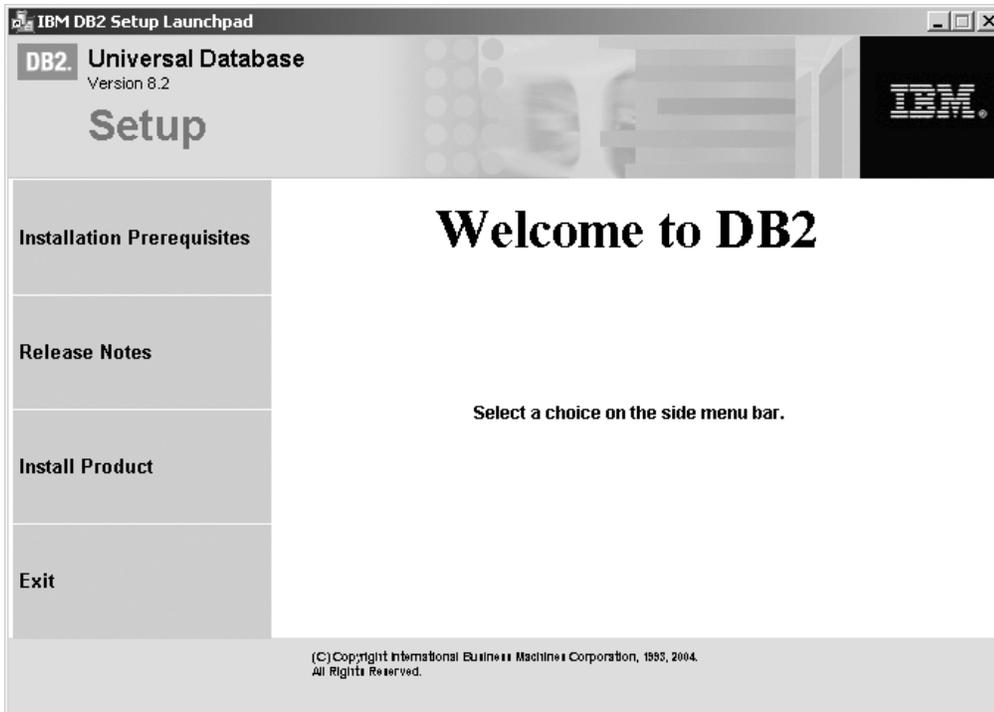


Figure 1. DB2 Personal Edition Launchpad (Windows)

2. On the second page of the "IBM DB2 Setup Launchpad", ensure that the **DB2 UDB Express** radio button is selected, as follows:

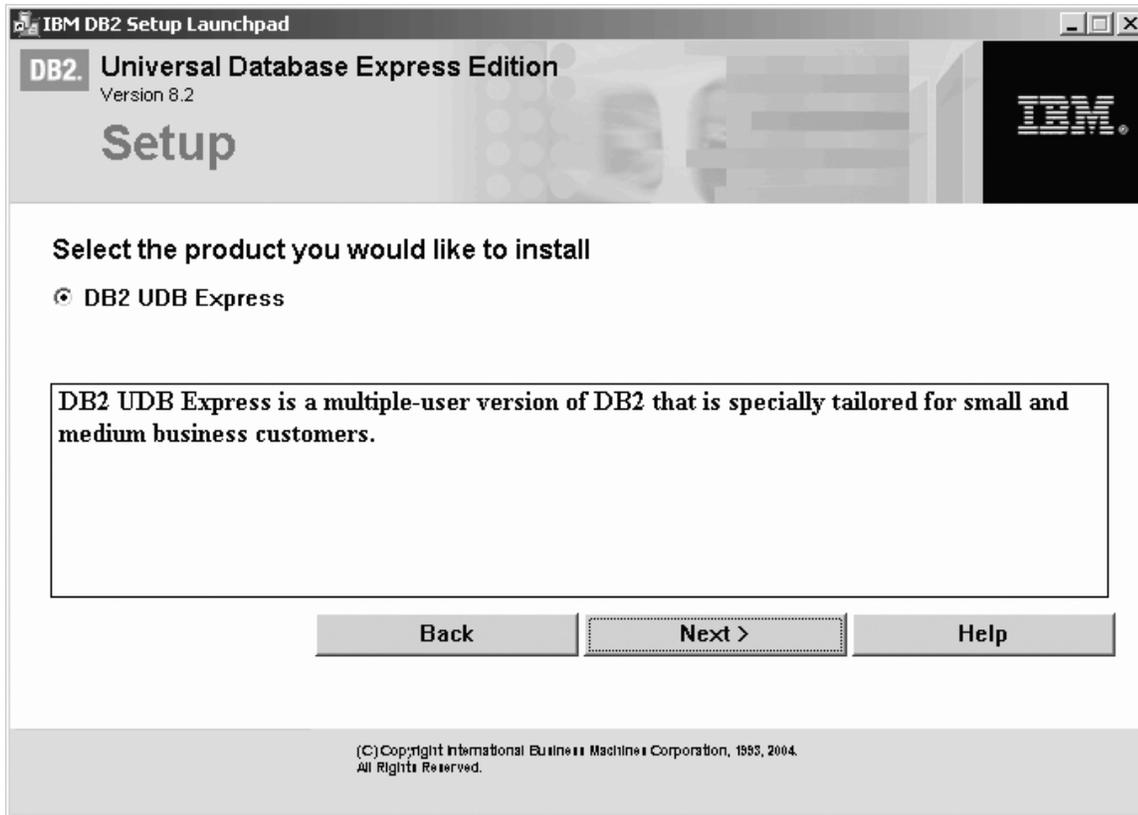


Figure 2. IBM DB2 Setup Launchpad

3. Click Next. In a few moments, the "DB2 Setup wizard" opens, as follows:

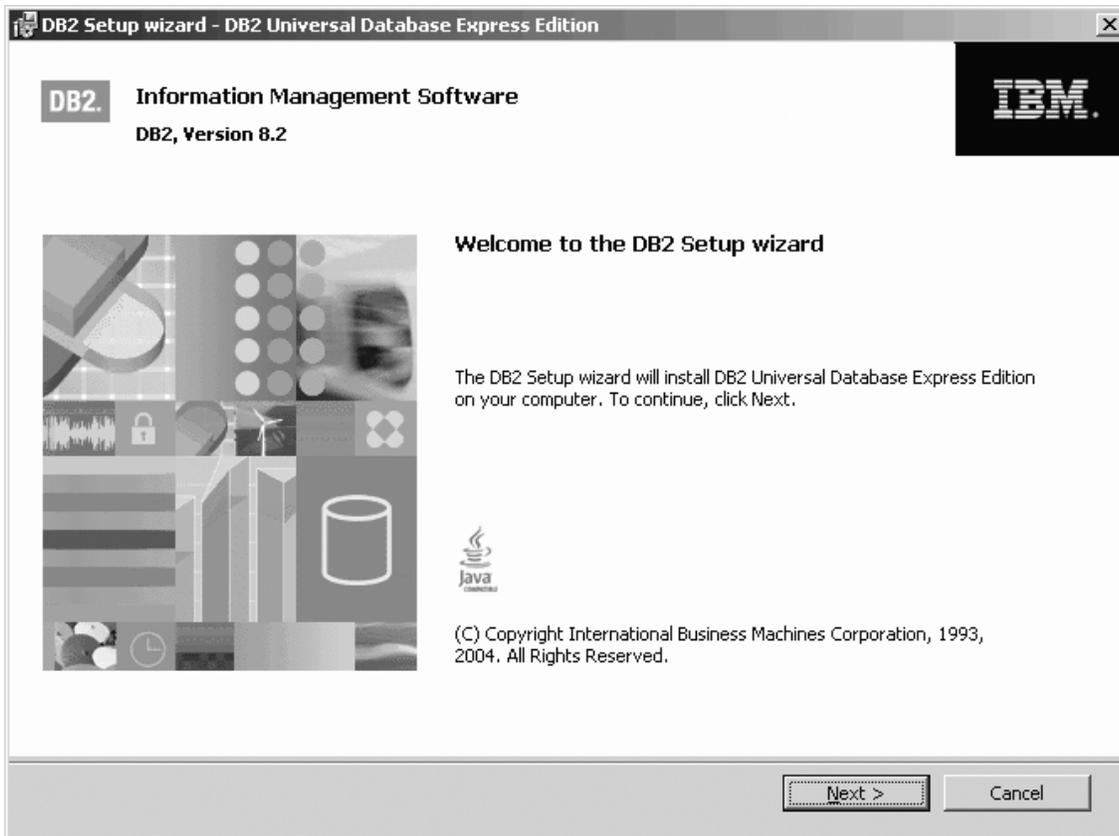


Figure 3. DB2 Setup wizard

4. Click **Next**. The "License Agreement" page opens.
5. On the License Agreement page:
 - a. Select the **I accept the terms in the license agreement** radio button:

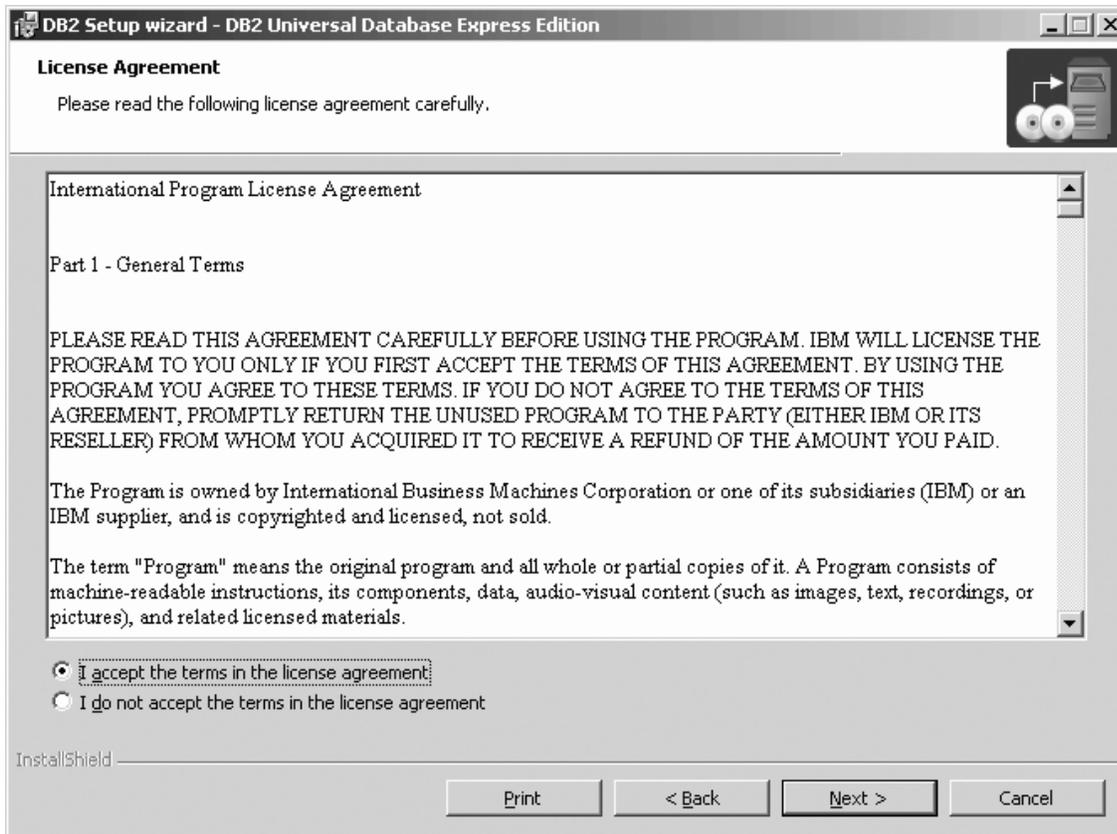


Figure 4. DB2 Setup wizard - Licence Agreement page

- b. Click **Next**. The "Select the installation type" page opens.
6. On the "Select the installation type" page:
 - a. Select the **Custom** radio button:

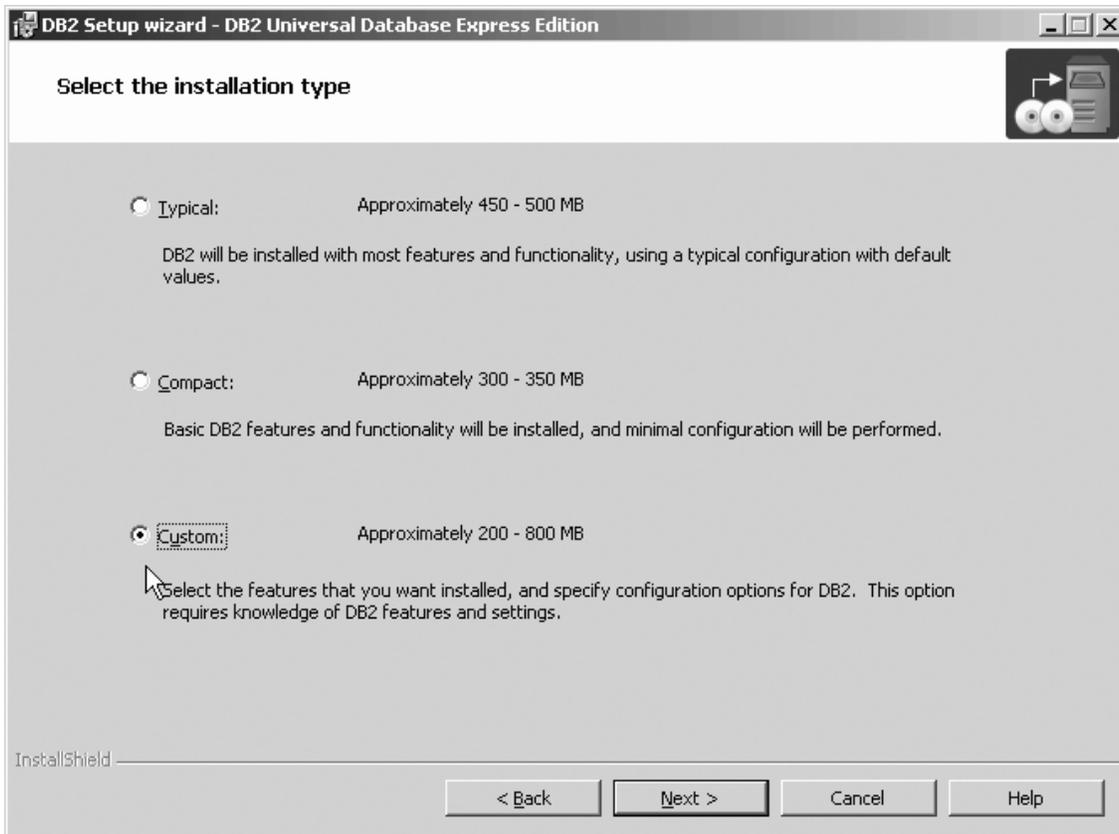


Figure 5. DB2 Setup wizard - Select the installation type page

- b. Click **Next**. The "Select the installation action" page opens.
7. On the "Select the installation action" page:
 - a. Select the **Install DB2 Universal Database Express Edition on this computer** check box.

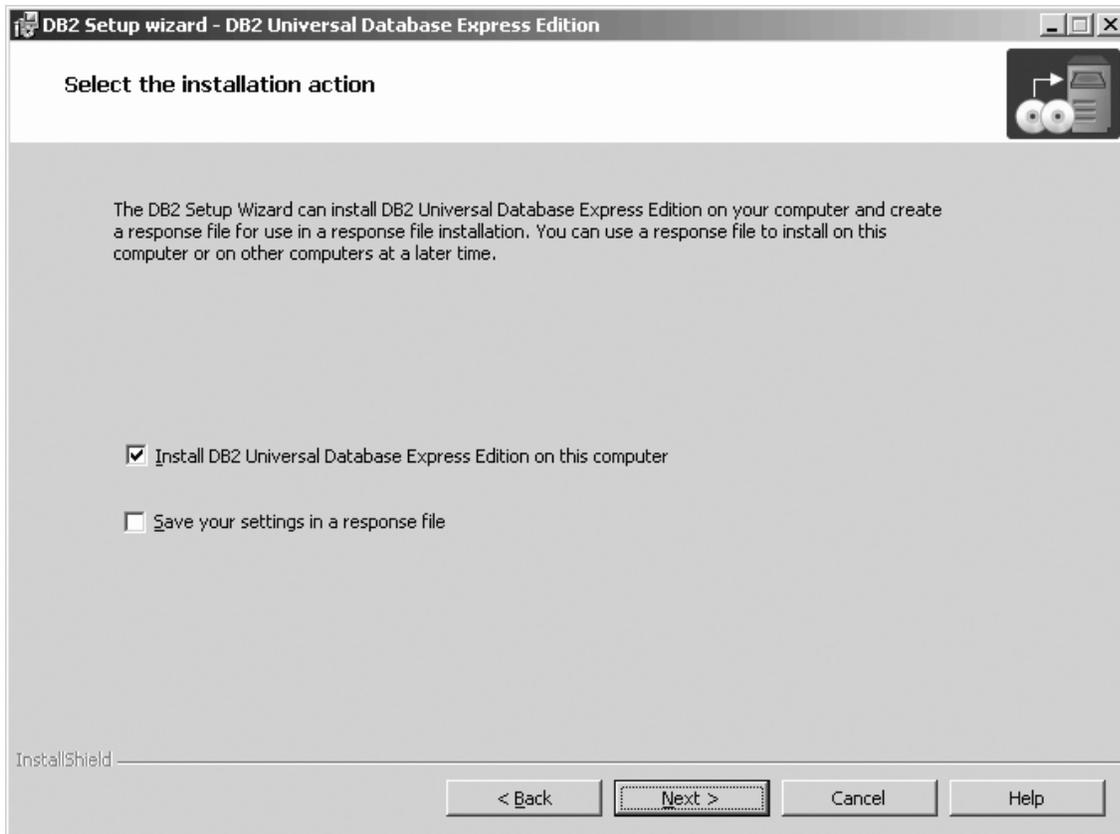


Figure 6. DB2 Setup wizard - Select the installation action page

- b. Click **Next**. The "Select the features you want to install" page opens.
8. On the "Select the features you want to install" page:
 - a. Open the + beside the **Client Support** option.
 - b. Open the + beside the **Communication protocols** option.
 - c. Select the **APPC** option and left click. Select **This feature will not be available** from the pop-up menu. Performing this action prevents the **APPC** option from being installed. Use the **This feature will not be available** option of the pop-up menu to deselect the **NetBIOS** option and the **Named Pipes** option. These protocols are not supported in a Common Criteria compliant environment.

Note: TCP/IP is supported in a Common Criteria compliant environment. Do *not* deselect the **TCP/IP** option.

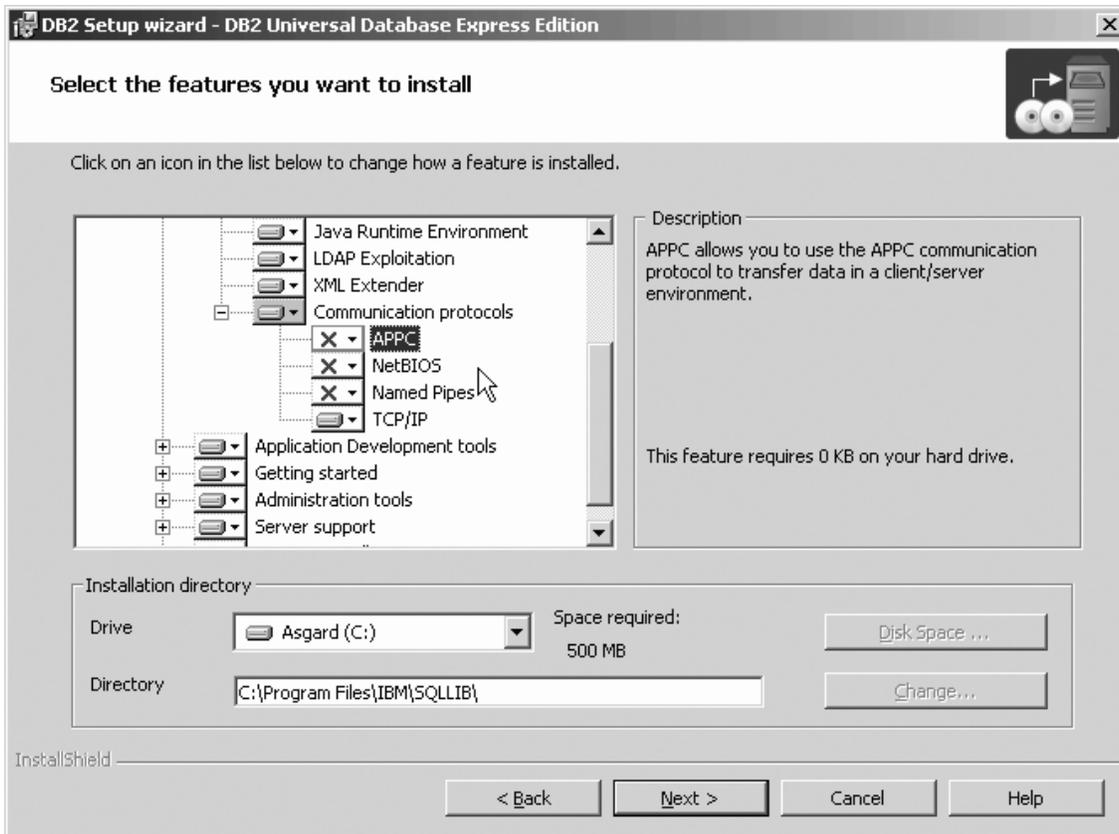


Figure 7. DB2 Setup wizard - Select the features you want to install page; APPC, NetBIOS, and Named Pipes options deselected for installation

- d. Open the + beside the **Application Development tools** option.
- e. Select the **Warehouse Samples** option and left click. Select **This feature will not be available** from the pop-up menu to deselect the **Warehouse Samples** option.

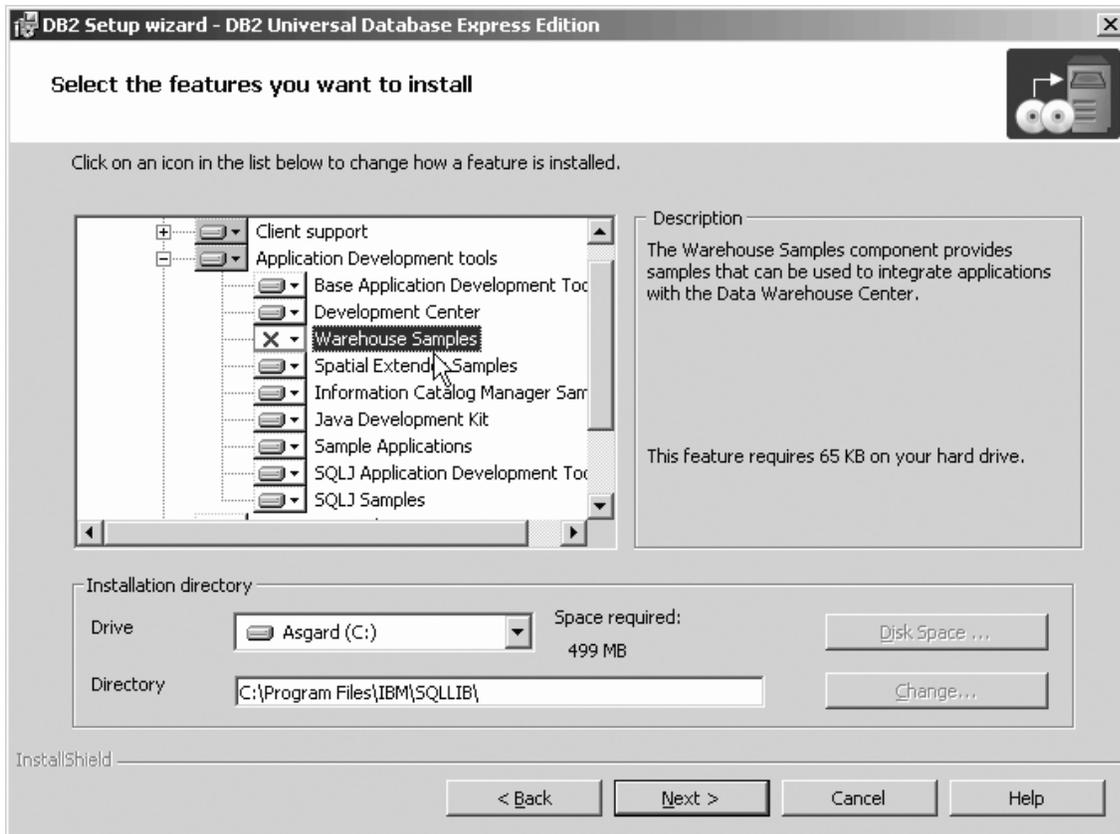


Figure 8. DB2 Setup wizard - Select the features you want to install page; Warehouse Samples option deselected for installation

- f. Open the + beside the **Getting started** option.
- g. Select the **First Steps** option, and left click. Select **This feature will not be available** from the pop-up menu. Performing this action prevents the **First Steps** option from being installed.
- h. Select the **Warehouse Sample Database Source** option, and left click. Select **This feature will not be available** from the pop-up menu.

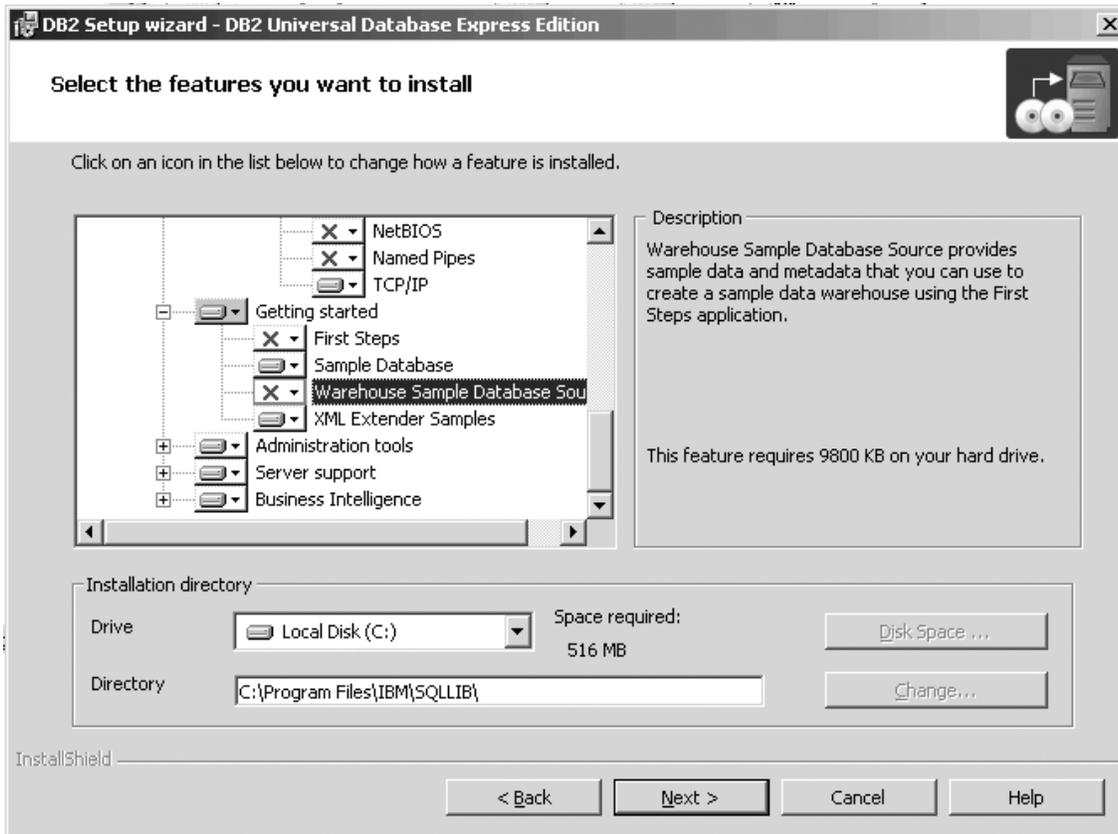


Figure 9. DB2 Setup wizard - Select the features you want to install page; First Steps and Warehouse Sample Database Source options deselected for installation

- i. Select the **Administration tools** option and left click. Select **This feature will not be available** from the pop-up menu to deselect the **Administration tools** option.

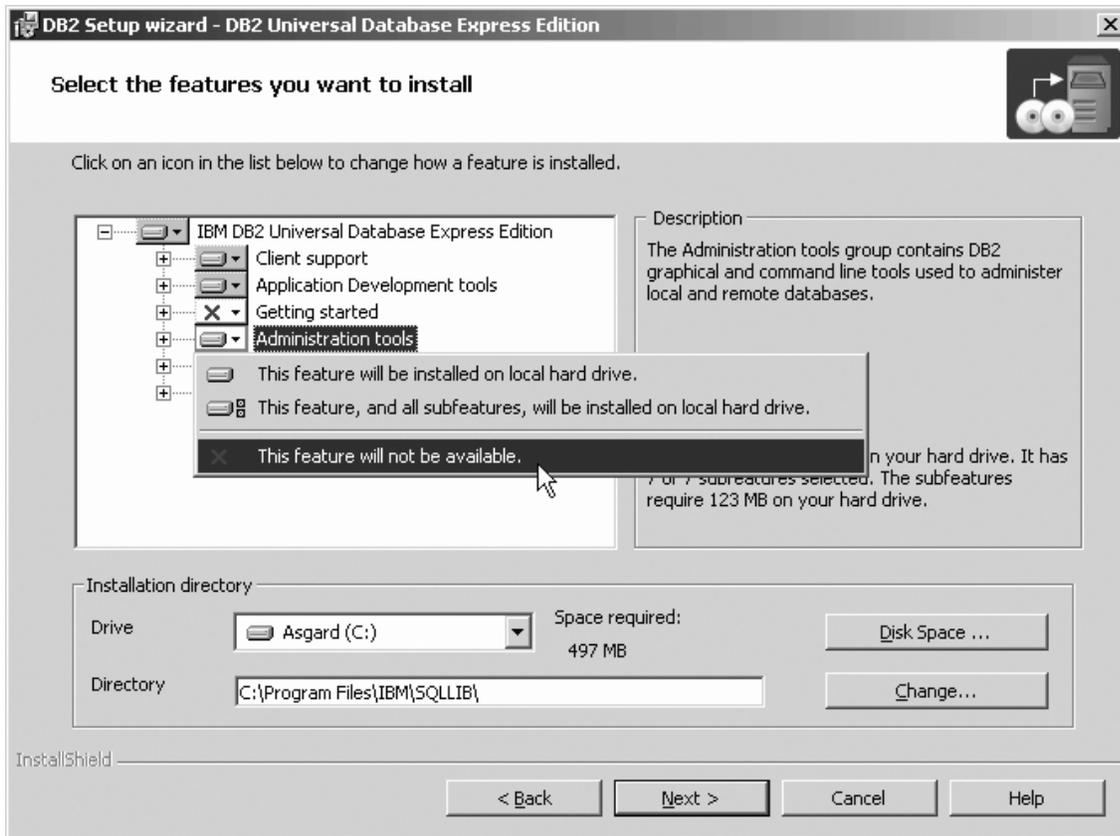


Figure 10. DB2 Setup wizard - Select the features you want to install page; Administration tools option deselected for installation

- j. Open the + beside the **Server support** option.
- k. Select the **Apply** option and left click. Select **This feature will not be available** from the pop-up menu to deselect the **Apply** option. Also ensure that following options under **Server support** are deselected for installation:
 - 1) **Capture**
 - 2) **Informix data source support**

After the **Server support** options are deselected, open the + beside the **Communications protocols** option, and deselect the **NetBIOS Listener** option and the **Named Pipes Listener** option.

Note: Do *not* deselect the **TCP/IP Listener** option.

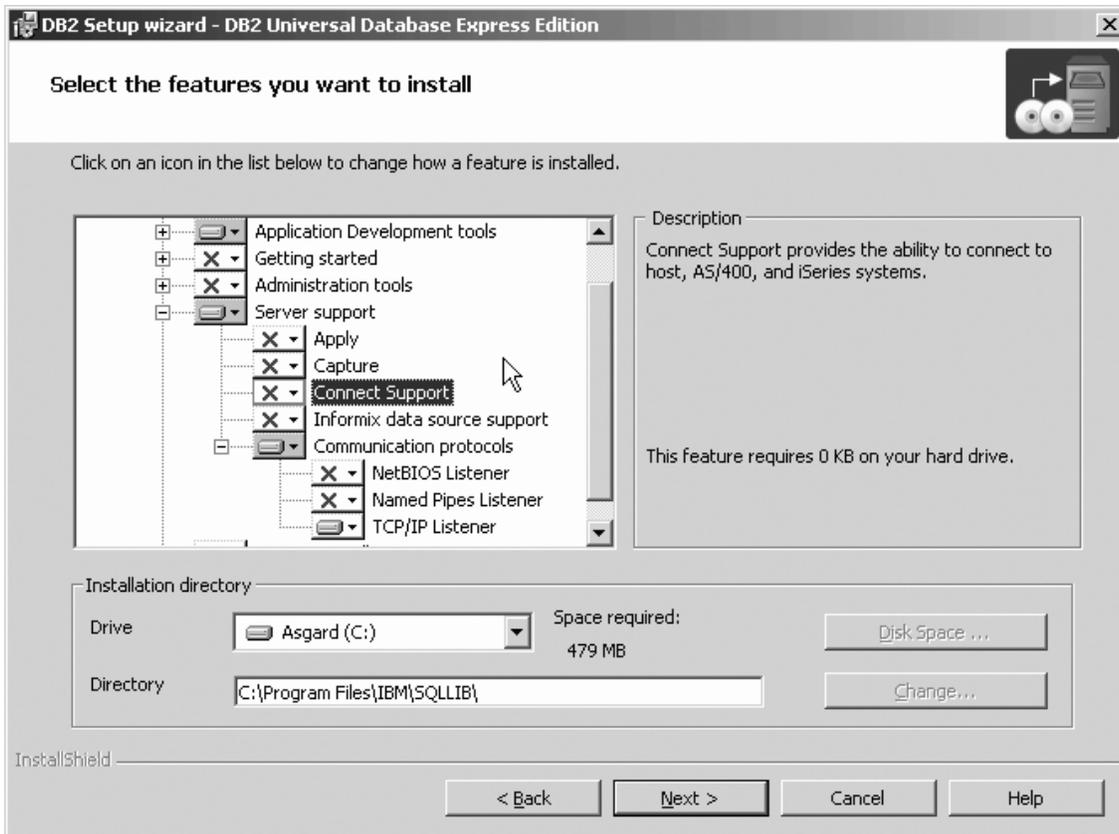


Figure 11. DB2 Setup wizard - Select the features you want to install page; all options except TCP/IP Listener deselected for installation

- i. Select the **Business Intelligence** option and left click. Select **This feature will not be available** from the pop-up menu to deselect the **Business Intelligence** option.

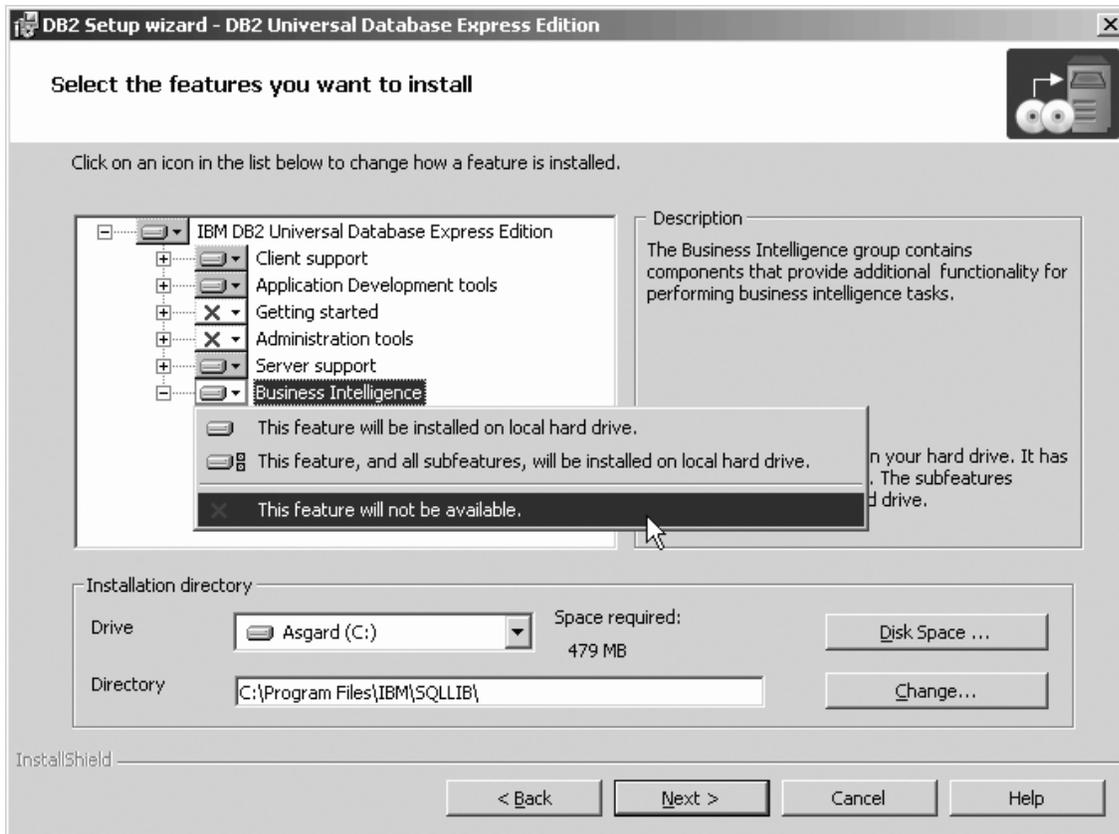


Figure 12. DB2 Setup wizard - Select the features you want to install page; Business Intelligence option deselected for installation

- m. Click **Next**. The "Select the languages to install" page opens.
9. On the "Select the languages to install" page, English is the only language support that is installed by default.

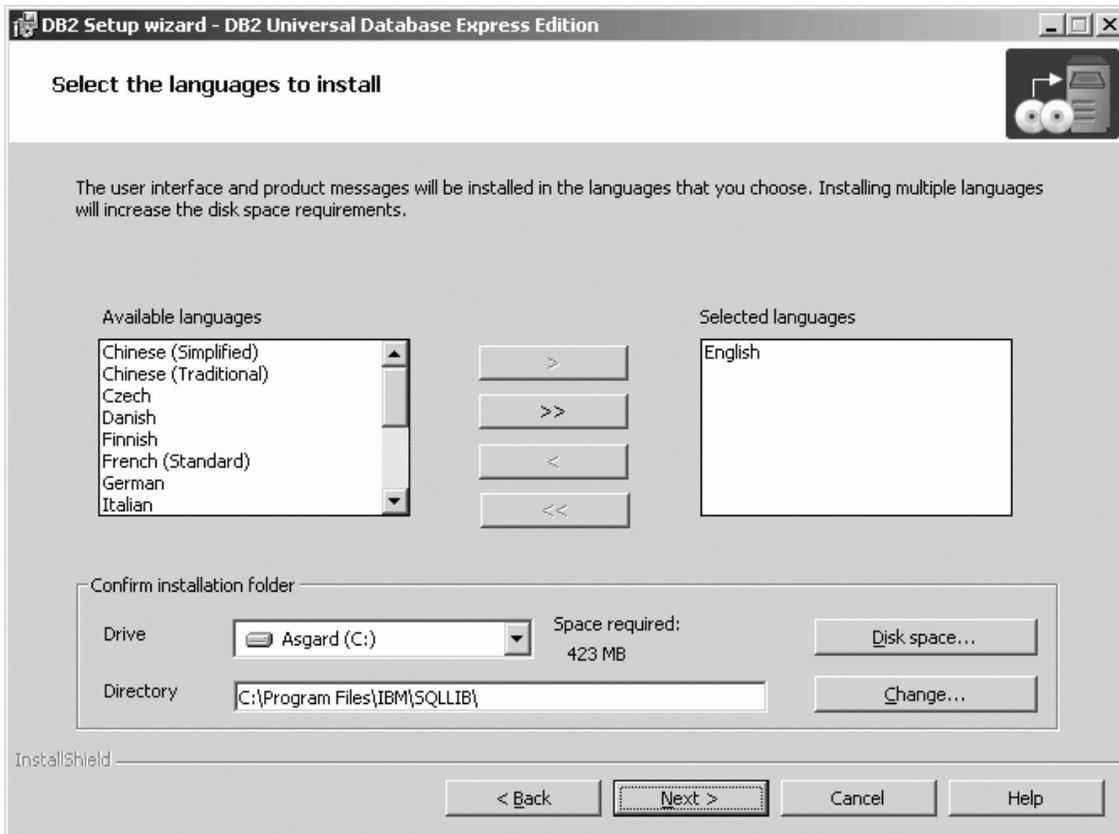


Figure 13. DB2 Setup wizard - Select the languages to install page; English language support selected for installation

Do one of the following:

- If you do not need to install any languages other than English, click **Next**. The "Specify the location of the DB2 Information Center" page opens.
 - If you need to install language support other than English, select the language you want from the **Available languages** box, and click > to move it to the **Selected languages** box. Repeat this procedure for every language that you need to install. When you have selected all the languages that you require, click **Next**. The "Specify the location of the DB2 Information Center" page opens.
10. On the "Specify the location of the DB2 Information Center" page:
- a. Ensure that the **On the IBM Web site** radio button is selected.

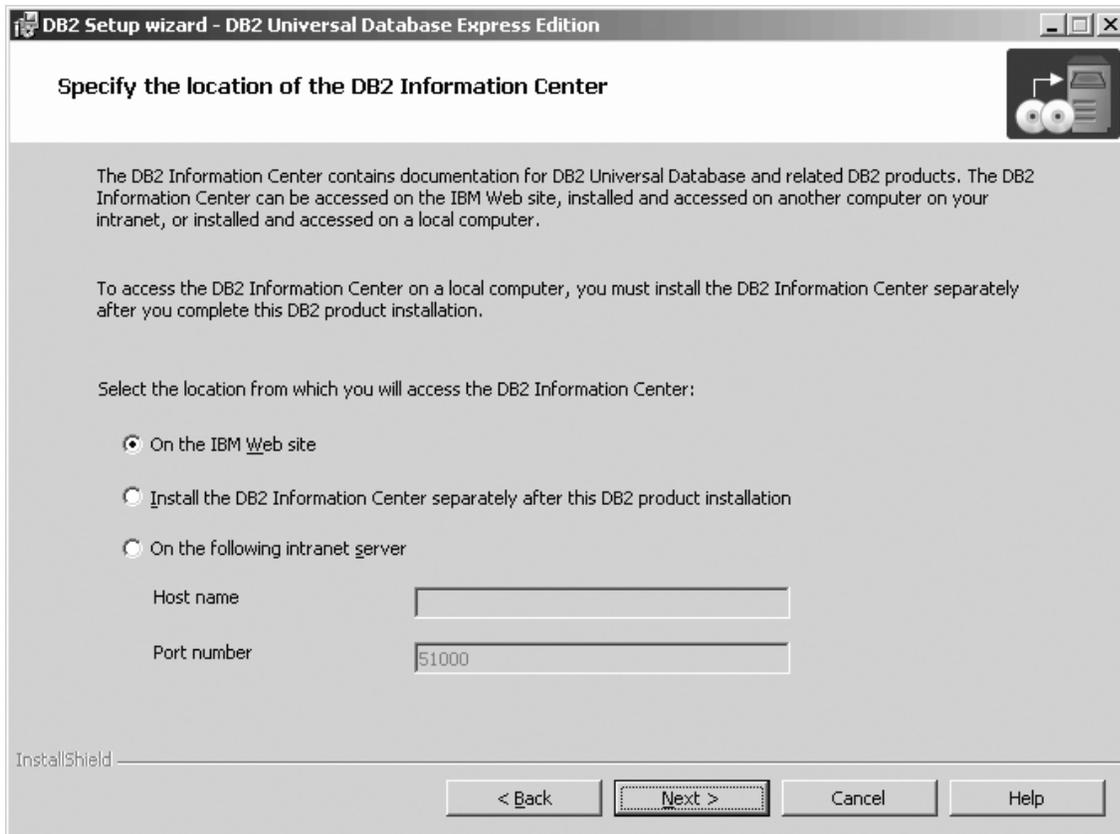


Figure 14. DB2 Setup wizard - Specify the location of the DB2 Information Center; On the IBM Web site option selected

- b. Click **Next**. The "Set user information for the DB2 Administration Server" page opens.
11. On the "Set user information for the DB2 Administration Server" page:
 - a. Select the domain of the user from the **Domain** drop-down list.
 - b. Type the user name for the DB2 Administration Server in the **User name** field.
 - c. Type the password for the user in the **Password** field.
 - d. Type the password again in the **Confirm password** field.
 - e. Ensure that the **Use the same user name and password for the remaining DB2 services** check box is not selected.

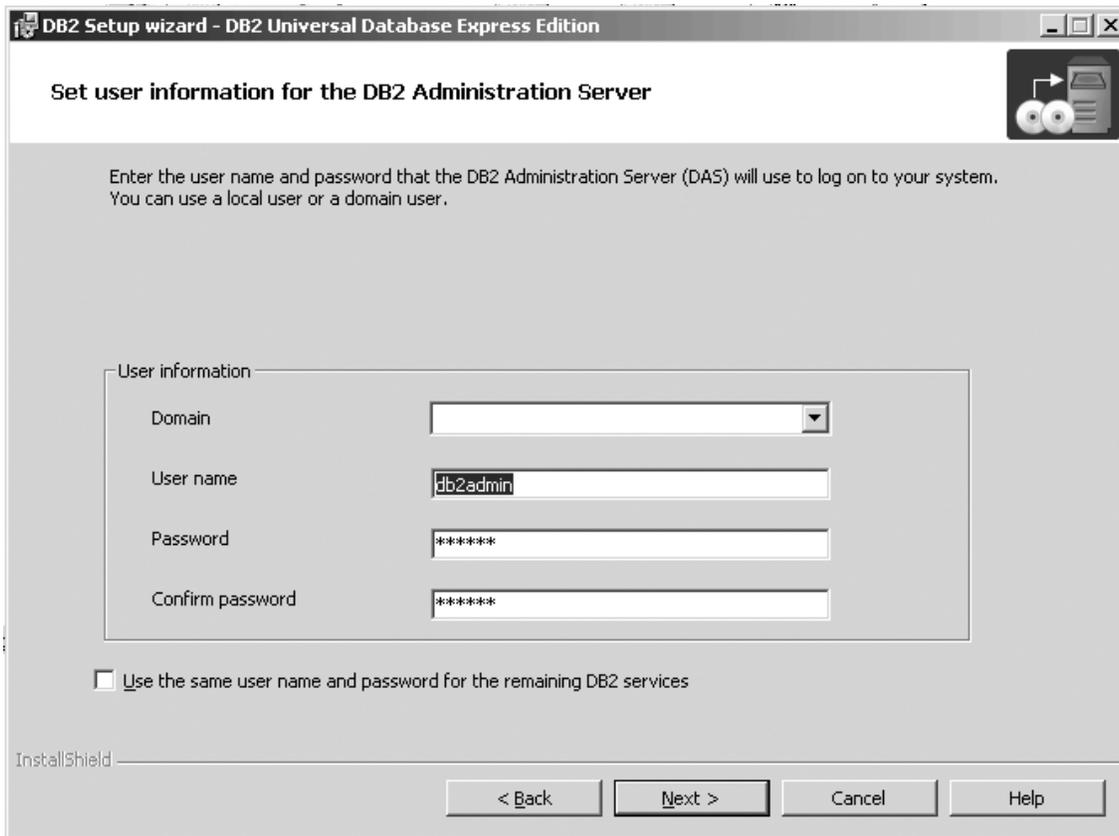


Figure 15. DB2 Setup wizard - Set user information for the DB2 Administration Server page

- f. Click **Next**. The "Set up the administration contact list" page opens.
12. On the "Set up the administration contact list" page:
 - a. Select the **Local - Create a contact list on this system** radio button.
 - b. Ensure that the **Enable notification** check box is deselected.

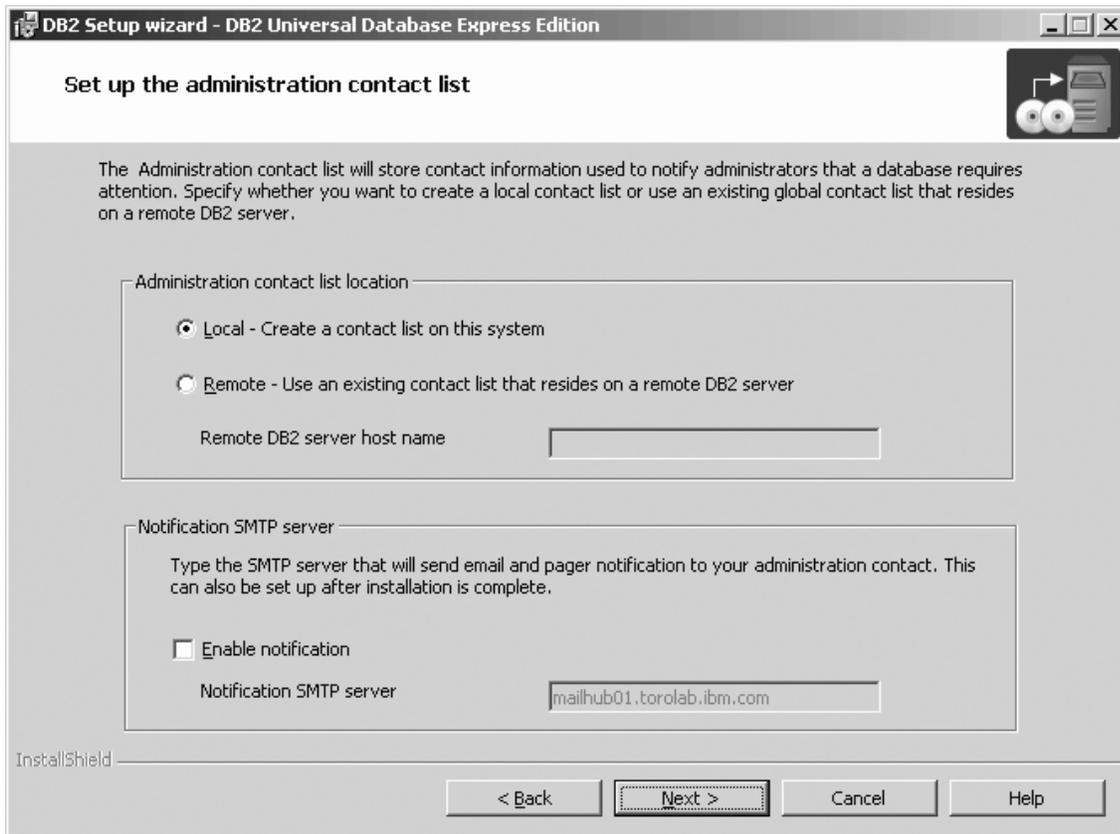


Figure 16. DB2 Setup wizard - Set up the administration contact list page

- c. Click **Next**. Because the **Enable notification** check box was not selected on the "Set up the administration contact list" page, the following warning message is displayed:

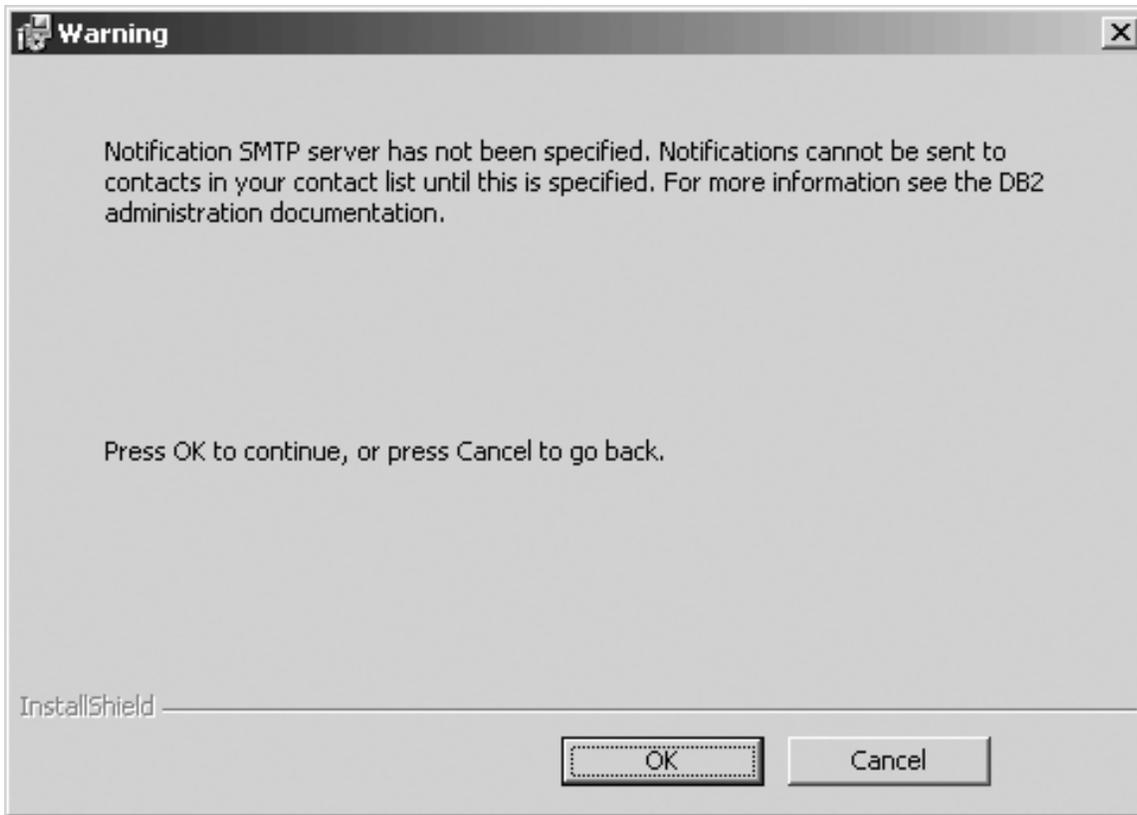


Figure 17. DB2 Setup wizard - Warning message

Click **OK**. The "Configure DB2 instances" page opens.

13. On the "Configure DB2 instances" page, click the **Startup** button. The "Startup options" window opens.

On the "Startup options" window:

- a. Select the **Do not autostart the instance. The instance must be started manually** radio button.

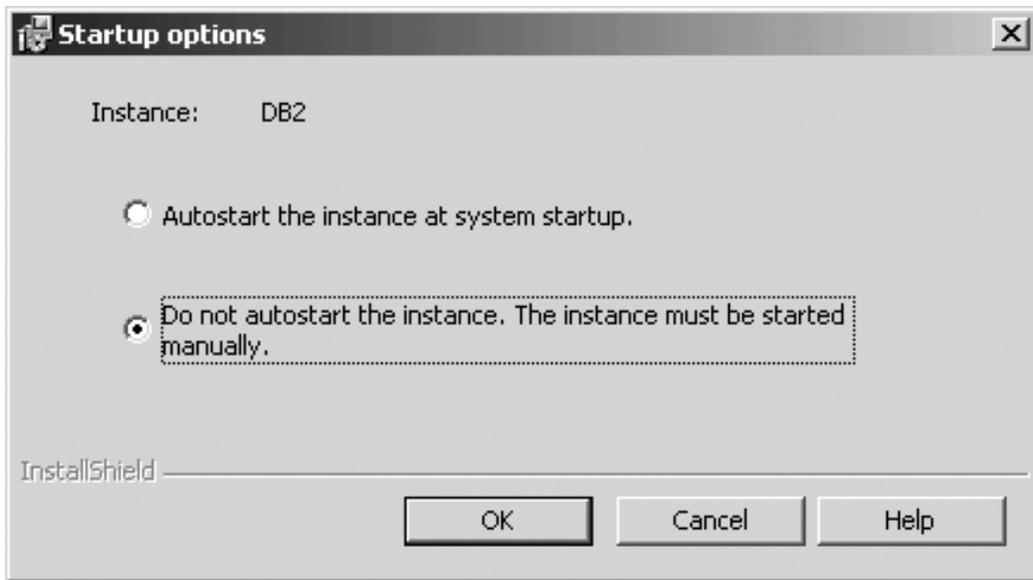


Figure 18. Startup options window

- b. Click OK. The "Startup options" window closes.

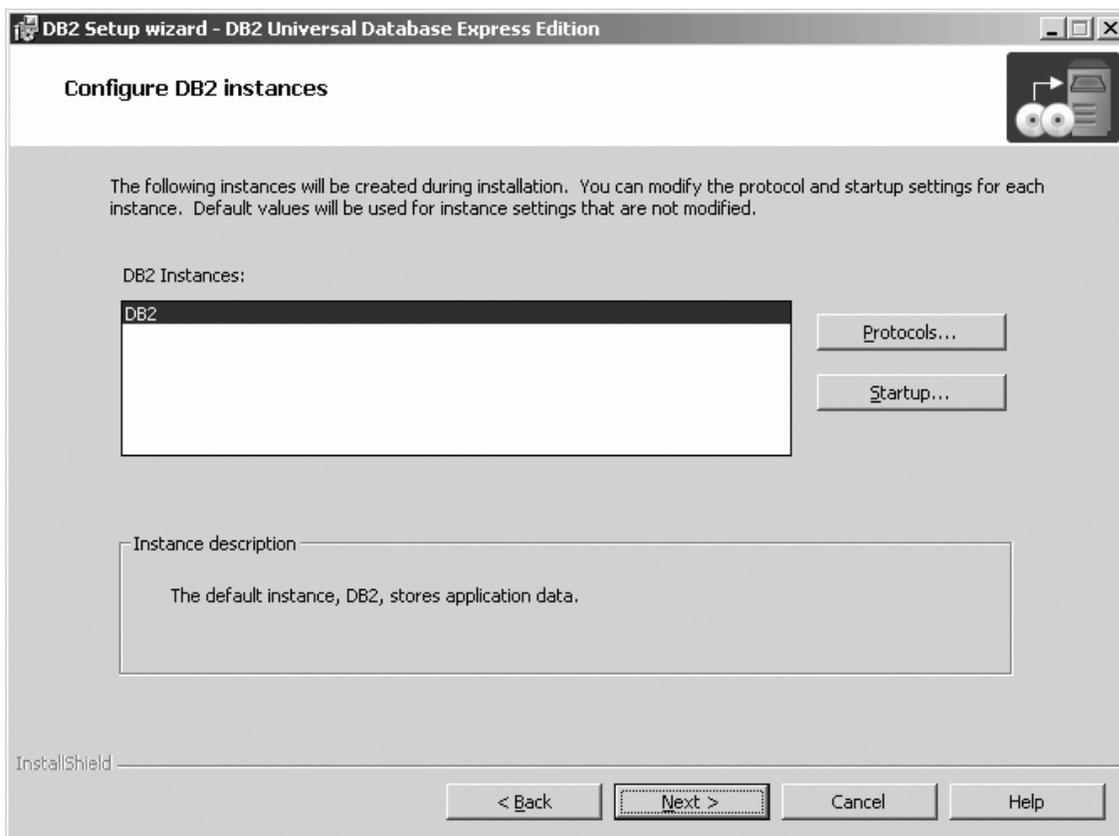


Figure 19. DB2 Setup wizard - Configure DB2 instances page

- On the "Configure DB2 instances" page, click **Next**. The "Set user information for the DB2 instance" page opens.

14. On the "Set user information for the DB2 instance" page:
 - a. Select the domain of the user from the **Domain** drop-down list.
 - b. Type the user name for the DB2 Administration Server in the **User name** field.
 - c. Type the password for the user in the **Password** field.
 - d. Type the password again in the **Confirm password** field.
 - e. Ensure that the **Use the same user name and password for the remaining DB2 services** check box is not selected.



Figure 20. DB2 Setup wizard - Set user information for the DB2 instance

- f. Click **Next**. The "Prepare the DB2 tools catalog" page opens.
15. On the "Prepare the DB2 tools catalog" page:
 - a. Click the **Do not prepare the DB2 tools catalog on this computer** radio button.

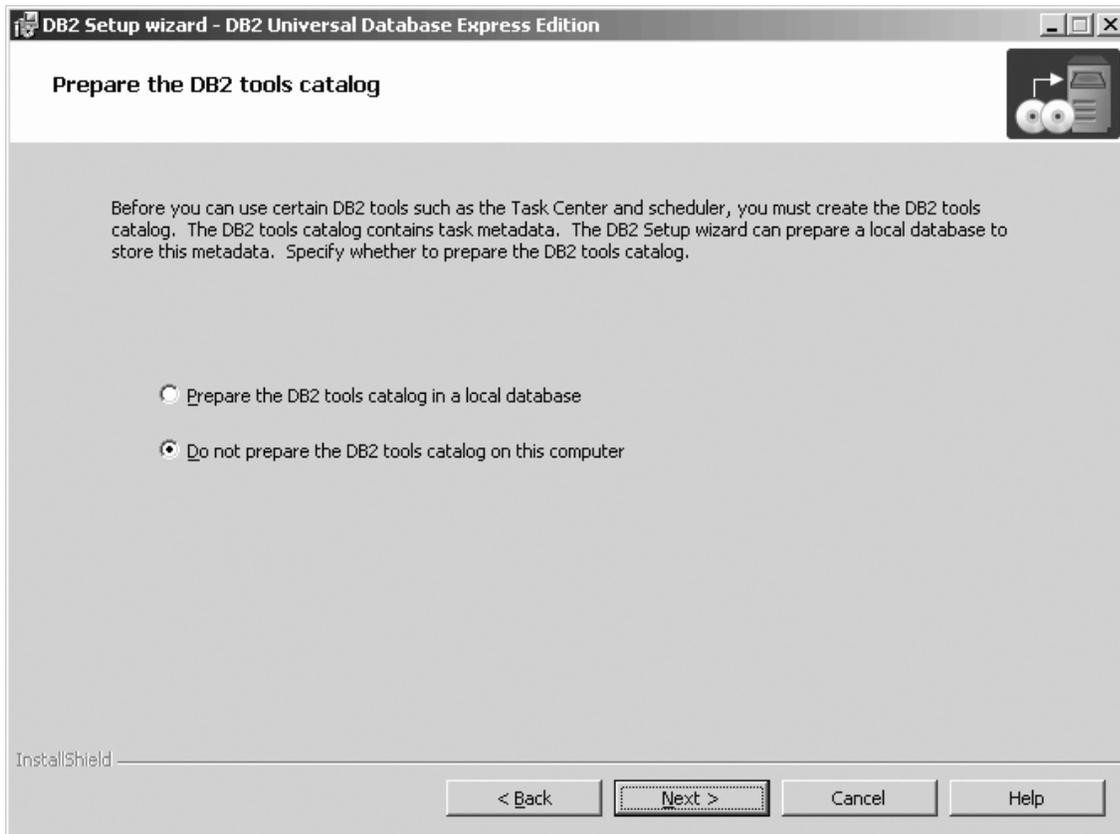


Figure 21. DB2 Setup wizard - Prepare the DB2 tools catalog page

- b. Click **Next**. The "Specify a contact for health monitor notification" page opens.
16. On the "Specify a contact for health monitor notification" page:
 - a. Click the **Defer the task until after installation is complete** radio button.

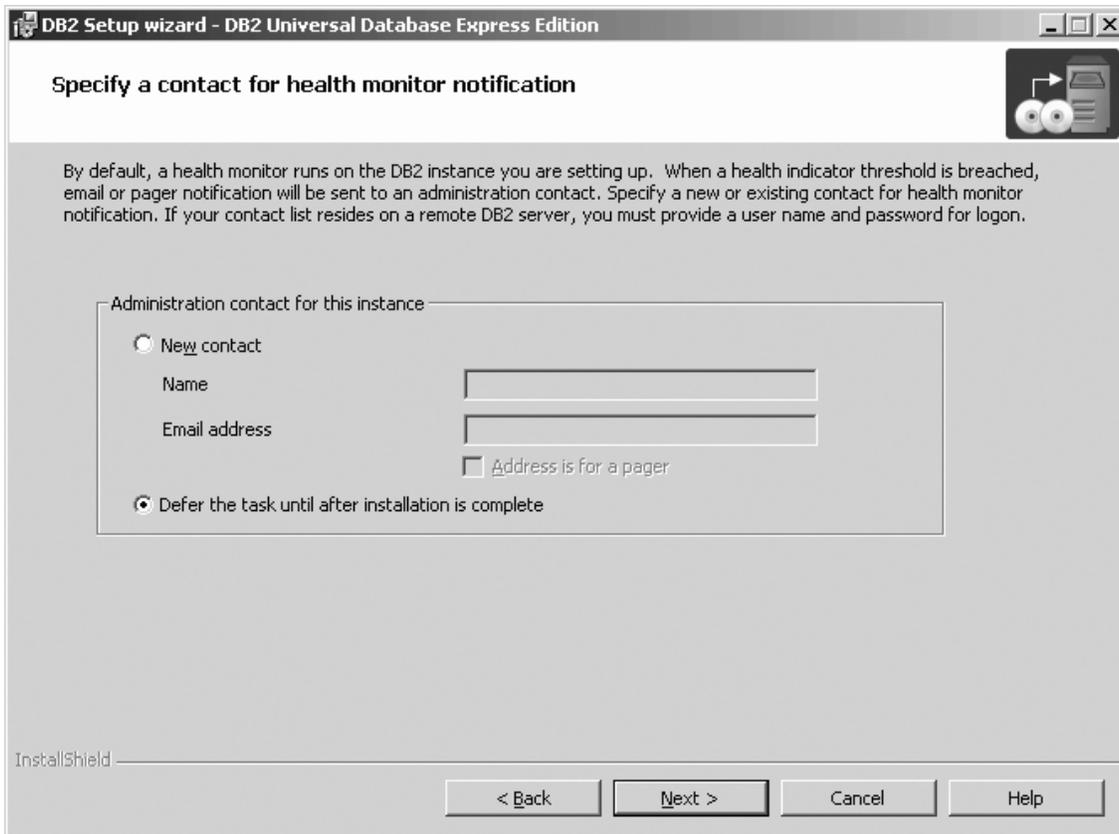


Figure 22. DB2 Setup wizard - Specify a contact for health monitor notification page

- b. Click **Next**. The "Enable operating system security for DB2 objects" page opens.
17. On the "Enable operating system security for DB2 objects" page:
 - a. Deselect the **Enable operating system security** check box.

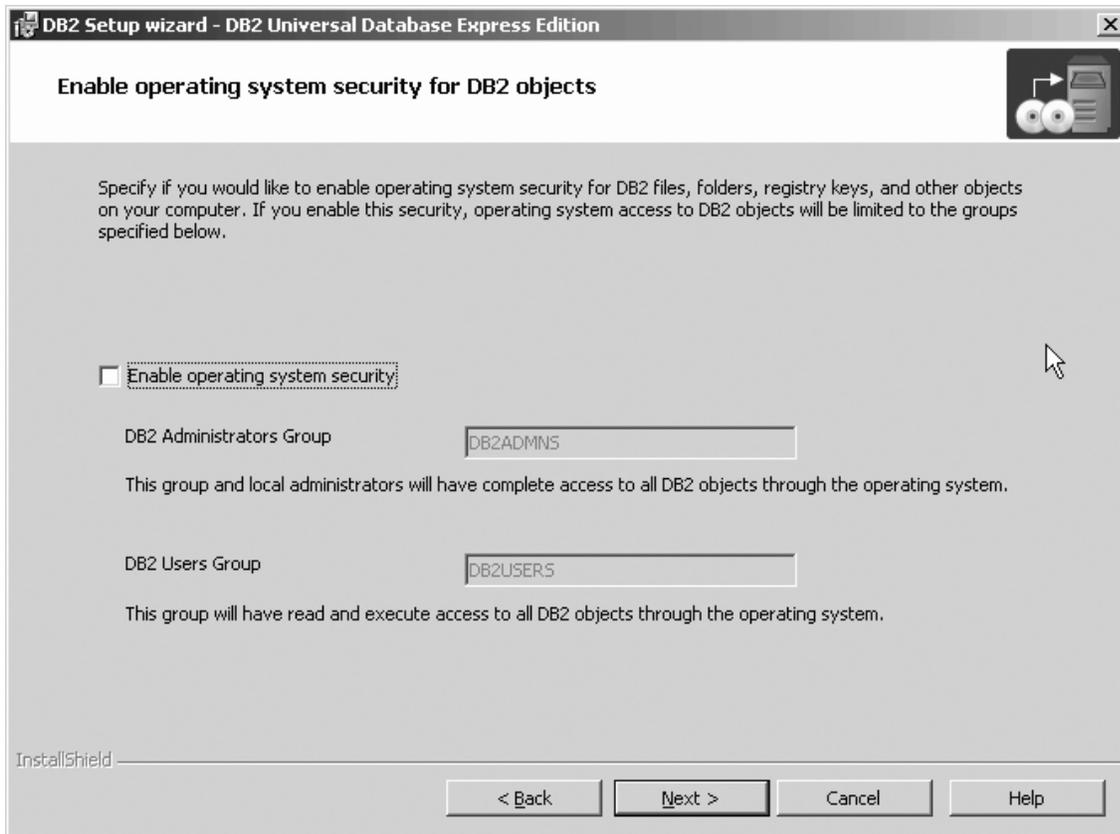


Figure 23. DB2 Setup wizard - Enable operating system security for DB2 objects page

- b. Click **Next**. The "Start copying files" page opens.
18. On the Start copying files page, click **Install** to begin installing DB2 on your computer.

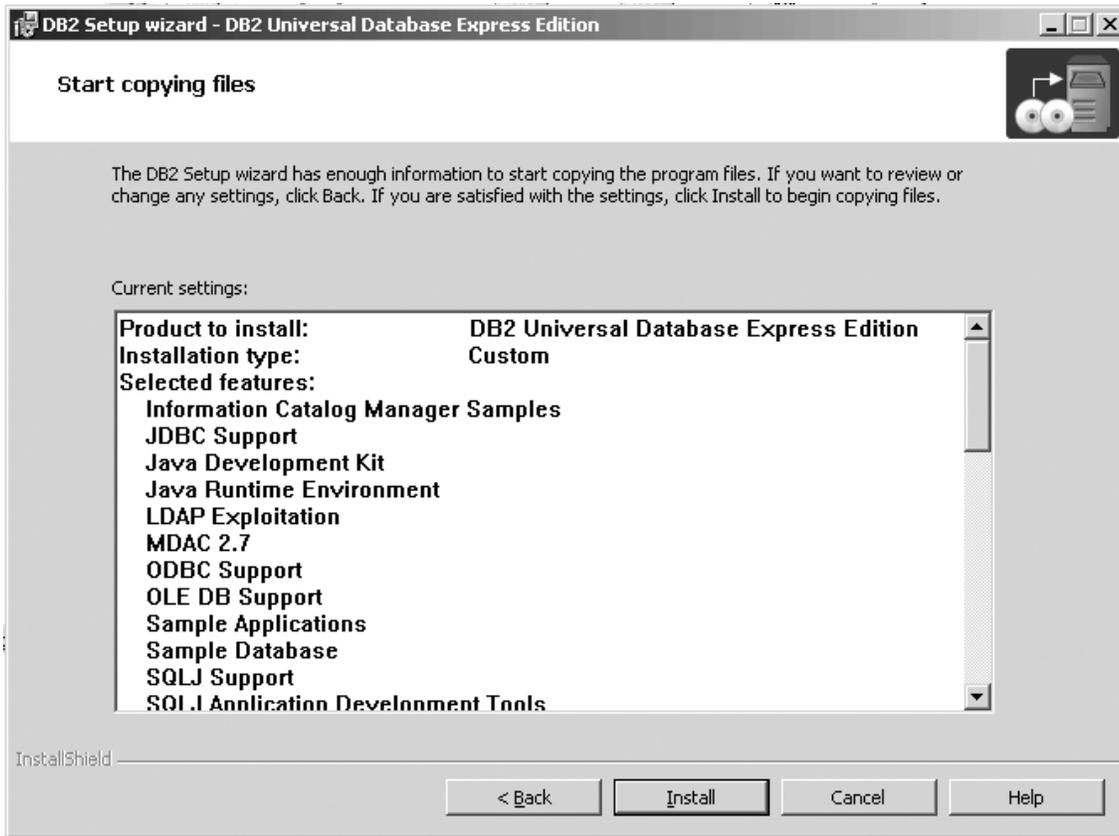


Figure 24. DB2 Setup wizard - Start copying files page

| The "Installing DB2 Universal Database Express Edition" page opens.
|

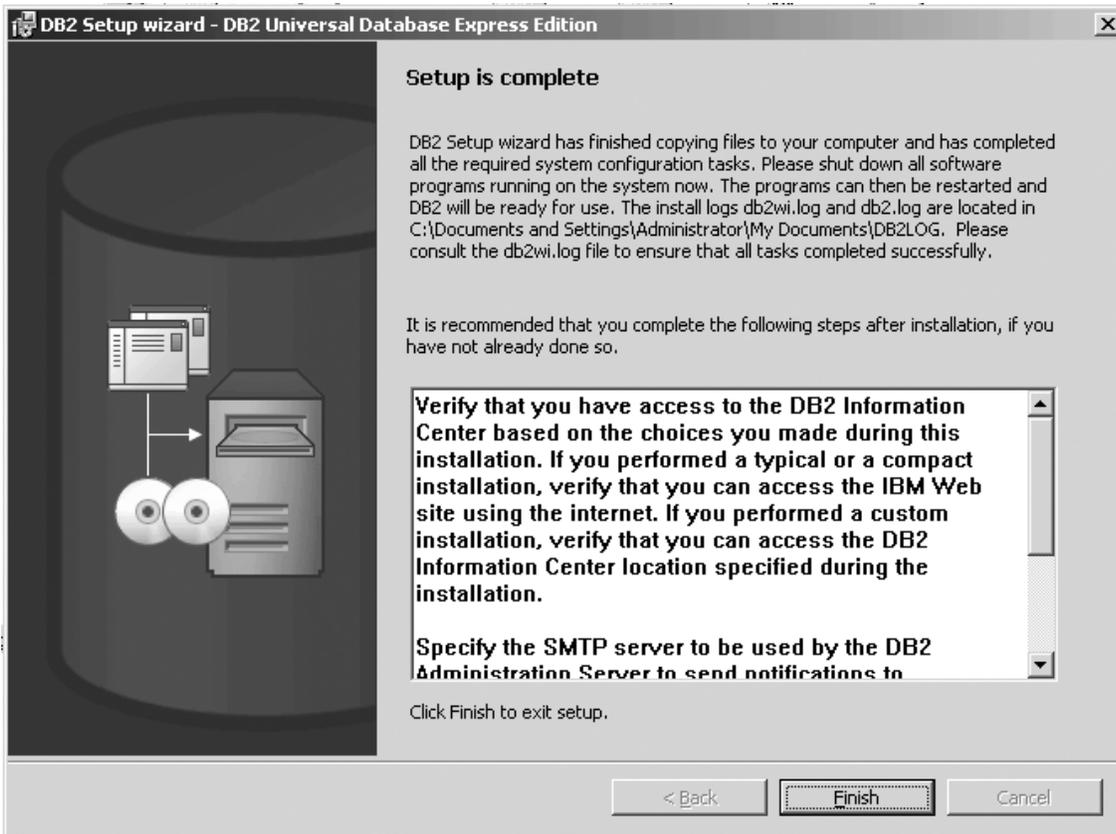


Figure 26. DB2 Setup wizard - Setup is complete page

Click **Finish** to exit from the "DB2 Setup wizard".

After DB2 Enterprise Server Edition is installed, see the topic on configuring DB2 to be Common Criteria compliant in the *DB2 Universal Database Common Criteria Certification: Administration and User Documentation* book.

Linux installation

Installing DB2 servers in a single-partition environment (UNIX)

This task describes how to start the DB2 Setup wizard on UNIX systems. The DB2 Setup wizard is used to define your installation preferences and install DB2 to your system.

Prerequisites:

Before you start the DB2 Setup wizard:

- Ensure that your system meets installation, memory, and disk requirements.
- Review the installation considerations for IBM Developer Kit for Java 1.3.1.
- You require root authority to perform the installation.
- The DB2 product CD-ROM must be mounted on your system.
- The DB2 Setup wizard is a graphical installer. You must have Xwindow software capable of rendering a graphical user interface for the DB2 Setup wizard to run

on your machine. Ensure that you have properly exported your display. For example, `export DISPLAY=9.26.163.144:0`.

- If NIS/NIS+ or similar security software is used in your environment, you must manually create required DB2 users before you start the DB2 Setup wizard. Refer to the referenced NIS topic before you begin.
- On Solaris, the files required to uninstall a FixPak or modification level using the `backoutallpatch` script, are stored in the `/var/sadm` directory. Disk space requirements for each FixPak or modification level in the `/var/sadm` directory can reach almost the same amount of disk space required by DB2 in the `/opt/IBM/db2/V8.1` directory.
- For Solaris Operating Environment and AIX 5L, you need to have a filesystem with 2 GB of free space to contain the tar.Z file and the uncompressed installation image, in addition to the software disk requirements.
- On AIX and Linux, ensure that Asynchronous I/O (AIO) has been enabled. It must be enabled before DB2 UDB can be successfully installed. AIO can be enabled and disabled at run time by issuing the `db2set` command. To use AIO on Linux, you must install `libaio-0.3.96` or later, have a kernel that supports AIO (for example, version 2.6), run the `db2set DB2NOLIOAIO=false` command, and restart DB2.

Procedure:

To start the DB2 Setup wizard:

1. Log on to the system as a user with root authority.
2. Refer to the CD-ROM label to ensure that you are using the CD-ROM with your appropriate language.
3. Change to the directory where the CD-ROM is mounted by entering the following command:

```
cd /cdrom
```

where `/cdrom` represents mount point of the CD-ROM.

4. See the appropriate section for your operating system:

For AIX 4.3.3, HP-UX and Linux

Enter the `./db2setup` command to start the DB2 Setup wizard.

For Solaris Operating Environment

- a. Copy `product.tar.Z`, where *product* represents the product you are licensed to install, to a temporary filesystem.
- b. Enter the following command to start the DB2 Setup wizard:

```
zcat product.tar.Z | tar -xf - ; ./product/db2setup
```

For example, if the product name for DB2 Enterprise Server Edition is *ese*, then enter the following command:

```
zcat ese.tar.Z | tar -xf - ; ./ese/db2setup
```

For AIX 5L

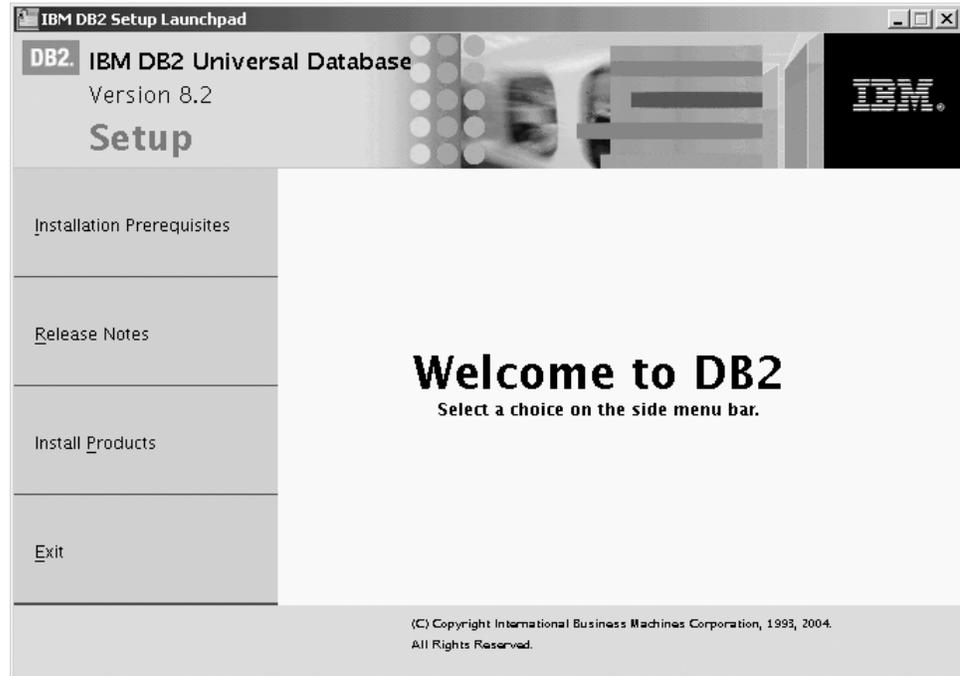
- a. Copy `product.tar.gz`, where *product* represents the product you are licensed to install, to a temporary filesystem.
- b. Enter the following command to start the DB2 Setup wizard:

```
-gzip -d < product.tar.gz | tar -xf - ; ./product/db2setup
```

For example, if the product name for DB2 Enterprise Server Edition is *ese*, then enter the following command:

```
-gzip -d < ese.tar.gz | tar -xf - ; ./ese/db2setup
```

5. After a moment, the IBM DB2 Setup Launchpad opens.



From this window, you can view installation prerequisites and the release notes, or you can proceed directly to the installation. You may want to review the installation prerequisites and release notes for late-breaking information.

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 remaining steps. To invoke the installation help, click **Help** or press F1. You can click **Cancel** at any time to end the installation.

When you have completed your installation, DB2 will be installed in the one of the following directories:

AIX /usr/opt/db2_08_01

HP-UX, Linux, Solaris Operating Environment
/opt/IBM/db2/V8.1

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

The db2setup.log file captures all DB2 installation information including errors. The db2setup.his records all DB2 installations on your machine. DB2 appends the db2setup.log file to the db2setup.his file. The db2setup.err file captures any error output that is returned by Java (for example, exceptions and trap information).

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

Related concepts:

- “DB2 Information Center” in the *Infrastructure Topics (DB2 Common Files)*

- “Installing the IBM Developer Kit for Java (UNIX)” on page 25
- “DB2 Information Center installation scenarios” in the *Infrastructure Topics (DB2 Common Files)*

Related tasks:

- “Installing the DB2 Information Center using the DB2 Setup wizard (UNIX)” in the *Infrastructure Topics (DB2 Common Files)*
- “Tools catalog database and DAS scheduler setup and configuration” in the *Administration Guide: Implementation*
- “Notification and contact list setup and configuration” in the *Administration Guide: Implementation*

Related reference:

- “UPDATE ADMIN CONFIGURATION Command” in the *Command Reference*

Mounting the CD-ROM (Linux)

Prerequisites:

Root authority is required to perform this task.

Procedure:

To mount the CD-ROM on Linux:

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

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

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

3. Log out.

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

Related concepts:

- “Multiple DB2 level installations” in the *Installation and Configuration Supplement*

Related reference:

- “DB2 product license files” on page 137

Installing DB2 UDB Express Edition on Linux SuSE for a Common Criteria compliant installation

This task provides detailed instructions on installing DB2 UDB Express Edition on Linux SuSE for a Common Criteria compliant installation.

Prerequisites:

- The computer on which you install DB2 Universal Database must be physically protected from untrusted users.
- Linux SuSE must be installed on the computer.
- You must have the installation CD mounted.
- The user names to be used for the following:

- The DB2 instance owner
- The DB2 Administration Server
- The fenced user

If you do not have these user names, obtain them from your system administrator. For more information about these users, see . For information about creating these users, see .

Procedure:

Use the following steps to install DB2 UDB Express Edition on Linux SuSE for a Common Criteria compliant environment.

1. On the "IBM DB2 Setup Launchpad", click **Install Products**.

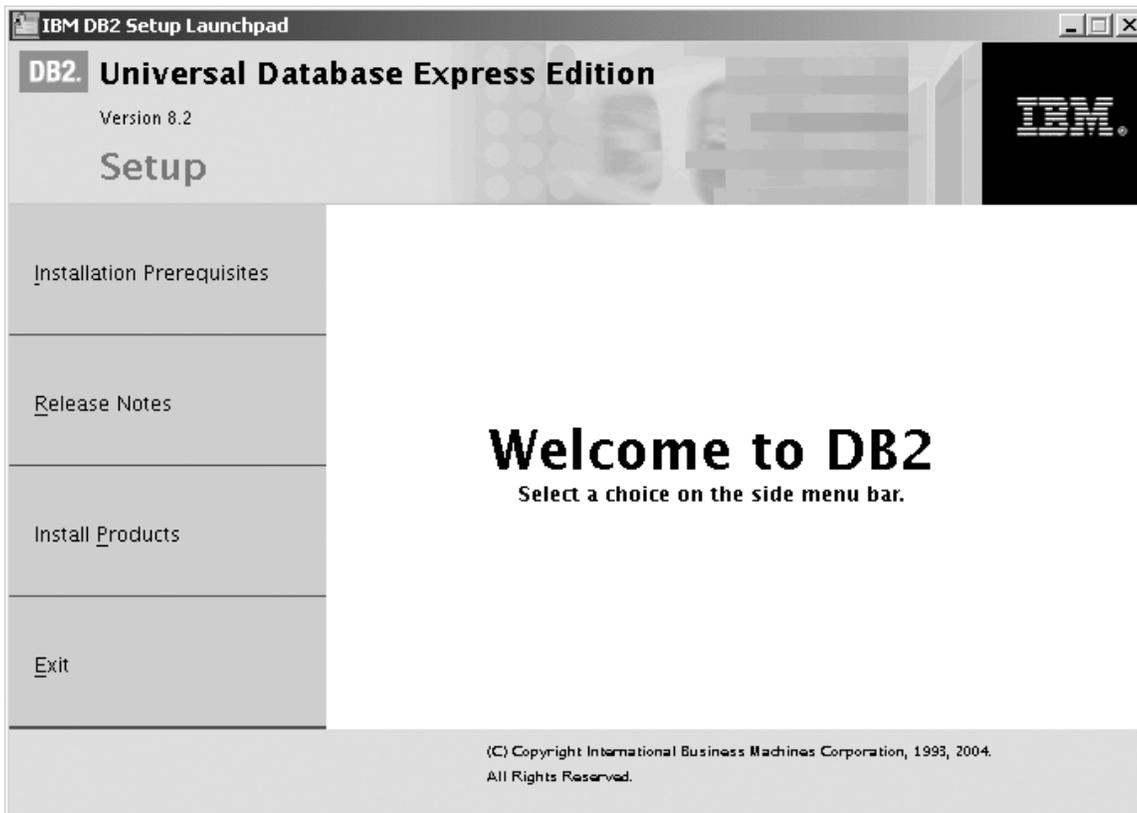


Figure 27. IBM DB2 Setup Launchpad

2. On the second page of the "IBM DB2 Setup Launchpad":
 - a. Ensure that **DB2 UDB Express** is selected, as follows:

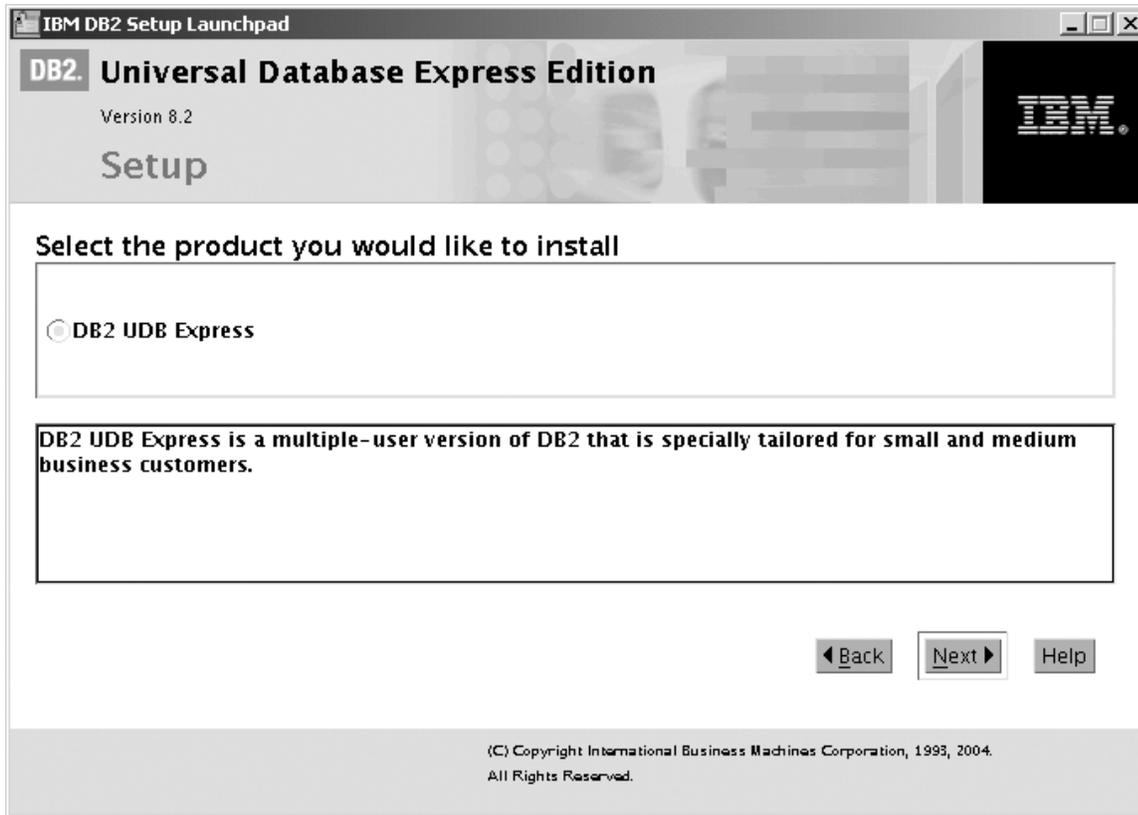


Figure 28. IBM DB2 Setup Launchpad with DB2 UDB Enterprise Server Edition selected

- b. Click **Next**. In a few moments, the "DB2 Setup wizard" opens, as follows:

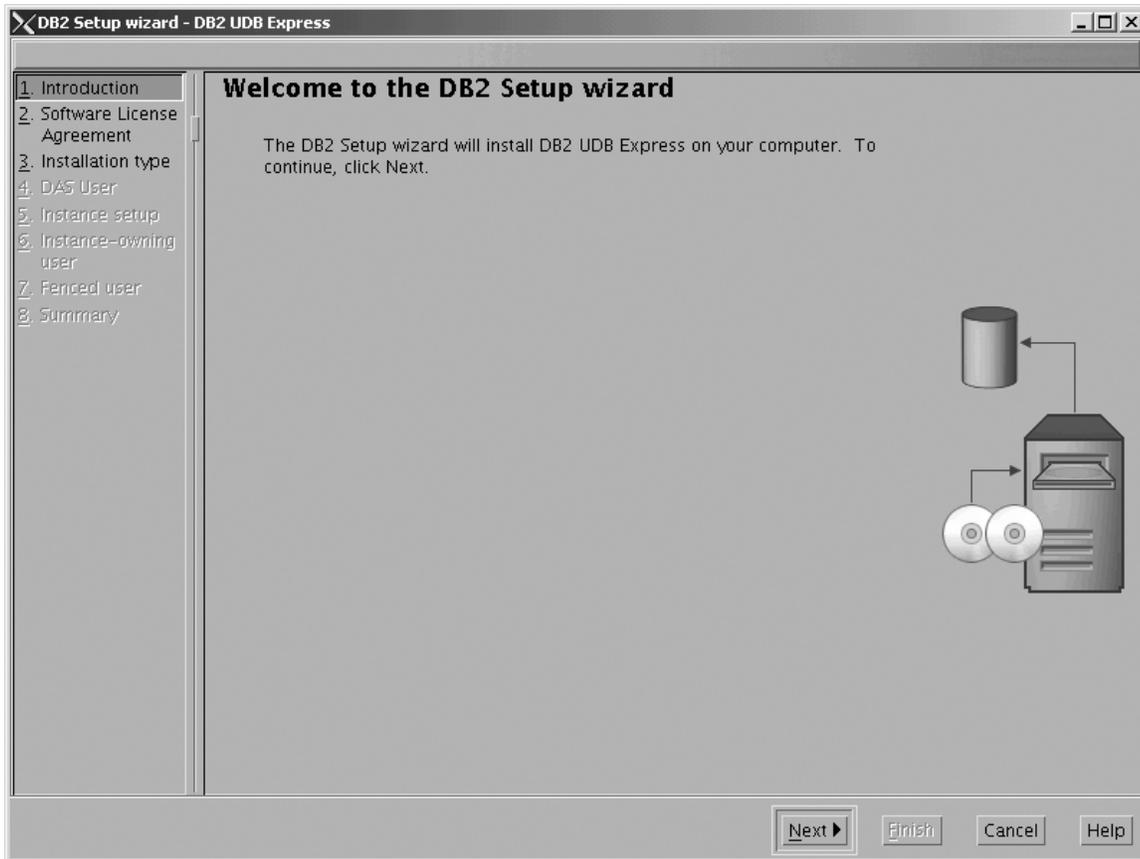


Figure 29. DB2 Setup wizard

- c. Click **Next**. The "Software License Agreement" page opens.
3. On the "Software License Agreement" page:
 - a. Click the **Accept** radio button.

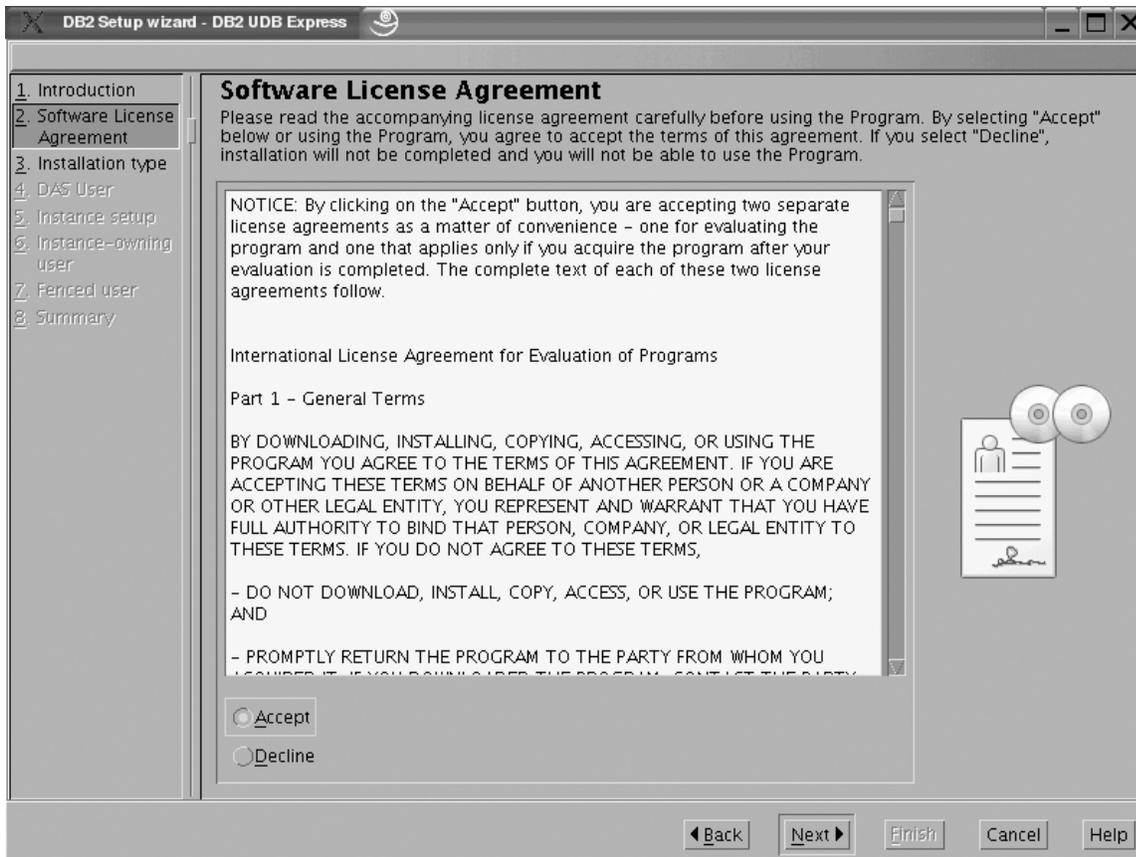


Figure 30. DB2 Setup wizard - Software License Agreement page

- b. Click **Next**. The "Select the installation type" page opens.
4. On the "Select the installation type" page:
 - a. Select the **Custom** radio button:

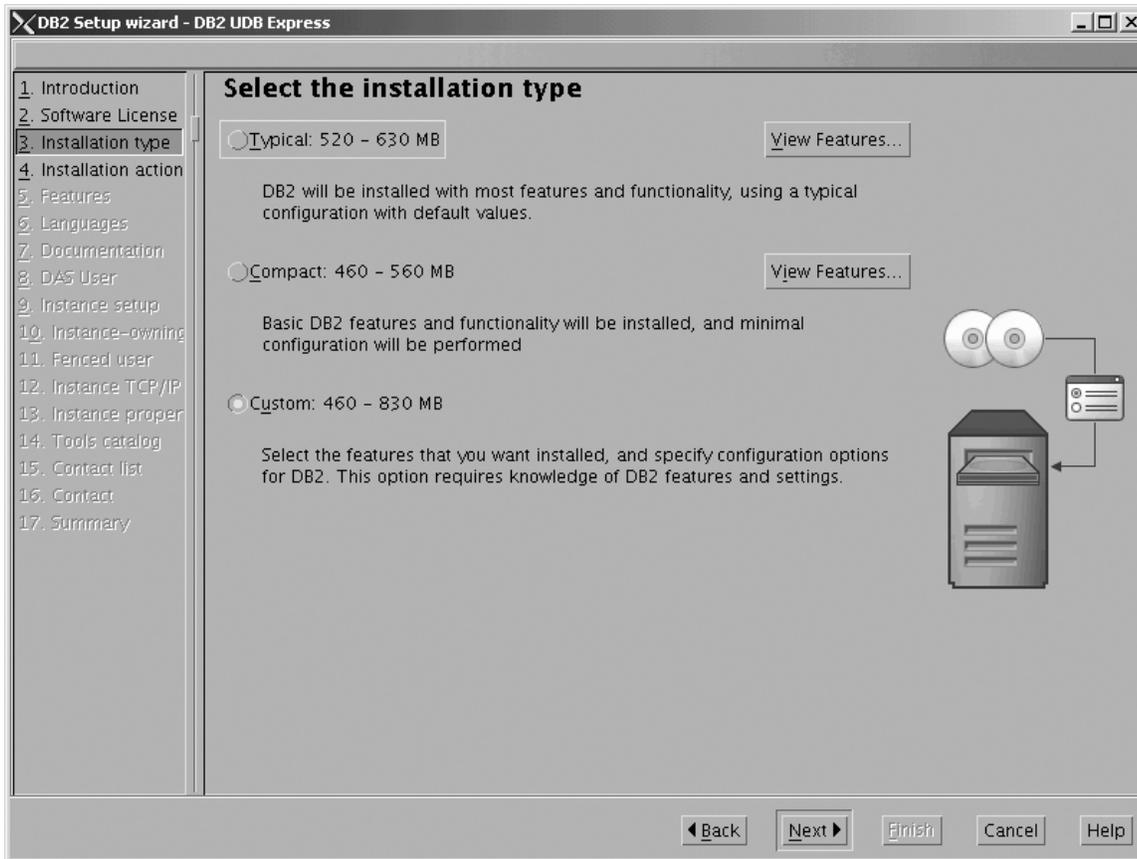


Figure 31. DB2 Setup wizard - Select the installation type page

- b. Click **Next**. The "Select the installation action" page opens.
5. On the "Select the installation action" page:
 - a. Select the **Install DB2 UDB Express on this computer** check box.



Figure 32. DB2 Setup wizard - Select the installation action page

- b. Click **Next**. The "Select the features to install" page opens.
6. On the "Select the features to install" page:
 - a. Open the + beside **Server support**, then select the check box beside **DB2 Data Source Support** (so that the check mark is removed). This action prevents the **DB2 Data Source Support** option from being installed.

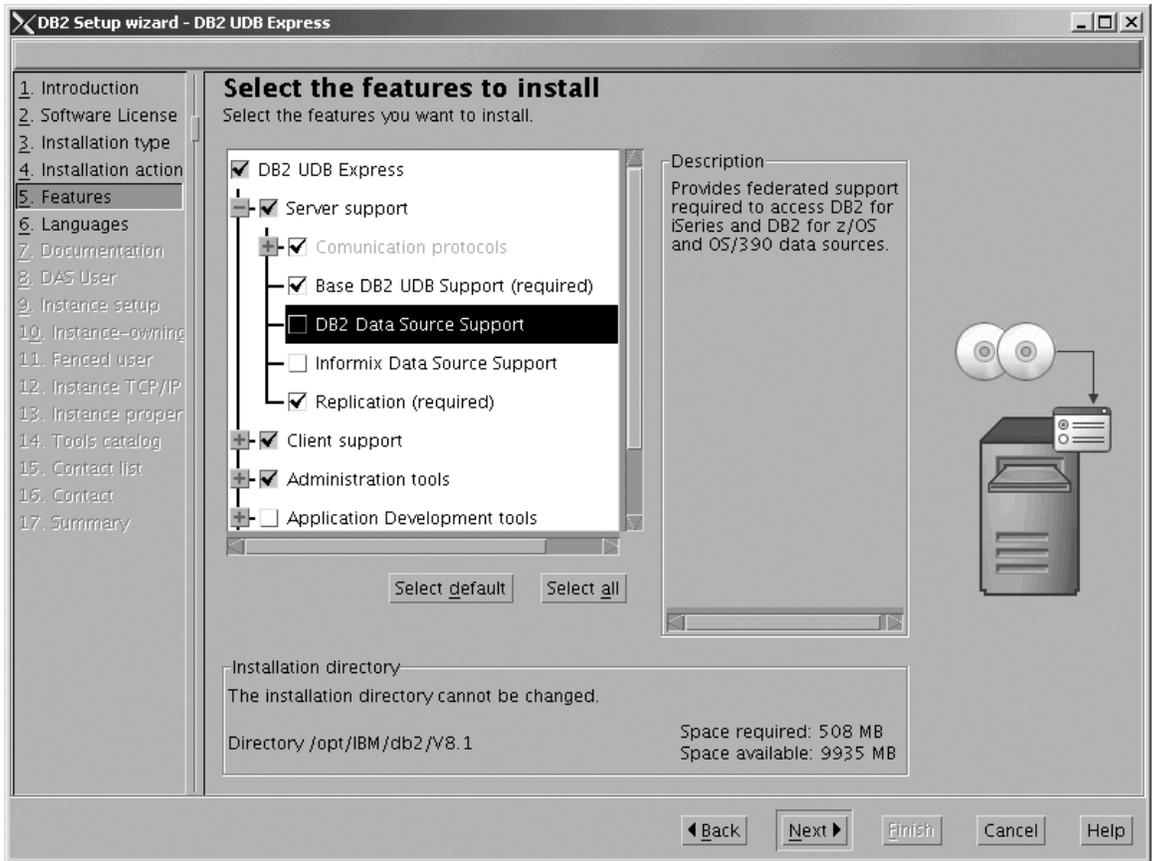


Figure 33. DB2 Setup wizard - Select the features to install page; DB2 Data Source Support option deselected for installation

- b. Open the + beside **Client support**, then select the check box beside **DB2 LDAP Support**. This action prevents the **DB2 LDAP Support** option from being installed.

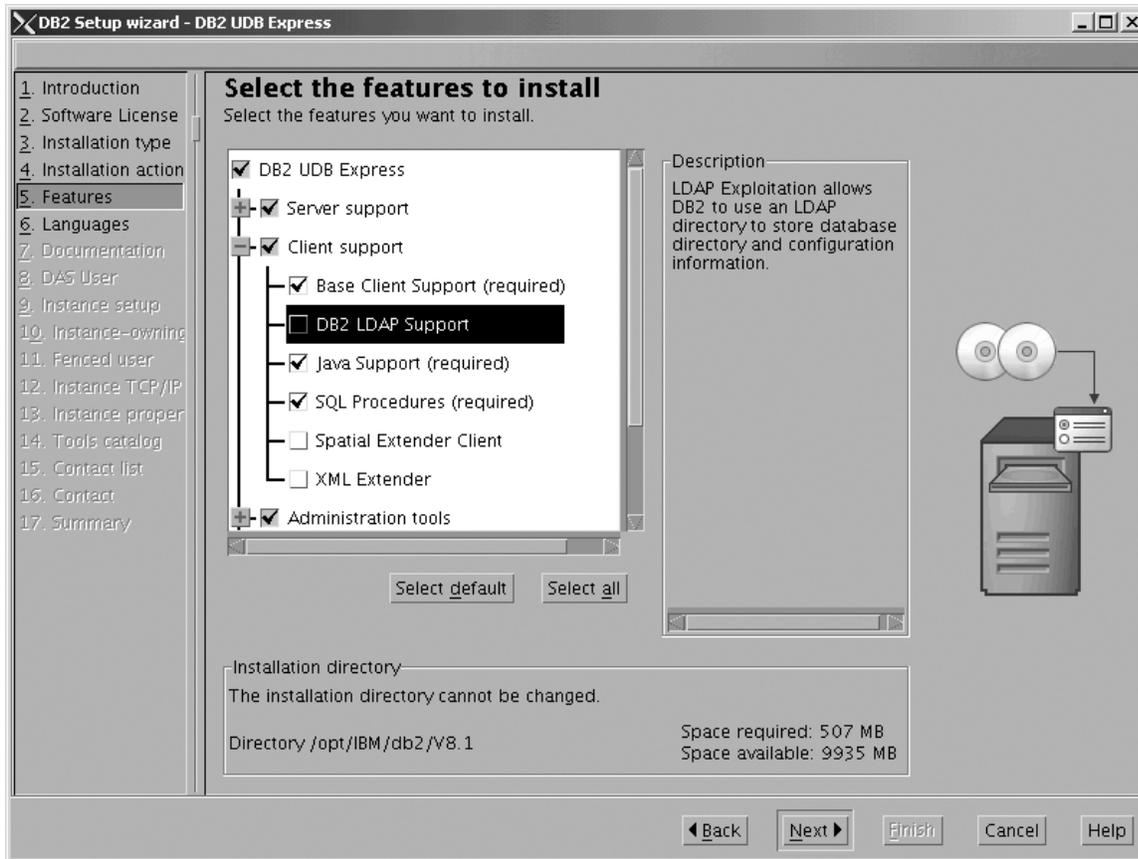


Figure 34. DB2 Setup wizard - Select the features to install page; DB2 LDAP Support option deselected for installation

- c. Open the + beside **Administration tools**, then deselect all the checked options to remove them from the list of options being installed. Note that you must deselect the **Configuration Assistant** option last.

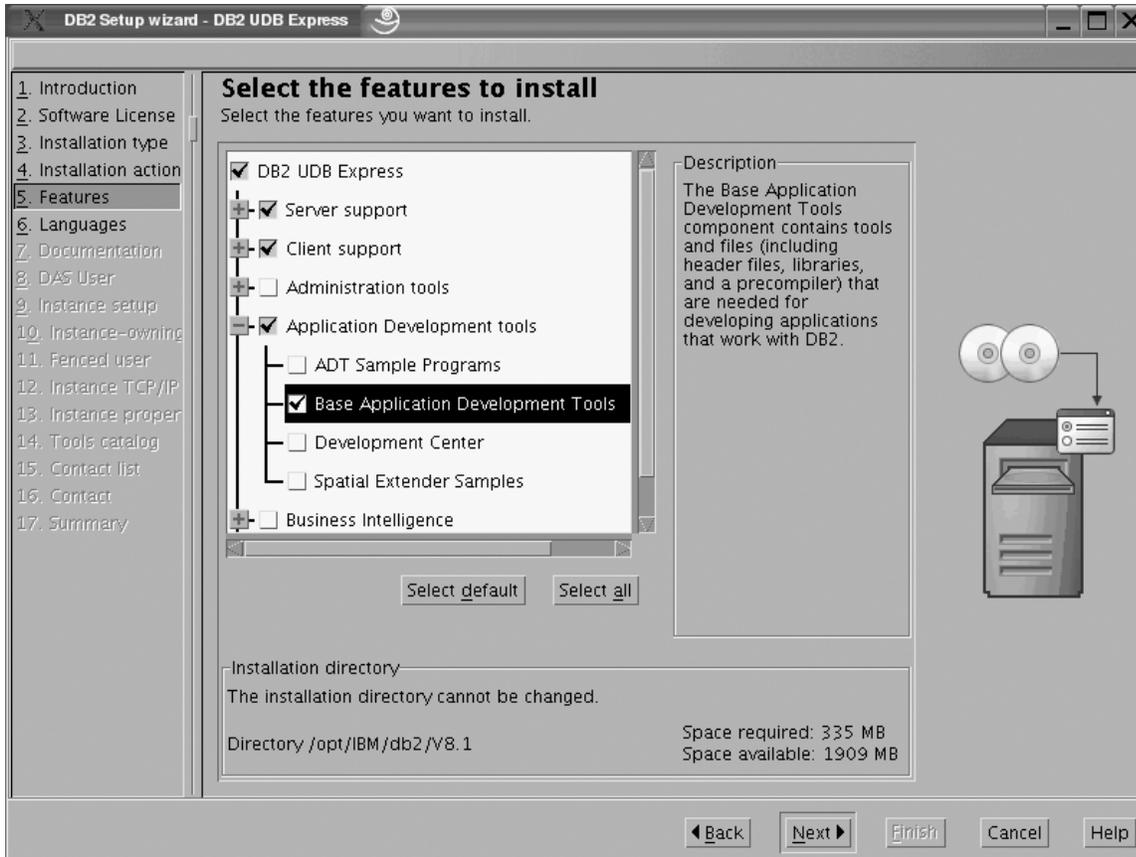


Figure 36. DB2 Setup wizard - Select the features to install page; Base Application Development Tools option selected for installation

- e. Open the + beside **Getting started**, then deselect the **First Steps** option so that this option does not get installed.

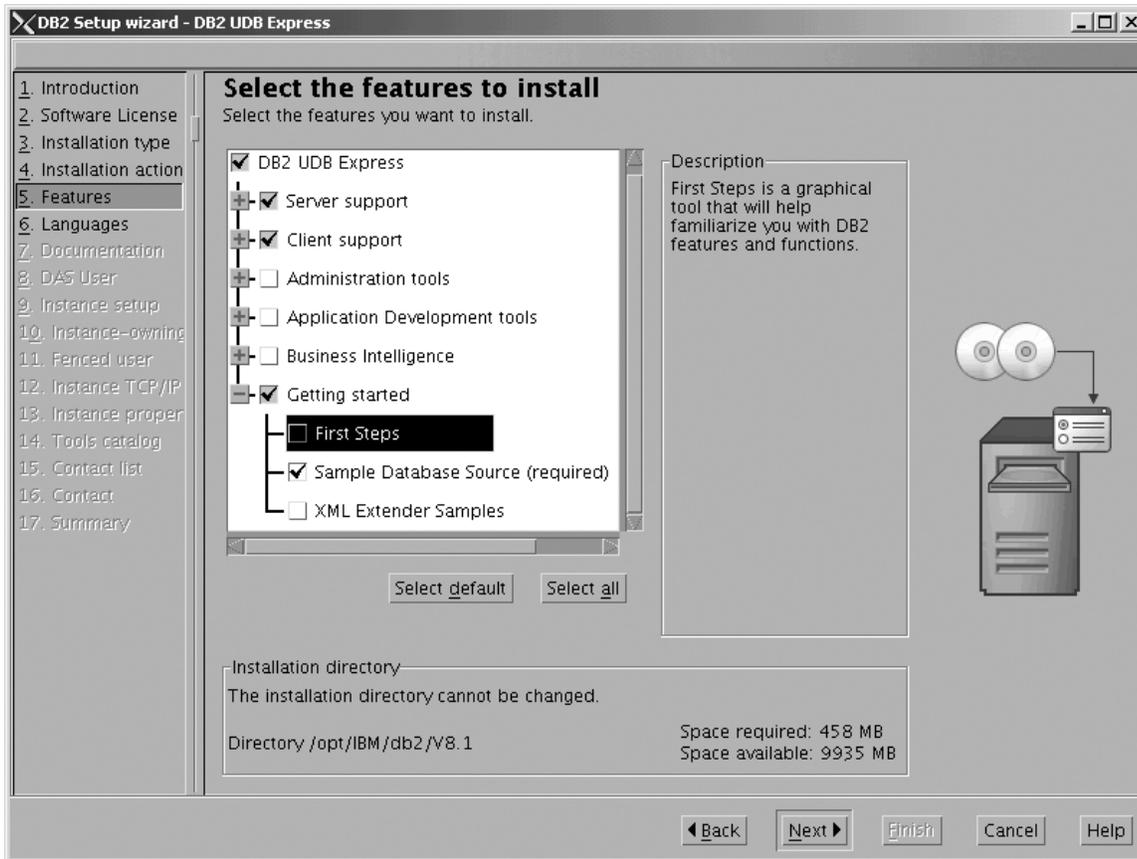


Figure 37. DB2 Setup wizard - Select the features to install page; First Steps option deselected for installation

- f. Click **Next**. The "Languages" page opens.
7. On the "Languages" page, English is the only language support that is installed by default.

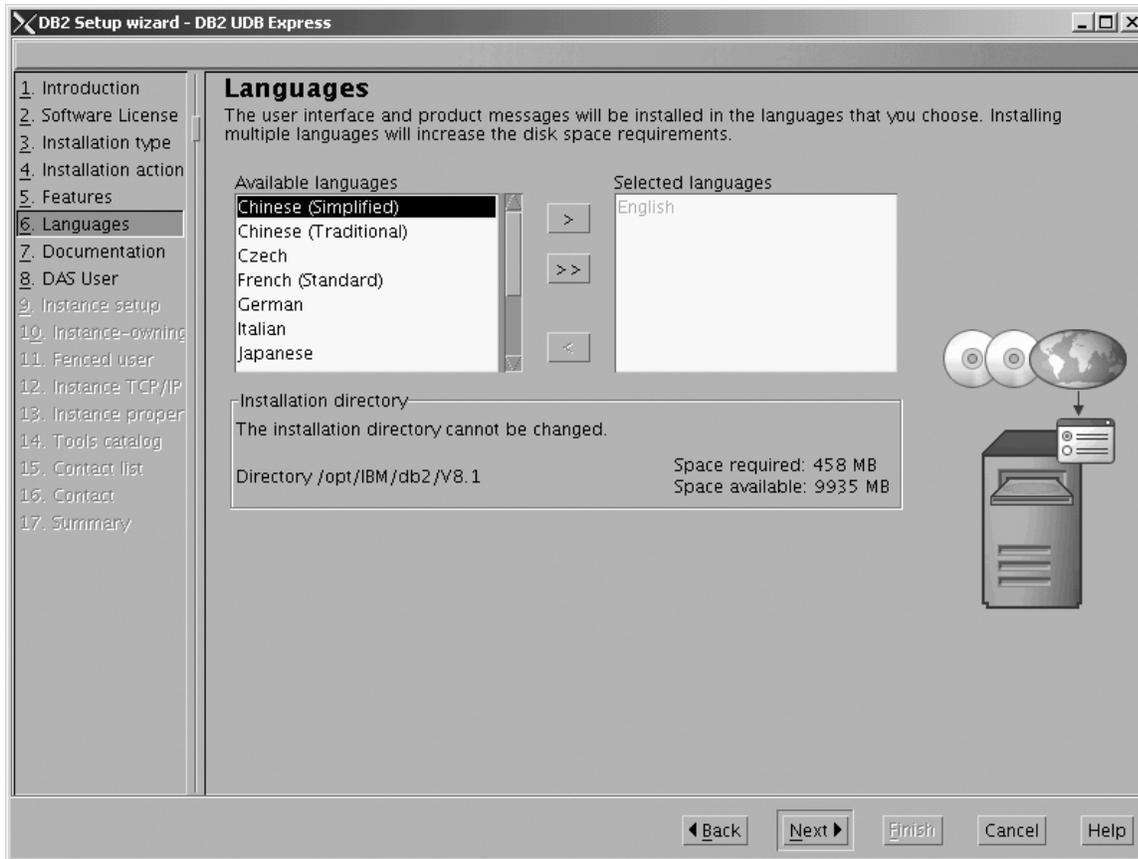


Figure 38. DB2 Setup wizard - Languages page; English language support selected for installation

Do one of the following:

- If you do not need to install any languages other than English, click **Next**. The Specify the location of the DB2 Information Center page opens.
 - If you need to install language support other than English, select the language you want from the **Available languages** box, and click > to move it to the **Selected languages** box. Repeat this procedure for every language that you need to install. When you have selected all the languages that you require, click **Next**. The Specify the location of the DB2 Information Center page opens.
8. On the "Specify the location of the DB2 Information Center" page:
- a. Ensure that the **On the IBM Web site** radio button is selected.

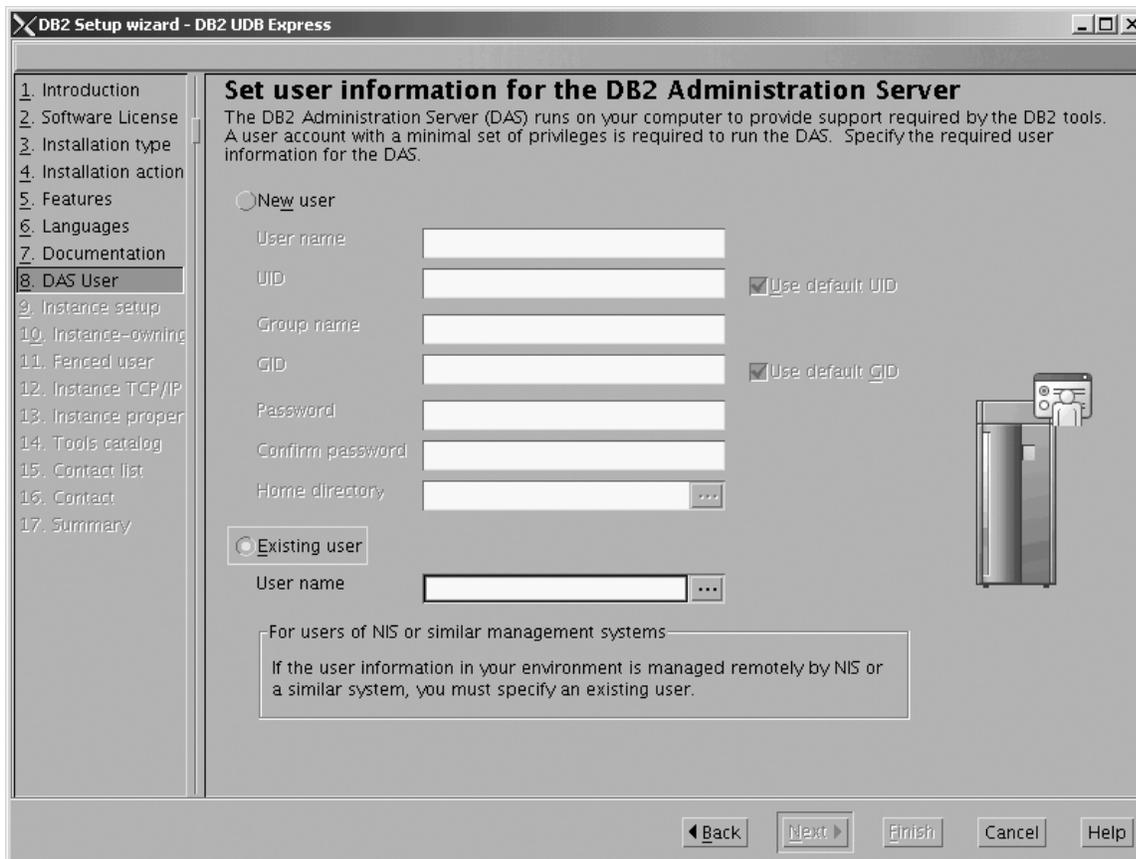


Figure 40. DB2 Setup wizard - Set user information for the DB2 Administration Server page

- c. Click **Next**. The "Set up a DB2 instance" page opens.
10. On the "Set up a DB2 instance" page:
 - a. Select the **Create a DB2 instance** radio button.

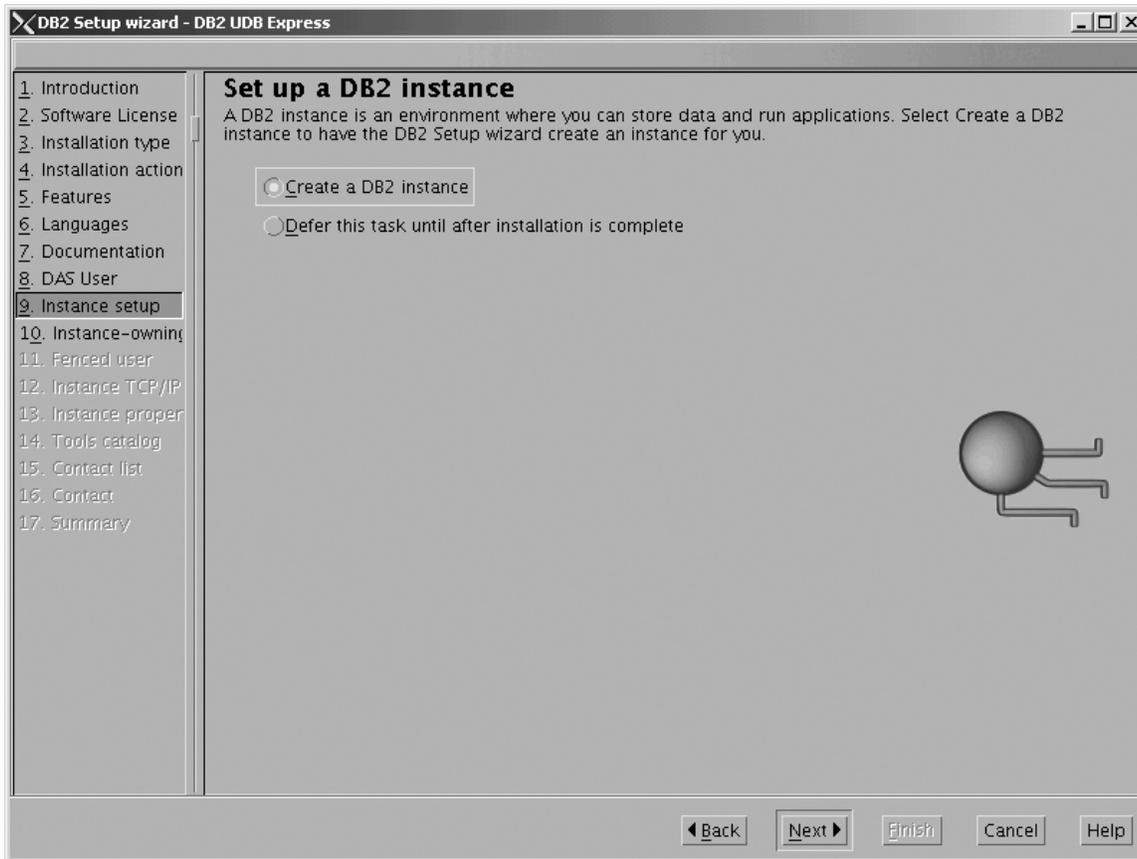


Figure 41. DB2 Setup wizard - Set up a DB2 instance page; Create a DB2 instance selected

- b. Click **Next**. The "Set user information for the DB2 instance owner" page opens.
11. On the "Set user information for the DB2 instance owner" page:
 - a. Select the **Existing user** radio button.
 - b. Use the ... of the **User name** field to select the user that you want.

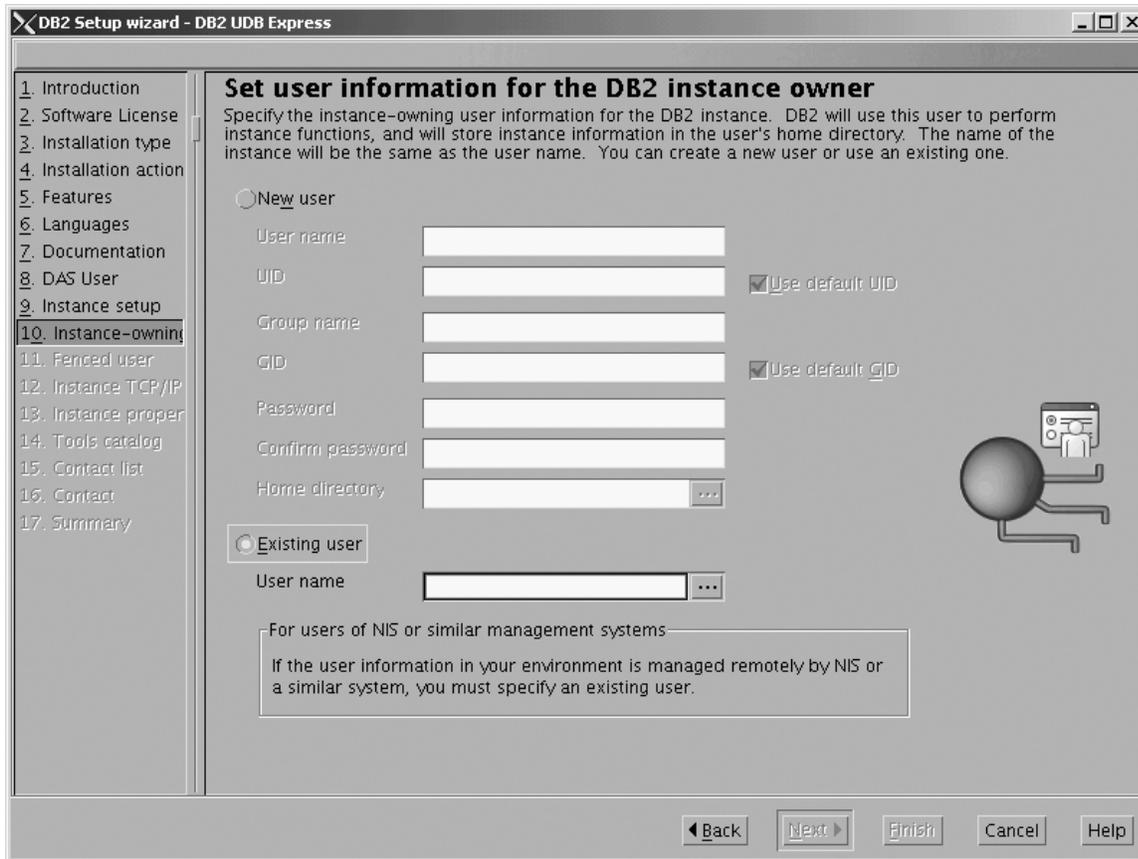


Figure 42. DB2 Setup wizard - Set user information for the DB2 instance owner page

- c. Click **Next**. The "Set user information for the fenced user" page opens.
12. On the "Set user information for the fenced user" page:
 - a. Select the **Existing user** radio button.
 - b. Use the ... of the **User name** field to select the user that you want.

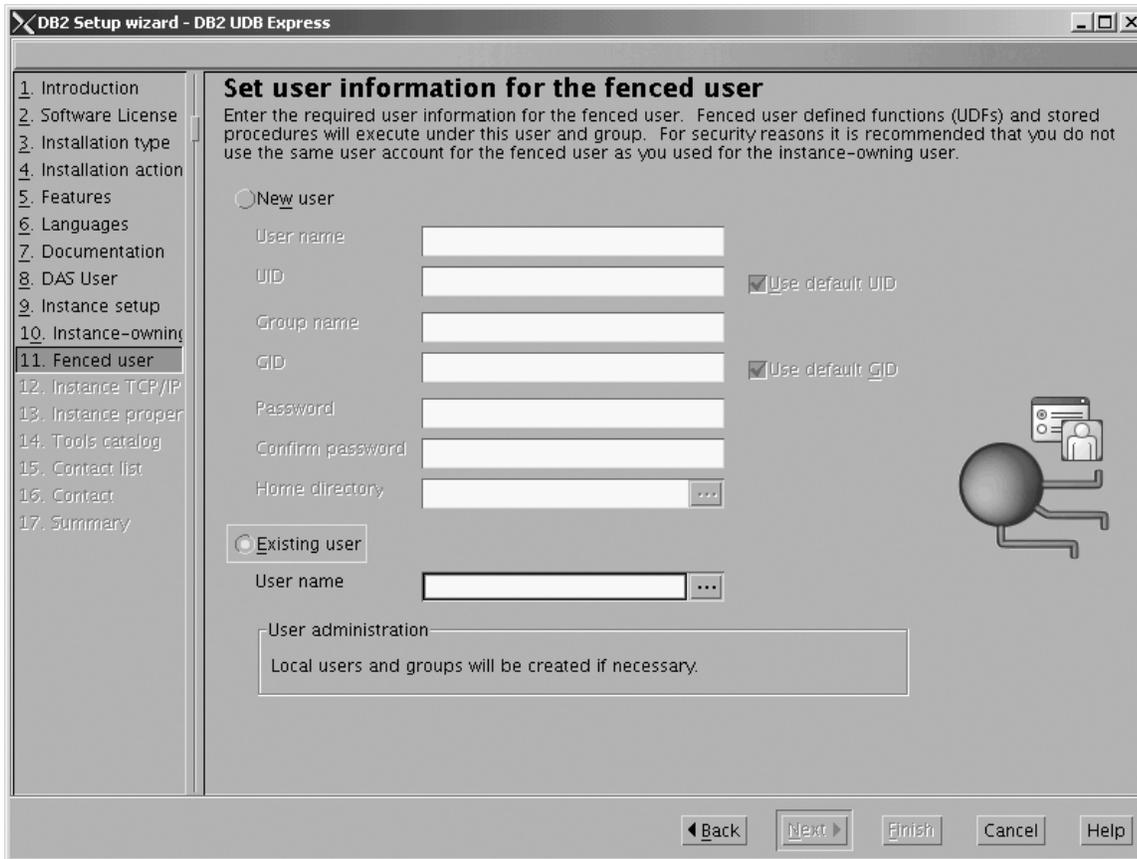


Figure 43. DB2 Setup wizard - Set user information for the fenced user page

- c. Click **Next**. The "Configure DB2 instance TCP/IP communication" page opens.
13. On the "Configure DB2 instance TCP/IP communication" page:
 - a. Select the **Configure** radio button.

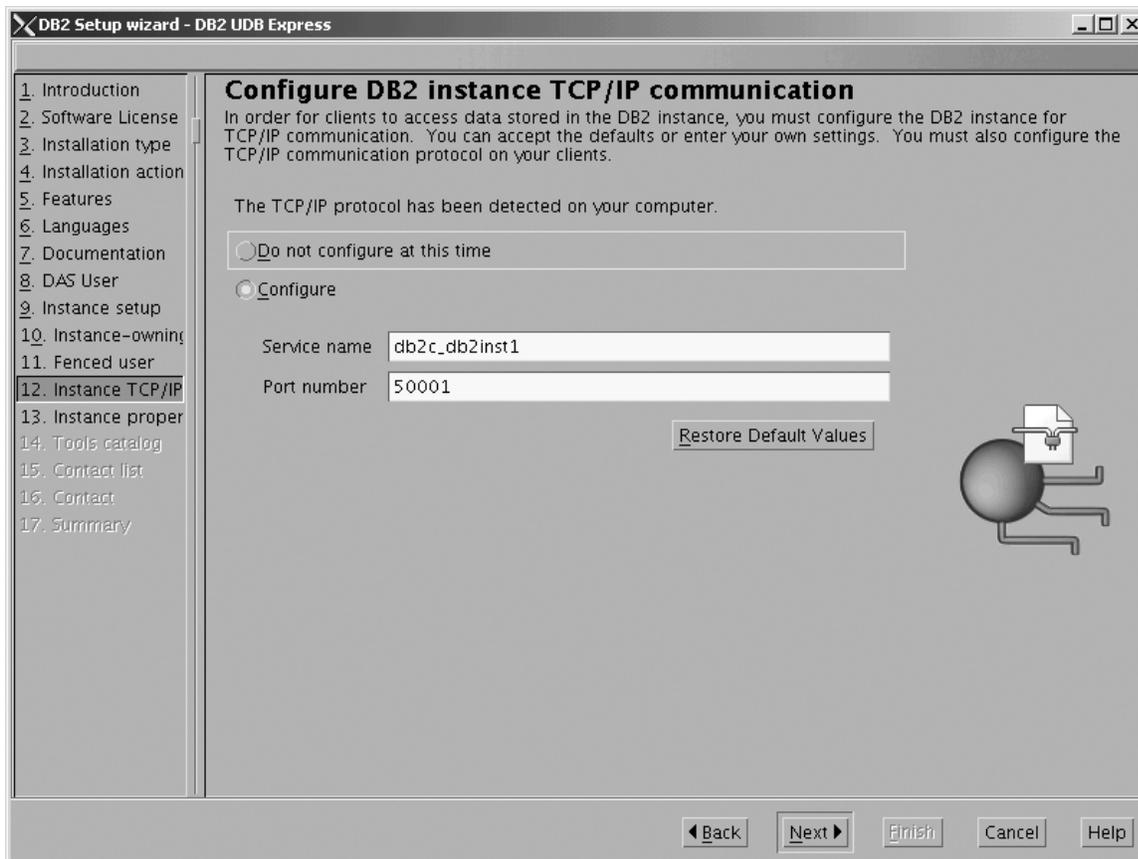


Figure 44. DB2 Setup wizard - Configure DB2 instance TCP/IP communication page

- b. Click **Next**. The "Set instance properties" page opens.
14. On the Set instance properties page:
 - a. Deselect the **Autostart the instance at system startup** check box.

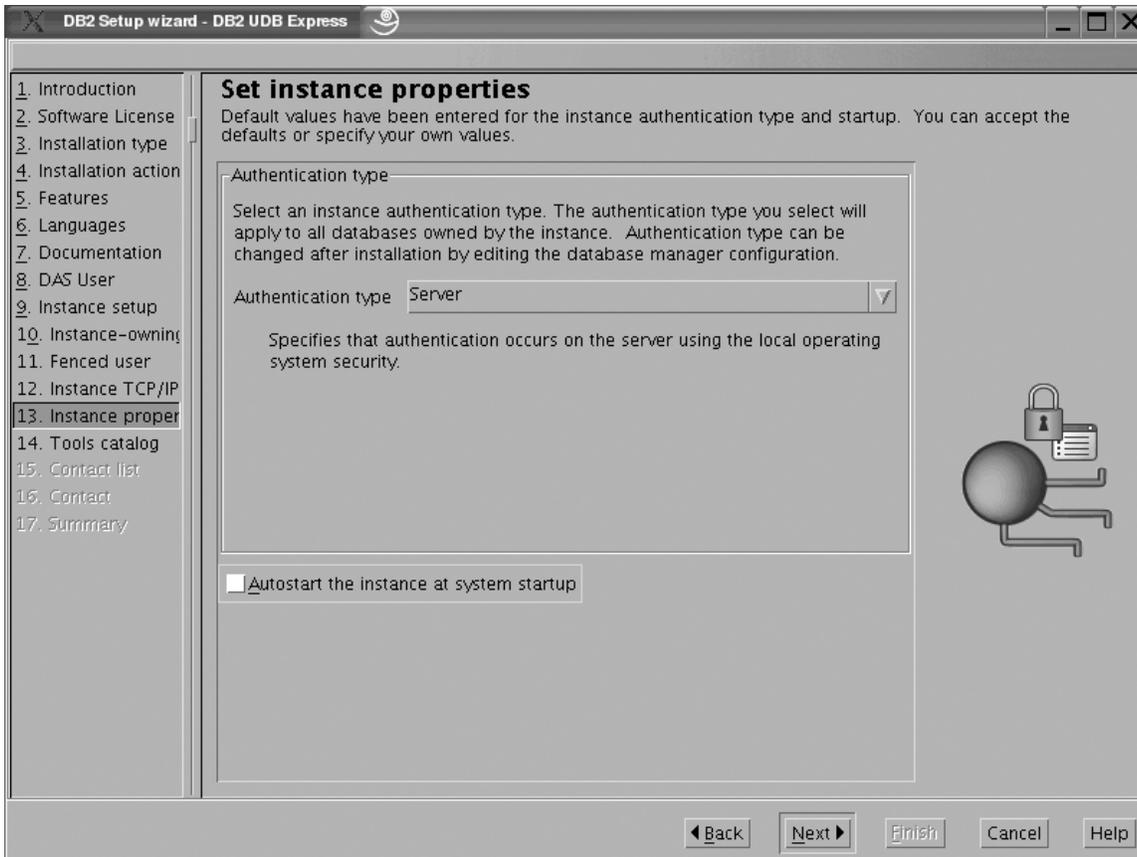


Figure 45. DB2 Setup wizard - Set instance properties page

- l
 - b. Click **Next**. The "Prepare the DB2 tools catalog page" opens.
- 15. On the "Prepare the DB2 tools catalog" page:
 - a. Select the **Do not prepare the DB2 tools catalog on this computer** radio button.

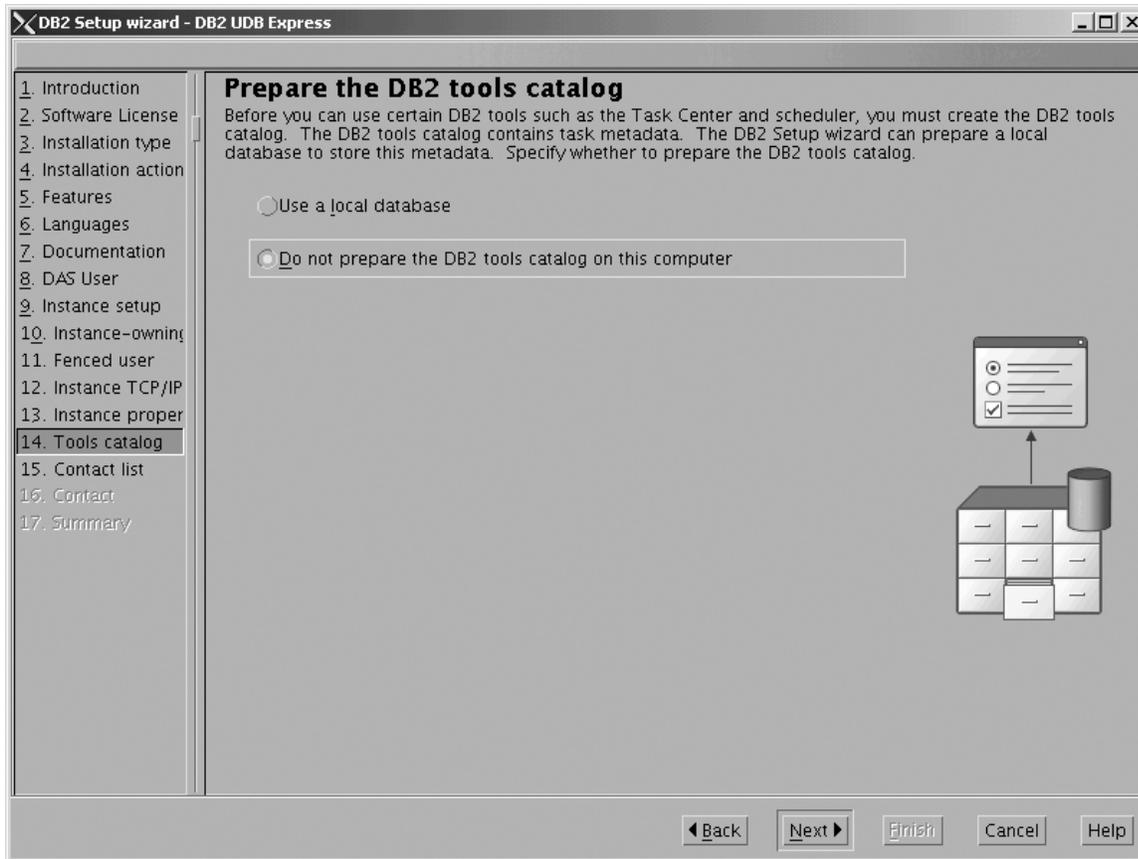


Figure 46. DB2 Setup wizard - Prepare the DB2 tools catalog page

- b. Click **Next**. The "Set up the administration contact list" page opens.
16. On the "Set up the administration contact list" page:
 - a. Select the **Local - Create a contact list on this system** radio button.
 - b. Ensure that the **Enable notification** check box is deselected.

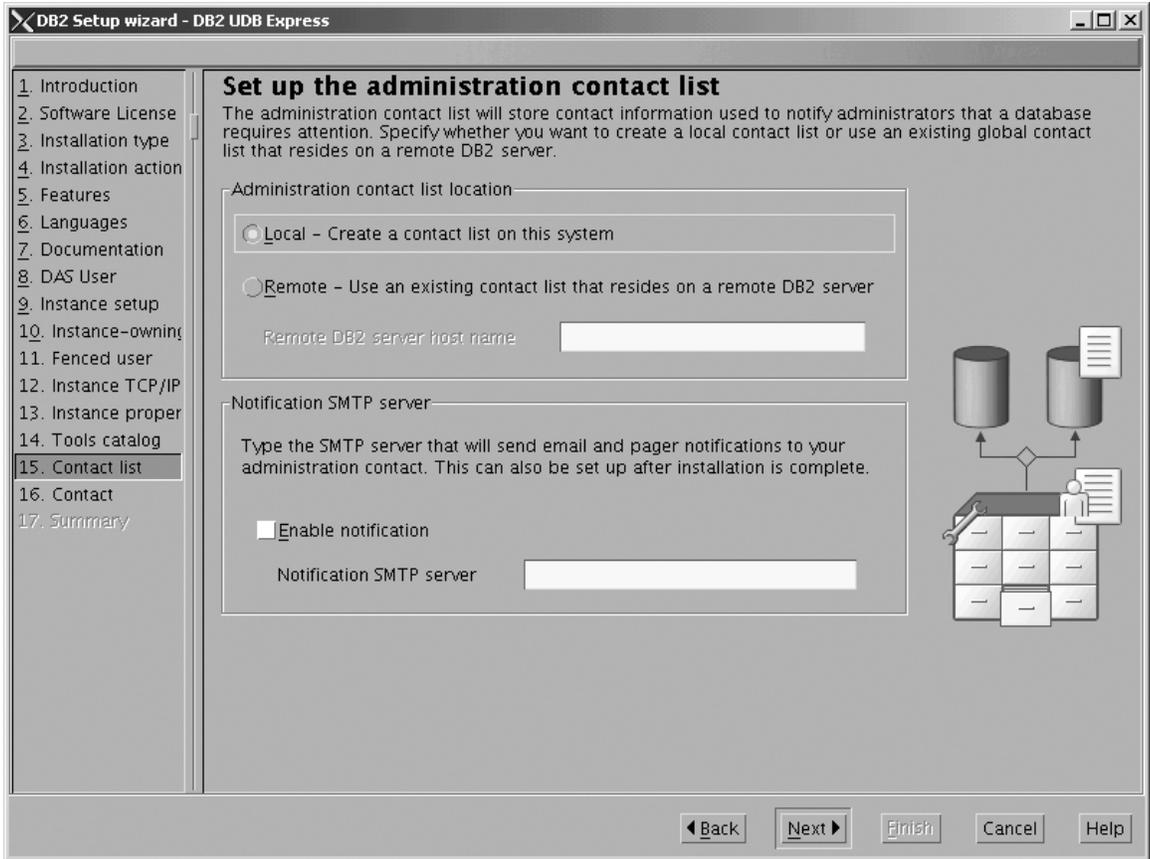


Figure 47. DB2 Setup wizard - Set up the administration contact list page

- c. Click **Next**. Because the **Enable notification** check box was not selected on the "Set up the administration contact list" page, the following warning message is displayed:



Figure 48. DB2 Setup wizard - Warning message

Click **OK**. The "Specify a contact for health monitor notification" page opens.

17. On the "Specify a contact for health monitor notification" page:
 - a. Select the **Defer this task until after installation is complete** radio button.

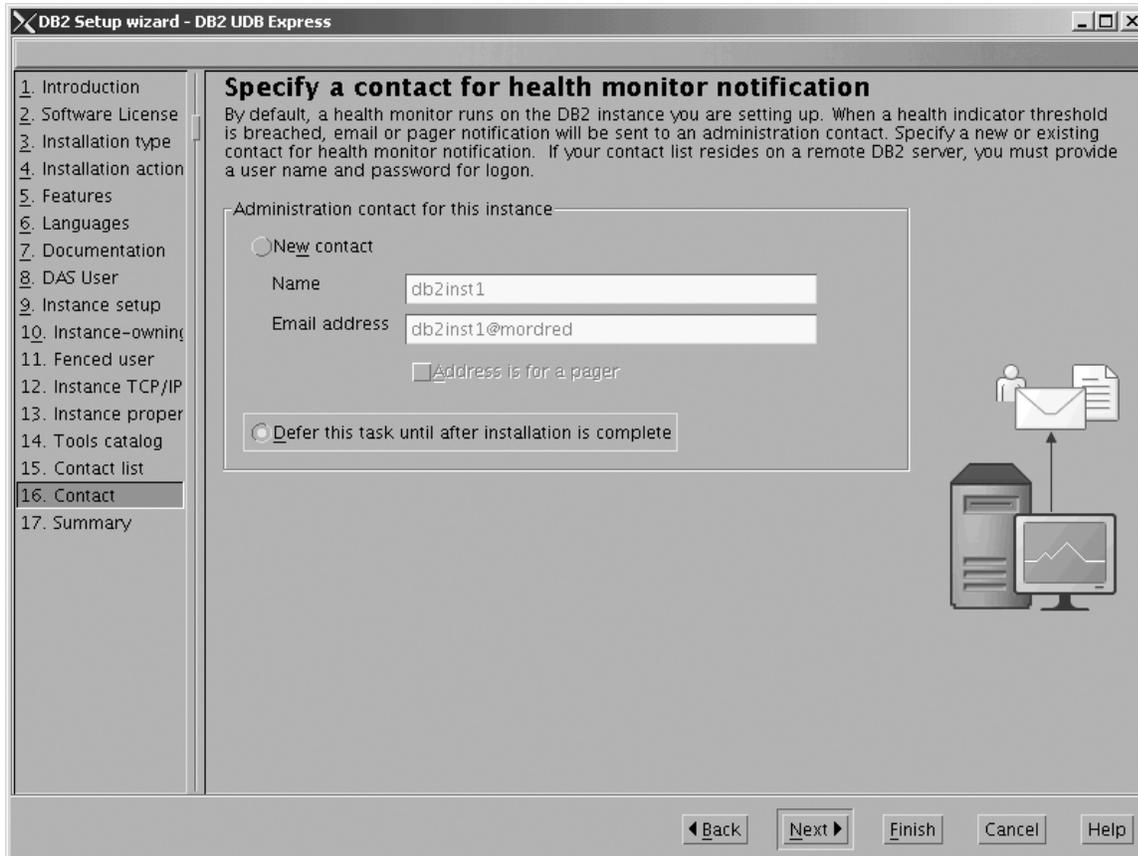


Figure 49. DB2 Setup wizard - Specify a contact for health monitor notification page

- b. Click **Next**. The "Start copying files" page opens.
18. On the "Start copying files" page, click **Finish** to begin installing DB2 UDB Express Edition on your computer.

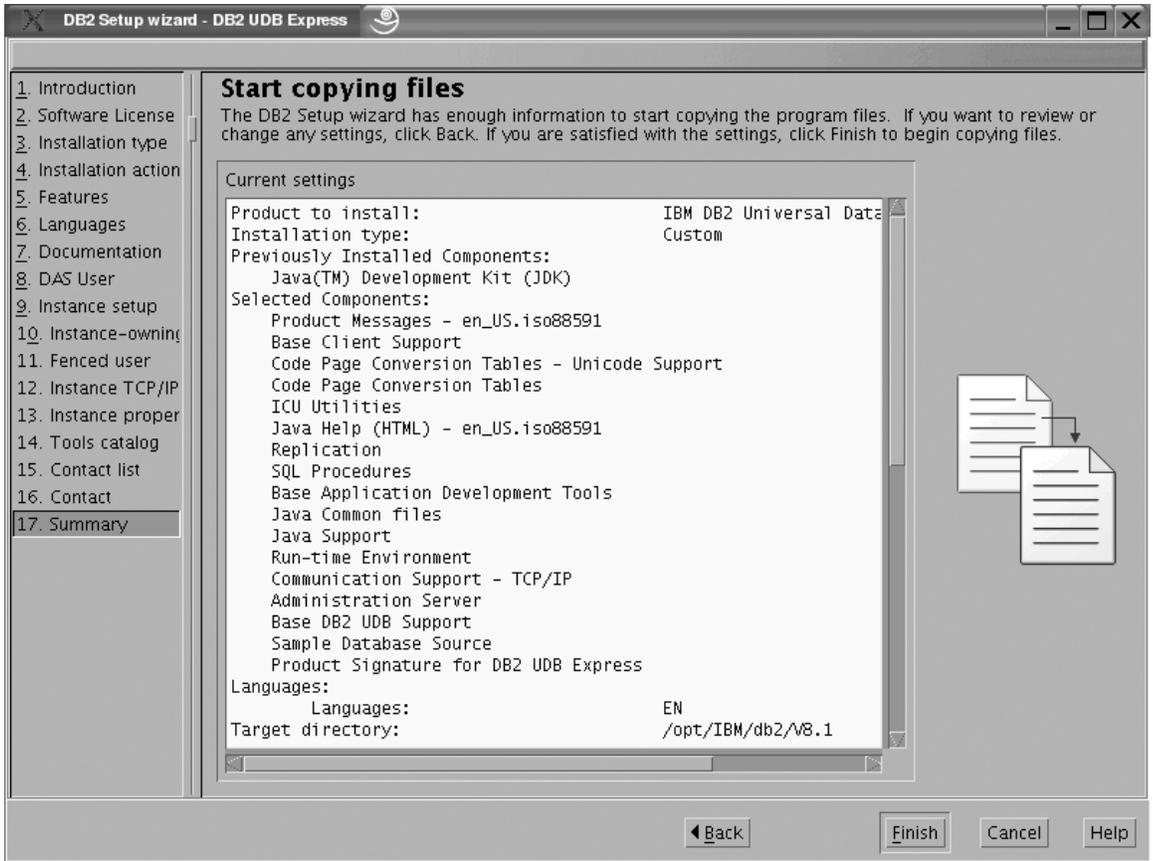


Figure 50. DB2 Setup wizard - Start copying files page

| The "Installing DB2 UDB Express" page opens.
|

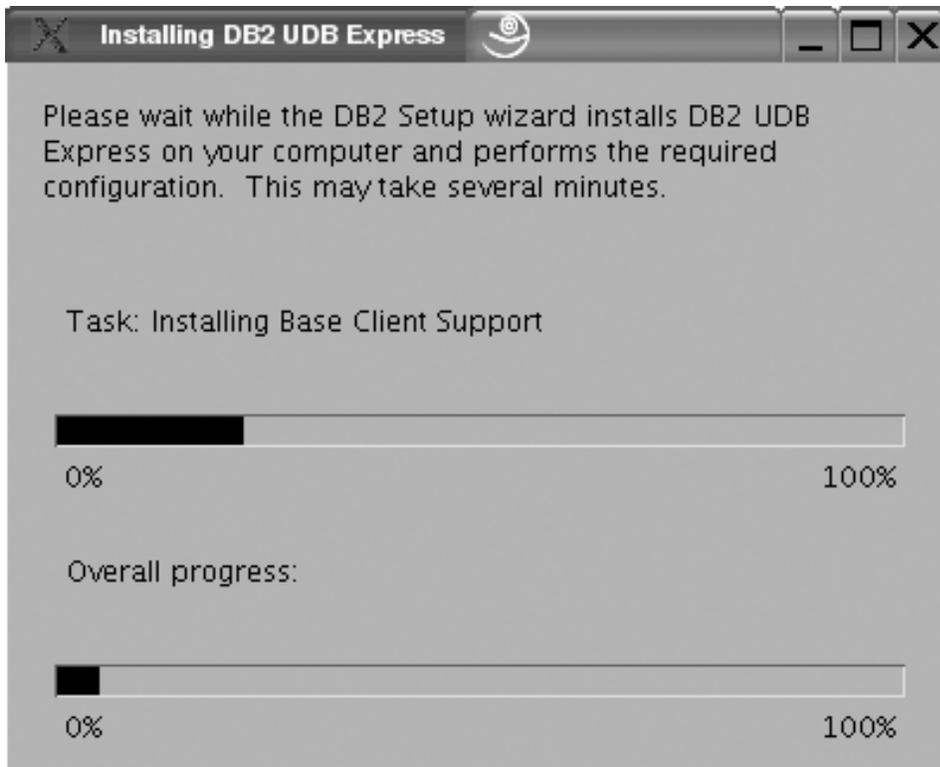


Figure 51. DB2 Setup wizard - Installing DB2 UDB Express page

When the installation completes, the "Setup is complete" page opens.

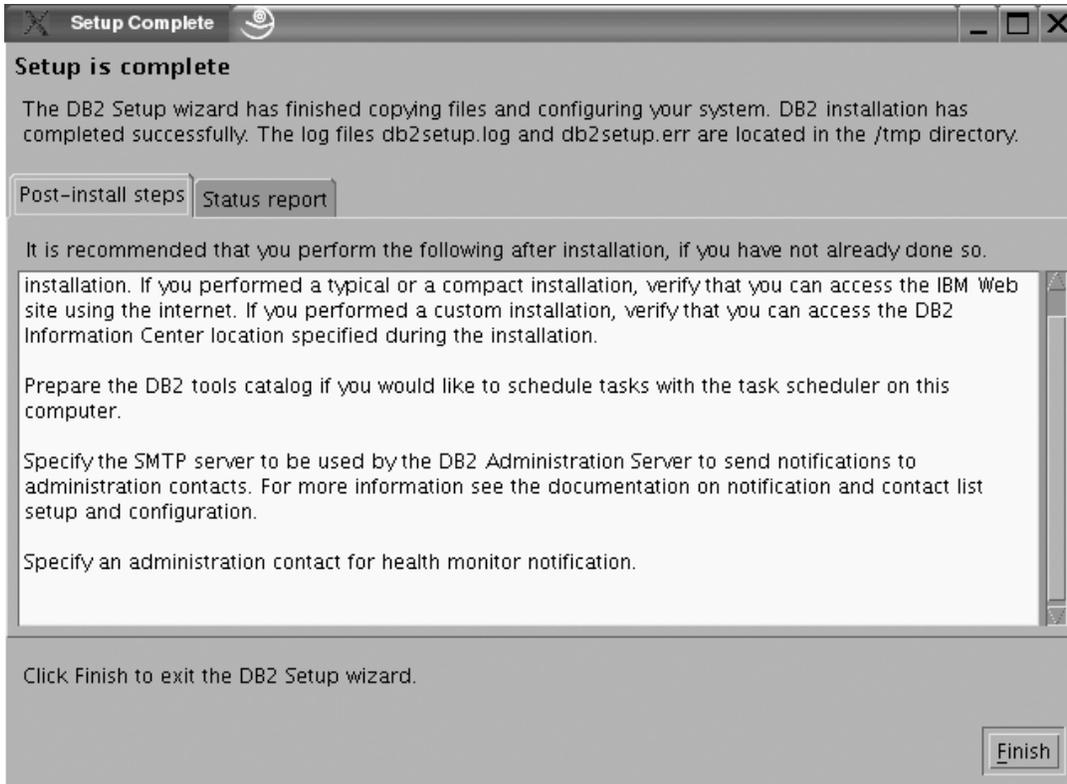


Figure 52. DB2 Setup wizard - Setup complete page

Click **Finish** to exit from the "DB2 Setup wizard".

After DB2 Enterprise Server Edition is installed, see the topic on configuring DB2 to be Common Criteria compliant in the *DB2 Universal Database Common Criteria Certification: Administration and User Documentation* book.

Postinstallation tasks

Verifying the installation using the command line processor (CLP)

You can verify the installation by creating a sample database and running SQL commands to retrieve sample data.

Prerequisites:

- The sample database component must be installed on your system and is included in a typical installation.
- You require a user with SYSADM authority.

Procedure:

To verify the installation:

1. Log on to the system as a user with SYSADM authority.
2. Start the database manager by entering the `db2start` command.
3. Enter the `db2samp1` command to create the SAMPLE database.

This command may take a few minutes to process. There is no completion message; when the command prompt returns, the process is complete.

The SAMPLE database is automatically cataloged with the database alias SAMPLE when it is created.

4. Enter the following DB2 commands from a DB2 command window to connect to the SAMPLE database, retrieve a list of all the employees that work in department 20, and reset the database connection:

```
db2 connect to sample
db2 "select * from staff where dept = 20"
db2 connect reset
```

After you have verified the installation, you can remove the SAMPLE database to free up disk space. Enter the `db2 drop database sample` command to drop the SAMPLE database.

Related tasks:

- “Verifying the installation of DB2 servers using First Steps” in the *Quick Beginnings for DB2 Servers*

Part 3. Basic administration and maintenance operations

Chapter 6. After you've installed DB2 UDB Express

Creating your own database

Now that you have installed DB2 UDB Express and verified its successful installation with the SAMPLE database, you are ready to create your own database. The following sections will guide you through the steps of creating a new database that will take advantage of DB2 automatic maintenance features.

Databases

A relational database presents data as a collection of tables. A table consists of a defined set of columns and any number of rows. The data in each table is logically related, and relationships can be defined between tables. Data can be viewed and manipulated based on mathematical principles and operations called relations (such as, INSERT, SELECT, and UPDATE).

A database is self-describing in that it contains, in addition to data, a description of its own structure. It includes a set of system catalog tables, which describe the logical and physical structure of the data; a configuration file, which contains the parameter values associated with the database; and a recovery log, which records ongoing transactions and transactions that can be archived.

Databases can be local or remote. A local database is physically located on the workstation in use, while a database on another machine is considered remote.

You can:

- Create a database using the Control Center
- Add a database using the Control Center or Configuration Assistant
- Drop a database from the Control Center
- Backup a database using the Control Center
- Restore a database using the Control Center
- Configure a database using the Control Center
- Connect to a database using the Control Center
- Monitor a database with the event monitor.
- Monitor database health with the Health Center

Related concepts:

- "Configuration Assistant" on page 113
- "Control Center" on page 94
- "Health Center" on page 105
- "Configuration parameter" in the *Guide to GUI Tools for Administration and Development*
- "Catalogs" in the *Guide to GUI Tools for Administration and Development*

Creating your own database using the Create Database with Automatic Maintenance wizard

The Create Database with Automatic Maintenance wizard is the quickest way to set up your own database. Based on basic information that you provide, the wizard:

- creates a new database on the disk or directory of your choice
- assigns disk space for your data
- configures the new database for optimal performance
- turns on automatic maintenance
- configures notification by e-mail or pager if the database needs attention

The Create Database with Automatic Maintenance wizard can be started from First Steps or directly from within the Control Center.

Prerequisites:

- If you wish to start the wizard from First Steps, you must also have the First Steps component installed. First Steps is part of the Getting started component grouping in the DB2 Setup wizard. It is installed as part of a Typical installation or may be selected when performing a Custom installation.
- You must have SYSADM or SYSCTRL authority to perform this task.
- For Linux, you must have Xwindow software capable of rendering a graphical user interface for First Steps and the Control Center to run on your machine. Ensure that you have properly exported your display. For example, export `DISPLAY=9.26.163.144:0`.
- On Linux, ensure that you are logged on as the instance owner.

Procedure:

1. Log on to the system with the user account that you want to use to create the database.
2. Start the Create Database with Automatic Maintenance in the one of the following ways:
 - From First Steps: Click on the button marked **Create Your Own Database**
 - From the Control Center: Click on the **All Databases** folder. Click on **Create New Database** in the **All Databases** pane.
3. Follow the steps of the wizard. You will have to provide some details and preferences about your new database, including such things as its name and the contacts who can be notified under various conditions. You will also select one of two database maintenance strategies.

If you created your own database from First Steps, you will now want to start the Control Center to begin exploring and working with your database. To do this, click on the button marked **Work With Databases** in First Steps.

Reviewing your new database

Once you have launched the Control Center, you can verify that your database was created by finding it in the Object Tree that fills the left side of the Control Center window.

Figure 53. Control Center with a database selected

Expand the Object Tree until you can see your database and select it. The right side of the Control Center will fill with details about the database's current operation and links to relevant actions. These object details, and the way that they work for other objects, are covered in the section of this book devoted to the Control Center.

When you created your database with the Create Database with Automatic Maintenance, you enabled certain Automatic maintenance features. The features are set up and do not necessarily require any further attention. You may, however, find it useful to know where their settings can be found and further configured.

There are automatic maintenance-related tools available. The first of these is the Automatic Maintenance wizard, which you can start by clicking on the **Maintenance** link in the Object Details Pane (see the above screenshot). As the wizard's name suggests, it will allow you to change the way in which automatic maintenance is carried out for your database.

The second is the Configuration Advisor. It can be started by right clicking on the database to be configured, and selecting **Configuration Advisor**. This tool will help you easily configure your database for optimal performance.

The third and last of these tools is the Health Center. You can launch it by clicking on **Monitor DB Health** in the Object Details Pane or by selecting **Health Center** from the **Tools** menu. Under normal circumstances, you should never have to look at the Health Center. If the health of your database needs attention, you will be notified by e-mail. You can then find out more about what needs attention.

DB2 GUI tools

This chapter describes the DB2 GUI tools. It explains what each tool is used for and why you might want to use it. It tells you how to invoke a tool and presents basic usage information.

You can select the following tools from the toolbar:

- "Control Center" on page 94
- "Replication Center" on page 99
- "Satellite Administration Center" on page 100
- "Data Warehouse Center" on page 101
- "Command Center" on page 102
- "Task Center" on page 103
- "Information Catalog Center" on page 104
- "Health Center" on page 105
- "Journal" on page 106
-
- "Development Center" on page 108
- "Information Center" on page 109

You can invoke the following tools from within another tool:

- "Memory Visualizer" on page 109
- "Spatial Extender" on page 110
- "SQL Assist" on page 111
- "Visual Explain" on page 111

You can invoke the following tools by entering a command or (on a Windows system) selecting a menu choice:

- "Configuration Assistant" on page 113
- "Indoubt Transaction Manager" on page 114

You can invoke the following tools from a browser:

- “Web Command Center” on page 115
- “Web Health Center” on page 116

Control Center

You can start the Control Center in the following ways:

- Select Control Center from the Tools menu of another tool.
- Click the icon from the toolbar of another tool.
- Enter the db2cc command.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **General Administration Tools** —> **Control Center**.
- On Linux systems, open the **IBM DB2** folder on the desktop and select **Control Center**.

Use the Control Center to manage systems, DB2® Universal Database instances, DB2 Universal Database™ for OS/390® and z/OS™ subsystems, databases, and database objects such as tables and views.

Figure 54. Control Center window

In the Control Center, you can administer all of your systems, instances, databases, and database objects. From the Control Center, you can also open other centers and tools to help you optimize queries, jobs, and scripts; perform data warehousing tasks; create stored procedures; and work with DB2 commands.

The following are some of the key tasks that you can perform with the Control Center:

- Add DB2 systems, federated systems, DB2 for z/OS and OS/390 systems, instances, databases, and database objects to the object tree.
- Manage database objects. You can create, alter, and drop databases, table spaces, tables, views, indexes, triggers, and schemas. You can also manage users.
- Manage data. You can load, import, export, and reorganize data. You can also gather statistics.
- Perform preventive maintenance by backing up and restoring databases or table spaces.
- Configure and tune instances and databases.
- Manage database connections, such as DB2 Connect™ servers and subsystems.
- Manage DB2 for z/OS and OS/390 subsystems
- Manage applications.
- Analyze queries using Visual Explain to look at access plans.
- Launch other tools such as the Command Center and the Health Center.

In many cases, wizards and launchpads are available to help you perform these tasks more quickly and easily.

Note: To schedule tasks through the Control Center, you must first create a tools catalog. If you did not create a tools catalog when you installed DB2, you can select **Tools** —> **Tools Settings** —> **Scheduler Settings** and create one now.

Tool invocation

You can invoke the following tools by selecting their icon on the toolbar:

- . Control Center
- . Replication Center
- . Satellite Administration Center
- . Data Warehouse Center (with the Data Warehousing option)
- . Command Center
- . Task Center
- . Information Catalog Center (with the Data Warehousing option)
- . Health Center
- . Journal
- . License Center
- . Development Center
- . Information Center

To start the Visual Explain tool, right-click a database name and select either **Show Explained Statements History** or **Explain SQL**.

To start the Memory Visualizer, right-click an instance and select **View Memory Usage**.

Storage Management view

To use the Storage Management view, right-click a database, database partition group, or table space and select **Manage Storage**.

Use the Storage Management view to monitor the storage state of a database. The Storage Management view is the graphical interface to the Storage Management tables and stored procedures. In the Storage Management view, you can take storage snapshots for a database, a database partition group, or a table space.

When a table space snapshot is taken, statistical information is collected from the system catalogs and database monitor for tables, indexes, and containers defined under the scope of the given table space. When a database or database partition group snapshot is taken, statistical information is collected for all the table spaces defined in the given database or database partition group. When a database snapshot is taken, statistical information is collected for all the database partition groups within the database.

Different types of storage snapshots can be used to help you monitor different aspects of storage:

- Space usage can be monitored through snapshots of table spaces.
- On partitioned databases only, data skew (database distribution) can be monitored best through snapshots of database partition groups.
- Cluster ratio of indexes can be captured through both database partition group snapshots and table space snapshots.

The cluster ratio of indexes is presented through the detail view of the index folder. The Storage Management view also enables you to set thresholds for data skew, space usage, and index cluster ratio. If a target object exceeds a specified

threshold, the icons beside the object and its parent object in the Storage Management view are marked with a warning flag or an alarm flag.

Which objects you can administer

In the Control Center, you can administer many DB2 objects, including:

- Systems
- Instances
- Databases
- Table spaces
- Tables
- Views
- Indexes
- Schemas
- Triggers
- Stored procedures
- User-defined types
- User-defined functions
- User-defined methods
- Packages
- Aliases
- Event monitors
- Buffer pools
- Users and groups

To see which actions you can perform on an object, select the object and click the right mouse button. A pop-up menu lists the available actions.

Related concepts:

- “Command Center” on page 102
- “Data Warehouse Center” on page 101
- “Health Center” on page 105
- “Development Center” on page 108
- “Information Center” on page 109
- “Journal” on page 106
- “License Center” in the *Guide to GUI Tools for Administration and Development*
- “Memory Visualizer” on page 109
- “Replication Center” on page 99
- “Task Center” on page 103
- “Visual Explain” on page 111
- “Federated systems in the Control Center” on page 97
- “z/OS and OS/390 objects in the Control Center” on page 97
- “Satellite Administration Center” on page 100
- “Basic GUI navigation concepts explained” in the *Guide to GUI Tools for Administration and Development*

Related tasks:

- “Backing up a database online for the first time” in the *Guide to GUI Tools for Administration and Development*

Remote object administration in the Control Center

The following sections describe how to administer remote systems through the Control Center:

- “Federated systems in the Control Center”
- “z/OS and OS/390 objects in the Control Center”

Federated systems in the Control Center

Use the Control Center to set up a federated system. You can create the wrappers, supply the server definitions, identify user mappings, and create nicknames for the data source objects.

Figure 55. Components of a federated system

Through the Control Center, you can also:

- Create a remote table on a data source, using transparent DDL
- Add columns to a remote table that was created using transparent DDL
- Show all of the remote tables on a data source, whether they were created using transparent DDL or created natively on the data source.

The following optional tasks are available through the command line processor:

- Create data type mappings
- Create function mappings
- Create index specifications

To add a new data source to your federated system:

1. Connect to the federated DB2® database.
2. Create a wrapper for each data source type that you want to include in your federated system.
3. Create a server definition for each remote data source that you want to access. This defines the data source to the federated system.
4. Create a user mapping between your authorization ID to access the federated database and your authorization ID to access the data source.
5. Create a nickname for each data source object (such as a table or view) at the data source that you want to access through DB2.
6. Query the data source object using DB2 database SQL.

Related concepts:

- “Command Center” on page 102
- “Control Center” on page 94
- “Federated system” in the *Guide to GUI Tools for Administration and Development*

z/OS and OS/390 objects in the Control Center

You can manage the following DB2® Universal Database for OS/390® and z/OS™ objects in the Control Center:

- Aliases
- Application objects (collections, distinct types, packages, plans, procedures, and user-defined functions)
- Buffer pools

- Catalog tables
- Database users
- Databases
- Data sets
- Indexes
- Locations
- Schemas
- Storage groups
- Synonyms
- Table spaces
- Tables
- Triggers
- Utility objects (data set templates, object lists, and utility procedures)
- Views

To add a DB2 for OS/390 and z/OS Version 6 or later subsystem, use either the Configuration Assistant or the command line processor (CLP) to configure a connection. With the Configuration Assistant, you can use the Add Database wizard, add a connection manually, or import a connection by using a profile.

To create a new object, right-click the object folder in the object tree. To see which actions you can perform on a particular object, right-click the object name in the Contents pane. A pop-up menu lists the available actions. For example, you can create, alter, or drop a view, as well as see its contents, modify the privileges on it, and show a list of other objects that are related to it.

You can execute many DB2 for OS/390 and z/OS database commands. For example, these are some of the actions that you can perform on a table space:

- Create
- Drop
- Locate
- Load and unload
- Reorganize
- Recover
- Check data
- Run statistics
- Copy
- Quiesce
- Set privileges

With the Create Cloning Session wizard, you can generate the job control language (JCL) jobs that will homogeneously copy (clone) an entire DB2 for OS/390 and z/OS Version 7 or later subsystem. You then manually submit the cloning jobs for execution.

You can also perform many other tasks, including:

- Start or stop a subsystem
- Generate, edit, and save JCL for common tasks such as reorganizing a table space

- Create and work with user-defined functions and stored procedures
- Update table space statistics

Related concepts:

- “Configuration Assistant” on page 113
- “Control Center” on page 94

Replication Center

You can start the Replication Center in the following ways:

- Select Replication Center from the Tools menu of another tool.
- Click the icon from the toolbar of another tool.
- Enter the db2rc command.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **General Administration Tools** —> **Replication Center**.

Use the Replication Center to administer replication between a DB2® database and another relational database (DB2 or non-DB2). From the Replication Center, you can define replication environments, apply designated changes from one location to another, and synchronize the data in both locations.

Figure 56. Replication Center window

The Replication Center launchpad guides you through some of the basic replication functions.

Figure 57. Replication functions

The following are some of the key tasks that you can perform with the Replication Center:

- Create replication control tables
- Register replication sources
- Create subscription sets
- Operate the Capture program
- Operate the Apply program
- Monitor the replication process
- Perform basic troubleshooting for replication

Related concepts:

- “Replication” in the *Guide to GUI Tools for Administration and Development*

Related tasks:

- “Replicating data” in the *Guide to GUI Tools for Administration and Development*
- “Configuring servers for SQL replication” in the *IBM DB2 Information Integrator SQL Replication Guide and Reference*

Satellite Administration Center

You can start the Satellite Administration Center in the following ways:

- Select Satellite Administration Center from the Tools menu of another tool.
- Click the  icon from the toolbar of another tool.

Use the Satellite Administration Center to set up and administer a group of DB2 servers that perform the same business function. These servers, known as satellites, all run the same application and have the same DB2 configuration (database definition) to support this application.

In the Satellite Administration Center, you create a group and then define the satellites as members of this group. You can administer the group as a single entity, instead of having to administer each satellite separately. If you later acquire additional DB2 servers that will perform the same business function, you can add them to the group as additional satellites. The administration solution provided by the satellite environment is fully scalable.

Information about the satellite environment is stored in the satellite control database (SATCTLDB). This database records, among other things, which satellites are in the environment and which group each satellite belongs to. The DB2 server that contains this database is known as the satellite control server.

You administer a group of satellites by creating batches, using the Satellite Administration Center. The batches contain scripts that set up and maintain the database definition that supports the application on the satellite. Each satellite regularly connects to its satellite control server, and downloads any scripts that apply to it. The satellite executes these scripts locally, and uploads the results back to the satellite control database.

This process of downloading batch scripts, executing them, and reporting the results of the batch execution is known as synchronization. A satellite synchronizes to maintain its consistency with the other satellites that belong to its group.

Although the satellites in a group run the same application, they do not necessarily run the same version of the application. For example, if you are in the process of upgrading to version 4 of your application, you might have some satellites at the version 3 level and some at version 4.

The application version is set on each satellite. When you want to deploy a new version of the application, you create a new set of batches that set up and maintain the new database definition that supports the new version of the application. As you move each satellite over to the new version of the application, you update the application version on the satellite.

When a satellite synchronizes, it uploads its application version. The satellite control server ensures that the satellite can only download and execute the batches that correspond to its application version. This allows you to stage the deployment of a new version of the application. Satellites with the new version of the application will not download and execute the batches of the previous application version, and satellites with the previous version of the application will not download and execute the batches for the new application version. Each satellite will have the database definition that is required to support its version of the application.

Before you can use the Satellite Administration Center, you must do the following:

- Install the satellite control server.
- Create the satellite control database.
- Catalog the satellite control database in the Control Center, if it is not already catalogued.

Note: You should only administer the satellite environment from the Satellite Administration Center.

Related concepts:

- “Satellite control server” in the *Installing and Administering a Satellite Environment*
- “Satellites” in the *Installing and Administering a Satellite Environment*
- “Control Center” on page 94

Data Warehouse Center

If you have installed the Data Warehousing option, you can start the Data Warehouse Center in the following ways:

- Select Data Warehouse Center from the Tools menu of another tool.
- Click the  icon from the toolbar of another tool.
- Enter the db2dwc command.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **Business Intelligence Tools** —> **Data Warehouse Center**.

Use the Data Warehouse Center to automate the extraction and transformation of data for your data warehouse. You can use the Data Warehouse Center to define the processes that move and transform data for the warehouse. You can also use the Data Warehouse Center to schedule, maintain, and monitor these processes.

The following are some of the key tasks that you can perform with the Data Warehouse Center:

- Set up the warehouse
- Create a star schema
- Set up DB2® and non-DB2 data sources
- Set up access to the warehouse
- Define and run processes
- Load and transform data
- Calculate statistics
- Manage metadata and the control database

To learn more about data warehousing, see the following tutorials:

- *Business Intelligence Tutorial: Introduction to the Data Warehouse*
- *Business Intelligence Tutorial: Extended Lessons in Data Warehousing*

Related concepts:

- “What solutions does data warehousing provide?” in the *Data Warehouse Center Administration Guide*
- “DB2 tutorials” in the *Infrastructure Topics (DB2 Common Files)*

Command Center

You can start the Command Center in the following ways:

- Select Command Center from the Tools menu of another tool.
- Click the  icon from the toolbar of another tool.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **Command Line Tools** —> **Command Center**.

Use the Command Center to execute DB2® commands and SQL statements; to execute MVS console commands; to work with command scripts; and to view a graphical representation of the access plan for explained SQL statements.

Figure 58. Command Center window

On the **Interactive** page, you can perform the following actions:

- Execute an SQL statement or DB2 CLP command. You do not need to precede the command by *DB2*.
- Run a command or statement, by clicking the  icon (at the left of the toolbar).

On the **Script** page, you can perform the following actions:

- Execute commands in sequence.
- Create and save a script. You can optionally store a saved script in the Task Center, where you can schedule the script to run at a specific time.
- Run an existing script.
- Schedule a task.

On the **Query Results** page, you can see the results of the queries. You can also save the results or edit the contents of the table.

On the **Access Plan** page, you can see the access plan for any explainable statement that you specified on the Interactive page or the Script page. DB2 generates the access plan when it compiles the SQL statement. You can use this information to tune your queries for better performance.

Note: If you specify more than one statement on the Script page, an access plan is created only for the first statement.

To invoke the SQL Assist tool, click the SQL Assist button on the Interactive page. To invoke the Visual Explain tool, execute an explainable statement on the Interactive page or the Script page.

The Web version of the Command Center includes most of these features but it *does not* currently include Visual Explain or SQL Assist.

Related concepts:

- “SQL Assist” on page 111
- “Task Center” on page 103
- “Visual Explain” on page 111
- “Web Command Center” on page 115

Task Center

You can start the Task Center in the following ways:

- Select Task Center from the Tools menu of another tool.
- Click the  icon from the toolbar of another tool.
- Enter the db2tc command.
- On Windows® systems, click the **Start** button and select **Programs** → **IBM DB2** → **General Administration Tools** → **Task Center**.

Note: To use the Task Center, you must first create a tools catalog. If you did not create a tools catalog when you installed DB2, you can select **Tools** → **Tools Settings** → **Scheduler Settings** and create one now.

Use the Task Center to run tasks, either immediately or according to a schedule, and to notify people about the status of completed tasks. The Task Center includes functionality from the Script Center in previous versions of DB2, plus additional functionality.

A task is a script, together with the associated success conditions, schedules, and notifications. You can create a task within the Task Center, create a script within another tool and save it to the Task Center, import an existing script, or save the options from a DB2® dialog or wizard such as the Load wizard. A script can contain DB2, SQL, or operating system commands.

For each task, you can do the following:

- Schedule the task
- Specify success and failure conditions
- Specify actions that should be performed when this task completes successfully or when it fails
- Specify e-mail addresses (including pagers) that should be notified when this task completes successfully or when it fails

You can specify conditional coding by creating task actions. Each task action consists of a task and the action that should be performed on the task. For example, task 1 could have the following task actions:

- If task 1 is successful, task action A enables the schedule for task 2.
- If task 1 fails, task action B runs task 3.

You can also create a grouping task, which combines several tasks into a single logical unit of work. When the grouping task meets the success or failure conditions that you define, any follow-on tasks are run. For example, you could combine three backup scripts into a grouping task and then specify a reorganization as a follow-on task that will be executed if all of the backup scripts execute successfully.

To see the most recent information, click the  button. You can view execution results as follows:

- To see the results from the last time a task was executed, right-click the task and select **Show Results**.
- To see the results from every time a task was executed, open the Journal. In the Journal, you can right-click the task execution that you are interested in and select **Show Results**.

To see help text for a message that appears in the execution results, open the Command Center and enter the error message preceded by a question mark. For example, enter ? SQL0100 to get more information about message SQL0100W.

Several customizable saved views are available via the pull-up menu at the bottom of the Task Center.

Related concepts:

- “Command Center” on page 102
- “Journal” on page 106

Information Catalog Center

If you have installed the Data Warehousing option and initialized a catalog, you can start the Information Catalog Center in the following ways:

- Select Information Catalog Center from the Tools menu of another tool.
- Click the  icon from the toolbar of another tool.
- Enter the db2icc command.
- On Windows® systems, click the **Start** button and select **Programs** → **IBM DB2** → **Business Intelligence Tools** → **Information Catalog Center**.

Note: To use the Information Catalog Center, you must first create a tools catalog. If you did not create a tools catalog when you installed DB2, you can select **Tools** → **Tools Settings** → **Scheduler Settings** and create one now.

Use the Information Catalog Center to organize and search for business information. The Information Catalog Center streamlines the search for business information by providing a single information catalog with a robust searching capability. It does for your organization what an electronic card catalog does for a library, and more.

The information catalog contains descriptive data about source information. For example, the information catalog can include the type of information, a description of the information, what it contains, who owns and updates it, and where and how to get to it.

You can search for specific objects, view any relationships that an object participates in, view an object’s lineage, and create comments for objects. If you have the authority, you can also create new objects in the information catalog.

After you find the information that you need, you can start a spreadsheet program, word processor, graphics tool, or other application from the Information Catalog Center. The Information Catalog Center remains in the background while you work with the retrieved information in the application where the information was originally created.

To learn more about the Information Catalog Center, see the *Information Catalog Center Tutorial*.

Related concepts:

- “DB2 tutorials” in the *Infrastructure Topics (DB2 Common Files)*
- “Data Warehouse Center” on page 101

Related tasks:

- “Getting started with the Information Catalog Center” in the *Information Catalog Center Administration Guide*
- “Information Catalog Center -- Overview: Information Catalog Center help”

Health Center

You can start the Health Center in the following ways:

- Select Health Center from the Tools menu of another tool.
- Click the  icon from the toolbar of another tool.
- Enter the db2hc command.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **Monitoring Tools** —> **Health Center**.
- Click the health center status beacon when it appears on a DB2® window. On the Tools Settings window, you can configure this beacon to appear on every DB2 window whenever an alert occurs.

Use the Health Center to monitor the state of the database environment and make any necessary changes.

When you use DB2, a health monitor continuously monitors a set of health indicators. If the current value of a health indicator is outside the acceptable operating range defined by its warning and alarm thresholds, the health monitor generates a health alert. DB2 comes with a set of predefined threshold values, which you can later customize. For example, you can customize the alarm and warning thresholds for the amount of space used in a table space.

Depending on the configuration of the DB2 instance, the following actions can occur when the health monitor generates an alert:

- An entry is written in the administration notification log, which you can read from the Journal.
- The health center status beacon appears in the lower right corner of the DB2 GUI Tools window.
- A script or task is executed.
- An e-mail or pager message is sent to the contacts that you specify for this instance.

The following are some of the key tasks that you can perform with the Health Center:

- View the status of the database environment. Beside each object in the navigation tree, an icon indicates the most severe alert for the object (or for any objects contained by that object). For example, a green diamond icon beside an instance means that the instance and the databases contained in the instance do not have any alerts.
- View the alerts for an instance or a database. When you select an object in the navigation tree, the alerts for that object are shown in the pane to the right.
- View detailed information about an alert, and recommended actions. When you double-click an alert, a notebook appears. The first page shows the details for the alert. The second page shows any recommended actions.
- Configure the health monitor settings for a specific object, and the default settings for an object type or for all objects within an instance.
- Select which contacts will be notified of alerts with an e-mail or pager message.
- Review the history of alerts for an instance.

You can use the toggle buttons at the top of the navigation bar to filter the alerts according to their severity:

- Displays only alarms (the most severe type of alert)
- Displays alarms and warnings
- Displays alarms, warnings, and attentions
- Displays all alerts

The Web version of the Health Center includes a subset of these features.

Related concepts:

- “Journal” on page 106
- “Memory Visualizer” on page 109
- “Web Health Center” on page 116
- “Indoubt Transaction Manager” on page 114

Related tasks:

- “Reacting to alerts” in the *Guide to GUI Tools for Administration and Development*

Journal

You can start the Journal in the following ways:

- Select Journal from the Tools menu of another tool.
- Click the  icon from the toolbar of another tool.
- On Windows® systems, click the **Start** button and select **Programs** → **IBM DB2** → **General Administration Tools** → **Journal**.

The Journal displays historical information about tasks, database actions and operations, Control Center actions, messages, and alerts.

Figure 59. Journal window

To see the most recent information, click the  button.

The **Task History** page shows the results of tasks that were previously executed. You can use this information to estimate how long future tasks will run.

The Task History page contains one row for each execution of a task. The Task Center contains only one row for each task no matter how many times the task is executed. Each row in the Task Center could be directly related to multiple rows in the Task History page of the Journal.

For each completed execution of a task, you can perform the following actions:

- View the execution results
- View the task that was executed
- Edit the task that was executed
- View the task execution statistics
- Remove the task execution object from the Journal

To perform one of these actions, right-click a completed task execution and select the corresponding action from the pop-up menu that appears.

The **Database History** page shows information from the recovery history file. This file is updated when various operations are performed, including:

- Backup
- Restore
- Roll forward
- Load
- Reorg

This information could be useful if you need to restore a database or tablespace.

The **Messages** page shows messages that were previously issued from the Control Center and other GUI tools.

The **Notification Log** page shows information from the administration notification log. You can filter the list. For example, you can show only alerts from the health monitor.

Several customizable saved views are available via the pull-up menu at the bottom of the Journal.

Related concepts:

- “Health Center” on page 105
- “Task Center” on page 103

Setting the DB2 license policy using the License Center

You can set your license policy using the License Center.

Procedure:

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

1. In the License Center, select **Change** from the **License** menu.
2. In the Change License window, select the type of license that you have purchased:
 - If you purchased a Connector license, select **Connector** and enter the number of user licenses that you have purchased.
 - If you purchased a Concurrent Users license, select **Concurrent users** or **Concurrent connect users** and enter the number of user licenses that you have purchased.
 - If you purchased a Registered Users license, select **Registered users** or **Registered connect users** and click **OK** to close the Change License window and return to the License Center. Click on the **Users** tab and add every registered user ID for which you purchased a license.

There are also processor based licenses. You will also need to modify the number of processor licenses that you have bought:

1. In the License Center, select **Change** from the **License** menu.
2. In the Change License window, enter the number of processor licenses that you have.

Related tasks:

- “Registering the DB2 product license key using the db2licm command” in the *Installation and Configuration Supplement*
- “Registering your DB2 license key using the License Center” on page 138
- “Setting the DB2 license policy using the db2licm command” in the *Installation and Configuration Supplement*

Development Center

You can start the Development Center in the following ways:

- Select Development Center from the Tools menu of another tool.
- Click the icon from the toolbar of another tool.
- Enter the db2dc command.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **Development Tools** —> **Development Center**.

Use the Development Center to develop stored procedures, user-defined functions (UDFs), and structured types. The Development Center includes functionality from the Stored Procedure Builder in previous versions of DB2, plus additional functionality.

A set of wizards makes it easy to perform your development tasks. The Development Center provides a single development environment that supports the entire DB2® family ranging from the workstation to z/OS.

With the Development Center, you can:

- Create, build, and deploy Java™ and SQL stored procedures
- Create, build, and deploy user-defined functions:
 - SQL scalar UDFs
 - SQL table UDFs
 - UDFs that read MQSeries® messages
 - UDFs that access OLE DB data sources
 - UDFs that extract data from XML documents
- Debug SQL stored procedures using the integrated debugger
- Create and build structured types
- See the contents of the server for each database connection that is in your project or that you have explicitly added to the Server View
- View and work with other database objects such as tables, triggers, and views
- Export and import routines and project information

The Development Center also provides a DB2 Development Add-In for each of the following development environments:

- Microsoft® Visual C++
- Microsoft Visual Basic
- Microsoft Visual InterDev

With the add-ins, you can easily access the features of the Development Center and other DB2 centers from your Microsoft development environment. This makes it easier for you to develop and incorporate stored procedures and UDFs into your DB2 application development.

Related concepts:

- “SQL Assist” on page 111

Information Center

You can start the Information Center in the following ways:

- Click the  icon from the toolbar of another tool.
- Enter the `db2ic` command.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **Information** —> **Information Center**.

Use the Information Center to find information about DB2 Universal Database. You can select topics from the DB2 documentation or the DB2 online help. You can also update your local HTML documentation, as described in Updating the DB2 Information Center installed on your computer or intranet server.

Figure 60. Information Center window

When you select a topic from the DB2 documentation, the page opens up in a browser window.

Figure 61. Information Center HTML page

From an Information Center page in a browser window, you can find information in any of the following ways:

- Expand the appropriate category in the navigation tree
- Select the index item in the navigation tree, then select the page that you want
- Click **Search** in the navigation toolbar, and enter one or more search terms

Memory Visualizer

You can start the Memory Visualizer in the following ways:

- In the Control Center, right-click an instance and select **View memory usage**.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **Monitoring Tools** —> **Memory Visualizer**.

Use the Memory Visualizer to monitor the memory allocation of a DB2® Version 8 instance.

The top pane of the window shows memory components organized in a navigation tree. Historical values and alarm and warning thresholds are shown to the right of each component. The lower pane shows a memory usage plot.

The high-level memory components include:

- Database manager shared memory
- Database global memory
- Application global memory
- Agent/Application shared memory
- Agent private memory

Each high-level component is divided into lower-level components that determine how the memory is allocated and deallocated. For example, memory is allocated and deallocated when the database manager starts, when a database is activated, and when an application connects to a database.

To display a memory usage plot, select the Show Plot check box for the desired component or components. The usage plots for different components are shown with a different color and shape. For each change to a configuration parameter, the usage plot also shows the original value, the new value, and the time when the value changed.

The following are some of the key tasks that you can perform with the Memory Visualizer:

- View overall memory usage
- Specify which memory information to display and which information to hide for a DB2 instance and its databases
- Update the configuration parameters for an individual memory component to prevent it from using too much or too little memory
- Save the memory allocation data
- Load memory allocation data from a file into a Memory Visualizer window

Related concepts:

- “Health Center” on page 105
- “Indoubt Transaction Manager” on page 114

Spatial Extender

Use DB2 Spatial Extender to increase your business intelligence capabilities by adding spatial data to your database. You can query and analyze location information and information about geographical features as well as standard business data. For example, a real estate agent could determine the distance from a house to the nearest school. A retail chain could determine the best location for a new store based on demographic data and the locations of competing stores.

You can analyze several types of geographical information, including:

- The shape of natural features such as rivers, lakes, and mountains
- User-defined areas, such as the marketing area serviced by a particular business unit
- Specific locations, such as the intersection where an auto accident occurred

To use DB2 Spatial Extender, do the following:

1. Purchase and install DB2 Spatial Extender.
2. In the Control Center, right-click a database and select **Spatial Extender** —> **Enable**. This prepares the database to accept spatial data types and work with geographic information systems.
3. In the Control Center, right-click a spatially enabled database, table, or view. Select **Spatial Extender**, then select the function that you want to perform. You can also invoke DB2 Spatial Extender functions directly from the command line processor.

Related concepts:

- “Control Center” on page 94

- “Spatial and geodetic data” in the *IBM DB2 Spatial Extender and Geodetic Extender User’s Guide and Reference*

SQL Assist

To start the SQL Assist tool, click the SQL Assist button in another tool. The SQL Assist button exists at various locations in the Control Center, Command Center, Replication Center, Development Center, and Data Warehouse Center.

Each tool allows you to create SQL statements that are appropriate in the context of that tool. In some tools, you can create only SELECT statements. In other tools, you can also create INSERT, UPDATE, and DELETE statements.

Figure 62. SQL Assist window

The **Outline** area contains a high-level representation of the current SQL statement type. Select an element of the SQL statement.

The **Details** area displays the appropriate panel for the element that you selected. You build your SQL statement by working with this panel. The changes that you make will be reflected in the **SQL code** area.

The **SQL code** area displays the current SQL statement. Colors are used to highlight the syntax. You can edit the SQL statement or paste an existing SQL statement into this area. If you make any changes in this area, you will not be able to take any actions in the **Details** area until you validate the syntax of the modified SQL.

To validate the syntax, click the **Check** button. If the syntax is correct, the **Details** area will be enabled again, and its content will be updated to reflect your changes. To run the SQL statement, click the **Run** button.

Note: The Data Warehouse Center currently invokes a back-level version of the SQL Assist tool (from DB2® version 7), which does not support all of the functionality that is described in this book. For more information about the back-level SQL Assist tool, see the online help from within that tool.

Related concepts:

- “Command Center” on page 102
- “Control Center” on page 94
- “Data Warehouse Center” on page 101
- “Development Center” on page 108
- “Replication Center” on page 99

Visual Explain

You can start Visual Explain in the following ways:

- In the Control Center, right-click a database name and select either **Show Explained Statements History** or **Explain SQL**.
- In the Command Center, execute an explainable statement on the Interactive page or the Script page.

Use Visual Explain to view the access plan for explained SQL statements as a graph. You can use the information in the graph to tune your SQL queries for better performance.

An access plan graph shows details of:

- Tables (and their associated columns) and indexes
- Operators (such as table scans, sorts, and joins)
- Table spaces and functions
- Cost (in timerons)

You can use Visual Explain to perform the following tasks:

- View the statistics that were used at the time of optimization. You can compare these statistics to the current catalog statistics to help you determine whether rebinding the package might improve performance.
- Determine whether or not an index was used to access a table. If an index was not used, Visual Explain can help you determine which columns might benefit from being indexed.
- View the effects of performing various types of tuning by comparing the before and after versions of the access plan graph for a query.
- Obtain information about each operation in the access plan, including the total estimated cost and number of rows retrieved (cardinality).

Access plan

Certain data is necessary to resolve an explainable SQL statement. An access plan specifies an order of operations for accessing this data. It lets you view statistics for selected tables, indexes, or columns; properties for operators; global information such as table space and function statistics; and configuration parameters that are relevant to optimization. With Visual Explain, you can view the access plan for an SQL statement in graphical form.

The optimizer produces an access plan whenever an explainable SQL statement is compiled. This happens at prepare or bind time for static statements, and at run time for dynamic statements.

An access plan is an estimate based on the available information, such as:

- Statistics in system catalog tables, which you can update by using the RUNSTATS command
- Configuration parameters
- Bind options
- The query optimization class

The cost information for an access plan is the optimizer's best estimate of the resource usage for a query. The actual elapsed time for a query may vary depending on factors that are independent of DB2® (for example, the number of other applications that are running at the same time).

Access plan graph

An access plan graph includes information from several sources, as shown in the following illustration. Based on various inputs, the optimizer chooses an access plan. Visual Explain displays this access plan in an access plan graph. Each node in the graph represents a table, an index, or an operation on a table or index. The links between the nodes represent the flow of data.

Figure 63. Visual Explain procedure

The previous illustration shows the following steps. Broken lines indicate steps that are required for Visual Explain.

1. Tune your table design and reorganize table data
2. Create appropriate indexes
3. Use the RUNSTATS command to provide the optimizer with current statistics
4. Choose appropriate configuration parameters
5. Choose appropriate bind options
6. Design queries to retrieve only the required data
7. Create an access plan
8. Create explain snapshots
9. Display and use an access plan graph

For example, to use Visual Explain, first update the current statistics using the RUNSTATS command on the tables and indexes that the statement uses. These statistics, the configuration parameters, bind options, and the query itself are used by the optimizer to create an access plan and an explain snapshot when the package is bound. Visual Explain uses the resulting explain snapshot to display the access plan graph for the statement.

To learn more about Visual Explain, see the *Visual Explain Tutorial*.

Related concepts:

- “Explain tools” in the *Administration Guide: Performance*
- “DB2 tutorials” in the *Infrastructure Topics (DB2 Common Files)*
- “Command Center” on page 102
- “Control Center” on page 94

Configuration Assistant

You can start the Configuration Assistant in the following ways:

- Enter the db2ca command.
- On Windows® systems, click the **Start** button and select **Programs** → **IBM DB2** → **Set-up Tools** → **Configuration Assistant**.
- On Linux systems, open the **IBM DB2** folder on the desktop and select **Configuration Assistant**.

Use the Configuration Assistant to configure your clients. You can also use it as a light-weight alternative to the Control Center, in situations where you do not want to install the complete set of GUI tools.

You must configure your DB2 clients so they can work with the available objects, as follows:

- To access an instance or database on another server or system, DB2® must catalog that system in the node directory of the client.
- To access a database, DB2 must catalog database information in the database directory of the client.

From the Configuration Assistant, you can perform various tasks including:

- Add new database objects
- Work with existing database objects
- Bind applications
- Set database manager configuration parameters
- Import and export configuration information
- Set DB2 registry parameters
- Change passwords
- Test connections
- Configure CLI parameters

The graphical interface makes these complex tasks easier through:

- Wizards that help you perform certain tasks
- Dynamic fields that are activated based on your input choices
- Hints that help you make configuration decisions
- Discovery that can retrieve information about selected database objects

The Configuration Assistant displays a list of the databases to which your applications can connect. Each database is identified by its database alias. You can use the Add Database wizard to add databases to the list. You can use the Change Database wizard to alter the information that is associated with databases in the list.

From the View menu, you can select an advanced view, which uses a notebook to organize connection information by object: Systems, Instance Nodes, Databases, Database Connection Services (DCS), and Data Sources. You can use the notebook pages to perform object-specific actions.

Indoubt Transaction Manager

You can start the Indoubt Transaction Manager in the following ways:

- Enter the `db2indbt` command.
- On Windows® systems, click the **Start** button and select **Programs** —> **IBM DB2** —> **Monitoring Tools** —> **Indoubt Transaction Manager**.

Use the Indoubt Transaction Manager to work with global transactions that are in an indoubt state. For example, a broken communication line could leave a transaction prepared but not yet committed or rolled back.

In most cases, you should simply wait for the Transaction Manager to resynchronize. If you cannot wait, you can use the Indoubt Transaction Manager with great care as a last resort.

You can perform the following actions on a transaction:

- Commit
- Rollback
- Forget (cancel a previous Commit or Rollback)

Related concepts:

- “Health Center” on page 105
- “Memory Visualizer” on page 109

Web tools

The following DB2 Web Tools provide access to the DB2 environment through a secure Web-enabled interface:

- “Web Command Center”
- “Web Health Center” on page 116

Web Command Center

Use the Web version of the Command Center to execute SQL statements, DB2 commands, and OS commands against a remote DB2 server, either interactively or in scripts. This is particularly useful for database administrators and experienced users who need to be able to work with the database at any time, from any place. The Web version of the Command Center includes most of the features of the full Command Center, but it *does not* currently include Visual Explain or SQL Assist.

To access the DB2 server, you use an HTML 4.0-compliant Web browser that runs on any computing device from a desktop computer to a Personal Digital Assistant (PDA). The browser is a client, which communicates with a middle-tier application server. The application server communicates with the DB2 server. Secure Socket Layer (SSL), the same technology that is used for most Internet banking and secure e-commerce transactions, is used for all communication.

The client can be any computing device that supports an HTML 4.0-compliant Web browser. The browser does not need to support Java, JavaScript, or cookies. The middle tier must have DB2[®] Web Tools installed. DB2 Web Tools requires an application server, such as IBM[®] WebSphere[®] or BEA WebLogic.

If you are the database administrator of a large center, you could use the Web tools as follows:

- While you are away from the office, attending a conference, you receive an urgent message on your PDA about a database problem.
- Using the PDA, you securely log on to a portal where DB2 Web Tools is installed.
- You use the Web versions of the Health Center and the Command Center to investigate the problem.
- You use the Web version of the Command Center to execute SQL, DB2, and OS commands that fix the problem.

Related concepts:

- “DB2 Web Command Center” in the *Installation and Configuration Supplement*
- “Command Center” on page 102
- “Web Health Center” on page 116

Related tasks:

- “Deploying DB2 Web Tools on WebSphere application servers” in the *Installation and Configuration Supplement*
- “Deploying DB2 Web Tools on WebLogic application servers” in the *Installation and Configuration Supplement*
- “Deploying DB2 Web Tools on other application servers” in the *Installation and Configuration Supplement*

Web Health Center

Use the Web version of the Health Center to monitor the health of remote databases. This is particularly useful for database administrators and experienced users who need to be able to work with the database at any time, from any place.

The Web version of the Health Center includes a subset of the features of the full Health Center. You can view the active alerts for an instance, view the details, history, and resolution recommendations for an alert, and apply some recommendations through the Web version of the Command Center.

To access the DB2 server, you use an HTML 4.0-compliant Web browser that runs on any computing device from a desktop computer to a Personal Digital Assistant (PDA). The browser is a client, which communicates with a middle-tier application server. The application server communicates with the DB2 server. Secure Socket Layer (SSL), the same technology that is used for most Internet banking and secure e-commerce transactions, is used for all communication.

The client can be any computing device that supports an HTML 4.0-compliant Web browser. The browser does not need to support Java, JavaScript, or cookies. The middle tier must have DB2[®] Web Tools installed. DB2 Web Tools requires an application server, such as IBM[®] WebSphere[®] or BEA WebLogic.

If you are the database administrator of a large center, you could use the Web tools as follows:

- While you are away from the office, attending a conference, you receive an urgent message on your PDA about a database problem.
- Using the PDA, you securely log on to a portal where DB2 Web Tools is installed.
- You use the Web versions of the Health Center and the Command Center to investigate the problem.
- You use the Web version of the Command Center to execute SQL, DB2, and OS commands that fix the problem.

Related concepts:

- “DB2 Web Health Center” in the *Installation and Configuration Supplement*
- “Health Center” on page 105
- “Web Command Center” on page 115

Related tasks:

- “Deploying DB2 Web Tools on WebSphere application servers” in the *Installation and Configuration Supplement*
- “Deploying DB2 Web Tools on WebLogic application servers” in the *Installation and Configuration Supplement*
- “Deploying DB2 Web Tools on other application servers” in the *Installation and Configuration Supplement*

Automatic maintenance

DB2[®] Universal Database (UDB) provides automatic maintenance capabilities for performing database backups, keeping statistics current and reorganizing tables and indexes as necessary.

Automatic database backup provides users with a solution to help ensure their database is being backed up both properly and regularly, without either having to worry about when to back up, or having any knowledge of the backup command.

Automatic statistics collection attempts to improve the performance of the database by maintaining up-to-date table statistics. The goal is to allow the optimizer to choose an access plan based on accurate statistics.

Automatic statistics profiling advises when and how to collect table statistics by detecting outdated, missing, and incorrectly specified statistics and by generating statistical profiles based on query feedback.

Automatic reorganization manages offline table and index reorganization without users having to worry about when and how to reorganize their data.

Enablement of the automatic maintenance features is controlled using the automatic maintenance database configuration parameters. These are a hierarchical set of switches to allow for simplicity and flexibility in managing the enablement of these features.

Automatic database backup:

A database may become unusable due to a wide variety of hardware or software failures. Automatic database backup simplifies database backup management tasks for the DBA by always ensuring that a recent full backup of the database is performed as needed. It determines the need to perform a backup operation based on one or more of the following measures:

- You have never completed a full database backup
- The time elapsed since the last full backup is more than a specified number of hours
- The transaction log space consumed since the last backup is more than a specified number of 4 KB pages (in archive logging mode only).

Protect your data by planning and implementing a disaster recovery strategy for your system. If suitable to your needs, you may incorporate the automatic database backup feature as part of your backup and recovery strategy.

If the database is enabled for roll-forward recovery (archive logging), then automatic database backup can be enabled for either online or offline backup. Otherwise, only offline backup is available. Automatic database backup supports disk, tape, Tivoli® Storage Manager (TSM), and vendor DLL media types.

Through the Configure Automatic Maintenance wizard in the Control Center or Health Center, you can configure:

- The requested time or number of log pages between backups
- The backup media
- Whether it will be an online or offline backup.

If backup to disk is selected, the automatic backup feature will regularly delete backup images from the directory specified in the Configure Automatic Maintenance wizard. Only the most recent backup image is guaranteed to be available at any given time. It is recommended that this directory be kept exclusively for the automatic backup feature and not be used to store other backup images.

The automatic database backup feature can be enabled or disabled by using the **auto_db_backup** and **auto_maint** database configuration parameters. In a multiple database partitioned environment, the automatic database backup runs on each partition if the database configuration parameters are enabled on that partition.

Automatic statistics collection:

When the SQL compiler optimizes SQL query plans, its decisions are heavily influenced by statistical information about the size of the database tables and indexes. The optimizer also uses information about the distribution of data in specific columns of tables and indexes if these columns are used to select rows or join tables. The optimizer uses this information to estimate the costs of alternative access plans for each query. When significant numbers of table rows are added or removed, or if data in columns for which you collect statistics is updated, the RUNSTATS utility needs to be run again to update the statistics.

Automatic statistics collection works by determining the minimum set of statistics that give optimal performance improvement. The decision to collect or update statistics is taken by observing and learning how often tables are modified and how much the table statistics have changed. The automatic statistics collection algorithm learns over time how fast the statistics change on a per table basis and internally schedules RUNSTATS execution accordingly.

Normal database maintenance activities such as when a user performs RUNSTATS, REORG or altering or dropping the table, are not affected by the enablement of this feature.

If you are unsure about how often to collect statistics for the tables in your database, you may incorporate the automatic statistics collection feature as part of your overall database maintenance plan.

The automatic statistics collection feature can be enabled or disabled by using the **auto_runstats**, **auto_tbl_maint**, and **auto_maintdatabase** configuration parameters.

In a multiple database partitioned environment, the determination to carry out automatic statistics collection and the initiation of automatic statistics collection, is done on the catalog partition. The **auto_runstats** configuration parameter needs to be enabled on the catalog partition only. The actual statistics collection is done by RUNSTATS and is collected as follows:

1. If the catalog partition has table data, then collect statistics on the catalog partition. RUNSTATS always collects statistics on the partition where it is initiated if that partition contains table data.
2. Otherwise, collection of statistics is done on the first partition in the table partition list.

Tables considered for automatic statistics collection are configurable by you using the Automatic Maintenance wizard from the Control Center or Health Center.

Automatic statistics profiling:

Missing or outdated statistics can make the optimizer pick a slower query plan. It is important to note that not all statistics are important for a given workload. For example, statistics on columns not appearing in any query predicate are unlikely to have any impact. Sometimes statistics on several columns (column group statistics) are needed in order to adjust for correlations between these columns.

Automatic statistics profiling analyzes optimizer behavior by only considering columns that were used in previous queries and also knowing columns or column combinations where estimation errors occurred. In order to detect errors and recommend or change a statistical profile, the statistical profile generator mines information collected when the query is compiled as well as information accumulated when the query ran. This approach is reactive as the action is taken after the query has been seen and eventually after a plan has been chosen and run.

Automatic statistics profiling advises on how to collect statistics using the RUNSTATS utility by detecting outdated, missing, and incorrectly specified statistics and generating statistical profiles based on query feedback.

If suitable to your needs, you may incorporate the automatic statistics profiling feature as part of your overall database maintenance plan.

Automatic statistics profiling interacts with automatic statistics collection and advises on when to collect statistics.

The automatic statistics profiling feature can be enabled or disabled by using the **auto_stats_prof**, **auto_tbl_maint** and **auto_maintdatabase** configuration parameters. If the **auto_prof_upd** database configuration parameter is also enabled, then the statistical profiles generated are used to update the RUNSTATS user profiles. Automatic statistics profiling is not available for multiple database partitioned environments or when symmetric multi-processor (SMP) parallelism, also called intrapartition parallelism, is enabled.

Automatic reorganization:

After many changes to table data, logically sequential data may be on non-sequential physical pages so the database manager has to perform additional read operations to access data.

Among other information, the statistical information collected by RUNSTATS show the data distribution within a table. In particular, analysis of these statistics can indicate when and what kind of reorganization is necessary. Automatic reorganization determines the need for reorganization on tables by using the REORGCHK formulas. It periodically evaluates tables that have had their statistics updated to see if reorganization is required. If so, it internally schedules a classic reorganization for the table. This requires that your applications function without write access to the tables being reorganized.

The automatic reorganization feature can be enabled or disabled by using the **auto_reorg**, **auto_tbl_maint**, and **auto_maint** database configuration parameters.

In a multiple database partitioned environment, the determination to carry out automatic reorganization and the initiation of automatic reorganization, is done on the catalog partition. The database configuration parameters need to be enabled on the catalog partition only. The reorganization runs on all of the partitions on which the target tables reside.

If you are unsure about when and how to reorganize your tables and indexes, you can incorporate automatic reorganization as part of your overall database maintenance plan.

Tables considered for automatic reorganization are configurable by you using the Automatic Maintenance wizard from the Control Center or Health Center.

Maintenance windows for automation:

The automatic maintenance features described above consume resources on your system and may affect the performance of your database when they are run. Automatic reorganization and offline database backup also restrict access to the tables and database when these utilities are run. It is therefore necessary to provide appropriate periods of time when these maintenance activities can be internally scheduled for execution by DB2 UDB. These can be specified as offline and online maintenance time periods using the automatic maintenance wizard from the Control Center or Health Center.

Offline database backups and table and index reorganization are run in the offline maintenance time period. These features run to completion even if they go beyond the time period specified. The internal scheduling mechanism learns over time and estimates job completion times. If the offline time period is too small for a particular database backup or reorganization activity, the scheduler will not start the job the next time around and relies on the health monitor to provide notification of the need to increase the offline maintenance time period.

Automatic statistics collection and profiling as well as online database backups are run in the online maintenance time period. To minimize the impact on the system, they are throttled by the adaptive utility throttling mechanism. The internal scheduling mechanism uses the online maintenance time period to start the online jobs. These features run to completion even if they go beyond the time period specified.

Storage:

The automatic statistics collection and reorganization features store working data in tables in your database. These tables are created in the SYSTOOLSPACE table space. The SYSTOOLSPACE table space is created automatically with default options when the database is activated. Storage requirements for these tables are proportional to the number of tables in the database and should be calculated as approximately 1 KB per table. If this is a significant size for your database, you may want to drop and re-create the table space yourself and allocate storage appropriately. The automatic maintenance and health monitor tables in the table space are automatically re-created. Any history captured in those tables is lost when the table space is dropped.

Monitoring and notification:

The health monitor provides monitoring and notification functionality for the automatic database backup, statistics collection and reorganization features.

Related concepts:

- “Catalog statistics” in the *Administration Guide: Performance*
- “Table reorganization” in the *Administration Guide: Performance*
- “Table and index management for standard tables” in the *Administration Guide: Performance*
- “Developing a backup and recovery strategy” in the *Data Recovery and High Availability Guide and Reference*
- “Table and index management for MDC tables” in the *Administration Guide: Performance*
- “Health monitor” in the *System Monitor Guide and Reference*

- “Automatic statistics collection” in the *Administration Guide: Performance*

Related reference:

- “autonomic_switches - Automatic maintenance switches configuration parameter” in the *Administration Guide: Performance*

Applying the latest FixPak (Windows and UNIX)

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

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

When installing a FixPak on a partitioned ESE system, all participating computers must have the same FixPak installed while the system is offline.

Prerequisites:

Each FixPak has specific prerequisites. See the FixPak Readme that accompanies the FixPak for more information.

Restrictions:

If you are installing DB2 Universal Database to set up a Common Criteria certified configuration, do not install FixPaks. Because FixPaks are not evaluated for Common Criteria compliance, installing a FixPak makes the configuration no longer compliant.

Procedure:

1. Download the latest DB2 FixPak from the IBM DB2 UDB and DB2 Connect Online Support Web site at <http://www.ibm.com/software/data/db2/udb/winos2unix/support>. Each FixPak contains a set of Release Notes and a Readme. The Readme provides instructions for installing the FixPak.
2. Install the FixPak.
3. On UNIX systems, run the `db2iupdt` command to update the instance.

Related concepts:

- “Common Criteria certification of DB2 Universal Database products” in the *Infrastructure Topics (DB2 Common Files)*

Related tasks:

- “Verifying the installation using the command line processor (CLP)” on page 86

Part 4. Deploying servers using response file installation

Chapter 7. Response files

Response file installation basics

Unlike the DB2[®] Setup wizard, a DB2 response file installation lets you install DB2 without any user input. This method is useful not only for large-scale deployments of DB2, but also for embedding the DB2 installation process transparently inside your customized installation and configuration procedure. A response file installation is performed by DB2 setup using user-generated response files.

A *response file* is an ASCII text file that contains setup and configuration information. It can be generated either with DB2 utilities or by manual editing. The setup and configuration data would have to be entered during an interactive installation, but with a response file, the installation can proceed without any intervention.

A response file specifies configuration and setup parameters such as the destination directory (Windows only) and the products and components to install. It can also be used to:

- Create instances
- Set up global DB2 registry variables
- Set up instance variables
- Set up instance database manager configuration settings

You can create a response file:

- By modifying one of the sample response files that are provided.
- Using the response file generator (Windows only).
- Using the DB2 Setup wizard to save the setup and configuration data.

Related concepts:

- “About the response file generator (Windows)” in the *Installation and Configuration Supplement*

Related reference:

- “Available sample response files (Windows and UNIX)” in the *Installation and Configuration Supplement*
- “Response file keywords (Windows and UNIX)” in the *Installation and Configuration Supplement*
- “DB2 Control Server response file keywords (Windows)” in the *Installation and Configuration Supplement*
- “db2rspgn - Response File Generator Command (Windows)” in the *Command Reference*

Response file considerations

You should understand the following considerations before proceeding with a response file installation:

- The response file format has changed from DB2[®] Version 7 to DB2 Version 8. As a result, there are version limitations as to where response files can be used. For

example, any response file generated in DB2 Version 8 can only be used to install DB2 Version 8.1; it cannot be used to install DB2 Version 7. The opposite is also true, where response files generated in DB2 Version 7 cannot be used to install DB2 Version 8.

- You can save your settings in a response file during the installation in the **Select the installation action** panel of the DB2 Setup wizard. This option is only available during a Custom installation.
- You can use a response file generated during an installation only if you allow the installation process to complete. If you cancel the installation, or if the installation fails, the response file will not be created.
- If you use the response file generator (Windows only), you are creating the response file based on an existing installation. This method is recommended when you have a more complex configuration, one that you manually configured.
- If you are using the DB2 Setup wizard, you are creating a response file based on just the installation you are performing. This method is recommended if you have either a fairly simple configuration or if you want to create a response file that you plan to later customize.
- You can use a response file to install an identical configuration across every workstation on your network or to install multiple configurations of a DB2 product. You can then distribute this file to every workstation where you want this product to be installed.

Related concepts:

- “Response file installation basics” on page 125

Related tasks:

- “Installing DB2 products using Microsoft Systems Management Server (SMS)” in the *Installation and Configuration Supplement*
- “Response file installation of DB2 overview (UNIX)” in the *Installation and Configuration Supplement*
- “Response file installation of DB2 overview (Windows)” in the *Installation and Configuration Supplement*

Creating a response file using the DB2 Setup wizard

You can create a response file using the DB2 Setup wizard based on the installation you are performing. This response file will be generated based on your DB2 Setup wizard selections. You can then use the response file to perform an unattended installation using the same settings.

Prerequisites:

You can only create a response file using the DB2 Setup wizard if you are performing a Custom installation.

Procedure:

To create a response file using the DB2 Setup wizard:

1. From the DB2 Launchpad, select **Install Product**.
2. Select the product you want to install and click **Next** to launch the DB2 Setup wizard.

3. Click **Next**.
4. In the **Select the installation type** window, select the **Custom** option.
5. In the **Select the installation action** window, select the **Save your setting in a response file** option.
6. Proceed through the rest of the installation panels selecting the options you want.
7. In the **Start copying files and create response file** window, in the **Response file name** field type the path where you want the DB2 Setup wizard to place the generated response.
8. Click **Finish** to install.
9. When the installation has completed, the DB2 Setup wizard will have placed the generated response file in the path you specified.

For example, if you installed the DB2 Run-Time Client in English, Arabic, Japanese, Russian, and Traditional Chinese, the generated response file will look similar to the following:

```

PROD=RUNTIME_CLIENT
LIC_AGREEMENT=ACCEPT
FILE=C:\Program Files\IBM\SQLLIB\
INSTALL_TYPE=CUSTOM

COMP=BASE_CLIENT
COMP=SYSTEM_BIND_FILES
COMP=CLIENT_TOOLS
COMP=JDBC_SUPPORT
COMP=LDAP_EXPLOITATION
COMP=MDAC
COMP=ODBC_SUPPORT
COMP=OLE_DB_SUPPORT
COMP=SQLJ_SUPPORT
COMP=APPC_DB2_CLIENT_SUPPORT
COMP=NETBIOS_DB2_CLIENT_SUPPORT
COMP=NPIPE_DB2_CLIENT_SUPPORT
COMP=TCPIP_DB2_CLIENT_SUPPORT

LANG=EN
LANG=AR
LANG=JP
LANG=RU
LANG=TW

```

```

INSTANCE=DB2
DB2.NAME=DB2
DEFAULT_INSTANCE=DB2
DB2.TYPE=CLIENT
DB2_USERSGROUP_NAME=DB2USERS
DB2_ADMINGROUP_NAME=DB2ADMNS

```

The following is a DB2 Run-Time Client sample response file:

```

* Sample response file for IBM DB2 Run-Time Client
* -----
*
* Comments are made by placing either a * or a # at the start of a line, or by
* placing ** or ## after the start of a line to comment out the rest of that
* line.
*
* For descriptions of DB2 registry variables, please see Appendix A in the
* "Administration Guide: Performance".
*

```

```

* For descriptions of configuration parameters, please see Chapter 13 in the
* "Administration Guide: Performance".
*
* For introduction of performing a response file installation, please see
* Chapter 6 in the "DB2 Installation and Configuration Supplement".
*
* Do not uncomment selected components (the COMP keywords) unless you change
* the INSTALL_TYPE to CUSTOM.
* =====

```

```

* General Options
* -----

```

```

PROD                                = RUNTIME_CLIENT
*LIC_AGREEMENT                      = DECLINE or ACCEPT (default=DECLINE)
*FILE                               = C:\Program Files\IBM\SQLLIB
*INSTALL_TYPE                       = TYPICAL, COMPACT, or CUSTOM (default=TYPICAL)
*LANG                               = AR (default=Operating System Language)
*LANG                               = BG (default=Operating System Language)
*LANG                               = BR (default=Operating System Language)
*LANG                               = CN (default=Operating System Language)
*LANG                               = CZ (default=Operating System Language)
*LANG                               = DE (default=Operating System Language)
*LANG                               = DK (default=Operating System Language)
*LANG                               = FI (default=Operating System Language)
*LANG                               = FR (default=Operating System Language)
*LANG                               = EL (default=Operating System Language)
*LANG                               = EN (default=Operating System Language)
*LANG                               = ES (default=Operating System Language)
*LANG                               = HR (default=Operating System Language)
*LANG                               = HU (default=Operating System Language)
*LANG                               = IW (default=Operating System Language)
*LANG                               = IT (default=Operating System Language)
*LANG                               = JP (default=Operating System Language)
*LANG                               = KR (default=Operating System Language)
*LANG                               = NL (default=Operating System Language)
*LANG                               = NO (default=Operating System Language)
*LANG                               = PL (default=Operating System Language)
*LANG                               = PT (default=Operating System Language)
*LANG                               = RO (default=Operating System Language)
*LANG                               = RU (default=Operating System Language)
*LANG                               = SE (default=Operating System Language)
*LANG                               = SL (default=Operating System Language)
*LANG                               = SK (default=Operating System Language)
*LANG                               = TR (default=Operating System Language)
*LANG                               = TW (default=Operating System Language)
*COMP                               = SYSTEM_BIND_FILES
*COMP                               = MDAC
*COMP                               = ODBC_SUPPORT
*COMP                               = OLE_DB_SUPPORT
*COMP                               = JDBC_SUPPORT
*COMP                               = SQLJ_SUPPORT
*COMP                               = LDAP_EXPLOITATION
*COMP                               = CLIENT_TOOLS
*COMP                               = TCPIP_DB2_CLIENT_SUPPORT
*COMP                               = NETBIOS_DB2_CLIENT_SUPPORT
*COMP                               = NPIPE_DB2_CLIENT_SUPPORT
*COMP                               = APPC_DB2_CLIENT_SUPPORT
*COMP                               = COMMAND_CENTER
*CREATE_ICONS                       = YES or NO (default=YES)
*AUTOSTART_CONFIG_ASSISTANT         = YES or NO (default=NO)
*REBOOT                             = YES or NO (default=NO)
*KILL_PROCESSES                     = YES or NO (default=NO)

```

```

* Global DB2 Registry Variables
* -----

```

```

*DB2ACCOUNT                = BLANK or char(199)
*DB2BQTIME                 = BLANK or 1 - MAX
*DB2BQTRY                  = BLANK or 0 - MAX
*DB2CHKPTR                 = BLANK, ON or OFF
*DB2CLIINIPATH             = BLANK or char(260)
*DB2CODEPAGE               = BLANK or 0 - MAX
*DB2COUNTRY                = BLANK or 1 - 999
*DB2DBDFT                 = BLANK or char(8)
*DB2DEFPREP               = BLANK, ALL, YES or NO
*DB2DISCOVERYTIME         = BLANK or 20 - MAX
*DB2DMNBCKCTL             = BLANK, ? or char()
*DB2_ENABLE_LDAP          = BLANK, YES or NO
*DB2IQTIME                 = BLANK or 1 - MAX
*DB2JD_PORT_NUMBER        = BLANK or 1024-65536
*DB2JVIEW                  = BLANK, ON or OFF
*DB2LDAPHOST               = BLANK or host name
*DB2LDAP_BASEDN           = BLANK or char()
*DB2LDAPCACHE              = BLANK or char()
*DB2LDAP_CLIENT_PROVIDER  = BLANK, MICROSOFT or IBM
*DB2LOCK_TO_RB            = BLANK or STATEMENT
*DB2NBDISCOVERRCVBUFS    = BLANK or 16 - MAX
*DB2NOEXITLIST            = BLANK, ON or OFF
*DB2OPTIONS                = BLANK or char(): -/[a,c,e[c|s],n,o,p,s,t,v,w,x]
*                           and/or -[f,l,r,z]filename
*DB2RQTIME                 = BLANK or 1 - MAX
*DB2SORCVBUF               = BLANK or 1024-65536
*DB2SOSNDBUF              = BLANK or 1024-65536
*DB2_GRP_LOOKUP            = BLANK or char()

```

* General information for instance to be created

```

* -----
INSTANCE                    = DB2
DEFAULT_INSTANCE            = DB2
DB2.NAME                    = DB2
*DB2.TYPE                   = CLIENT

```

* Default Instance Client Import Profile file

```

* -----
*DB2.CLIENT_IMPORT_PROFILE = filename

```

* Default Instance DBM CFG settings

```

* -----
*DB2.AUTHENTICATION        = CLIENT, DCS, DCS_ENCRYPT, SERVER, SERVER_ENCRYPT,
*                           KERBEROS(Windows 2000 only) or
*                           KRB_SERVER_ENCRYPT(Windows 2000 only)
*DB2.CATALOG_NOAUTH        = YES or NO
*DB2.DFT_CLIEN_T_COMM      = BLANK or APPC, NETBIOS, TCPIP, NPIPE
*DB2.DIAGLEVEL              = 0 - 4
*DB2.DIAGPATH              = BLANK or char(215)
*DB2.DIR_CACHE              = YES or NO
*DB2.DIR_OBJ_NAME           = BLANK or char(255) (length of DIR_OBJ_NAME +
*                           DIR_PATH_NAME < = 255)
*DB2.DIR_PATH_NAME         = BLANK or char(255) (length of DIR_OBJ_NAME +
*                           DIR_PATH_NAME < = 255)
*DB2.DISCOVER               = DISABLE, KNOWN or SEARCH
*DB2.DISCOVER_COMM         = BLANK or NETBIOS, TCPIP
*DB2.DRDA_HEAP_SZ          = 16 - 60000
*DB2.NNAME                  = BLANK or char(8)
*DB2.NOTIFYLEVEL           = 0 - 4
*DB2.ROUTE_OBJ_NAME        = BLANK or char(255) (length of SQL_DIR_NAME_SZ)
*DB2.RQRIOBLK              = 4096 - 65535
*DB2.SYSADM_GROUP          = BLANK or char(30)
*DB2.SYSCTRL_GROUP         = BLANK or char(30)
*DB2.SYSMAINT_GROUP        = BLANK or char(30)

```

```
*DB2.TM_DATABASE           = BLANK or char(8)
*DB2.TP_MON_NAME           = BLANK or char(19)
```

* Default Instance DB2 Registry Variables

```
* -----
*DB2.DB2ACCOUNT           = BLANK or char(199)
*DB2.DB2BQTIME           = BLANK or 1 - MAX
*DB2.DB2BQTRY            = BLANK or 0 - MAX
*DB2.DB2CHKPTR           = BLANK, ON or OFF
*DB2.DB2CLIINIPATH       = BLANK or char(260)
*DB2.DB2CODEPAGE         = BLANK or 0 - MAX
*DB2.DB2COUNTRY          = BLANK or 1 - 999
*DB2.DB2DBDFT            = BLANK or char(8)
*DB2.DB2DEFPREP          = BLANK, ALL, YES or NO
*DB2.DB2DISCOVERYTIME    = BLANK or 20 - MAX
*DB2.DB2DMNBCKCTRL       = BLANK, ? or char()
*DB2.DB2IQTIME           = BLANK or 1 - MAX
*DB2.DB2JD_PORT_NUMBER   = BLANK or 1024-65536
*DB2.DB2JVVIEW           = BLANK, ON or OFF
*DB2.DB2LOCK_TO_RB       = BLANK or STATEMENT
*DB2.DB2NBDISCOVERCVBUFS = BLANK or 16 - MAX
*DB2.DB2NOEXITLIST       = BLANK, ON or OFF
*DB2.DB2OPTIONS          = BLANK or char(): -/[a,c,e[c|s],n,o,p,s,t,v,w,x]
*                          and/or -[f,l,r,z]filename
*DB2.DB2RQTIME           = BLANK or 1 - MAX
*DB2.DB2SORCVBUF         = BLANK or 1024-65536
*DB2.DB2SOSNDBUF         = BLANK or 1024-65536
*DB2.DB2_GRP_LOOKUP      = BLANK or char()
```

* Information Center Server Information

```
* -----
* These keywords are applicable to setting up information center server information.
* DB2_DOCHOST             = host name (default=localhost)
* DB2_DOCPORT            = 51000 - 65535
```

* Enhanced security settings

```
* -----
* DB2_EXTSECURITY        = YES or NO (default=YES)
* DB2_USERSGROUP_NAME    = char(30) (Default=DB2USERS)
* DB2_ADMINGROUP_NAME    = char(30) (default=DB2ADMNS)
```

Related concepts:

- “Response file installation basics” on page 125

Related tasks:

- “Response file installation of DB2 overview (UNIX)” in the *Installation and Configuration Supplement*
- “Response file installation of DB2 overview (Windows)” in the *Installation and Configuration Supplement*

Part 5. Appendixes

Appendix A. Language support

Changing the DB2 interface language (Windows)

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

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

Prerequisites:

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

Procedure:

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

To change the DB2 interface language on Windows:

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

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

Related reference:

- “Supported territory codes and code pages” in the *Administration Guide: Planning*
- “Supported DB2 interface languages” on page 134

Changing the DB2 interface language (UNIX)

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

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

Prerequisites:

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

Procedure:

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

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

Related reference:

- “Supported territory codes and code pages” in the *Administration Guide: Planning*
- “Supported DB2 interface languages” on page 134

Supported DB2 interface languages

DB2 language support for DB2 interfaces can be categorized into server group languages and client group languages. Server group languages will translate most messages, help, and DB2 graphical interface elements. Client group languages will translate the DB2 Run-Time 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 DB2 with languages supported by the DB2 interface. Languages supported by DB2 that is, languages that *data* can exist in, are a superset of languages supported by the DB2 interface.

Related tasks:

- “Changing the diagnostic error level before DB2 migration” in the *Quick Beginnings for DB2 Servers*
- “Changing the DB2 interface language (Windows)” on page 133
- “Changing the DB2 interface language (UNIX)” on page 133

Related reference:

- “National language versions” in the *Administration Guide: Planning*
- “Supported territory codes and code pages” in the *Administration Guide: Planning*

- “Conversion tables for code pages 923 and 924” in the *Administration Guide: Planning*
- “Conversion table files for euro-enabled code pages” in the *Administration Guide: Planning*

Language identifiers for running the DB2 Setup wizard in another language

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

Table 5. Language identifiers

Language	Language identifier
Arabic	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
Hebrew	iw
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

Displaying the db2setup command in your national language

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.

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:

```
export LANG= <locale> where locale is a locale supported by the DB2 interface.
```

For example, if your Linux system's default locale is ja_JP.ujis and the codepage of ja_JP.ujis is 954, you can set your LANG environment variable to ja_JP.eucJP by issuing the following command, assuming you are using Bourne shell (or a variant):

```
export LANG=ja_JP.eucJP
```

The db2setup command will now be displayed in Japanese (in codepage 954).

Note: The db2setup command can be translated into a subset of the languages supported by the DB2 product you are installing.

Related reference:

- "Supported DB2 interface languages" on page 134
- "db2setup - Install DB2 Command" in the *Command Reference*
- "setup - Install DB2 Command" in the *Command Reference*

Appendix B. Licensing

DB2 product license files

The following list provides license file names for DB2 products. You must add the license file before using DB2.

db2ese.lic

DB2 Enterprise Server Edition

db2ese_dpf.lic

DB2 database partitioning feature (DPF).

db2exp.lic

DB2 UDB Express Edition

db2conee.lic

DB2 Connect Enterprise Edition.

db2conas.lic

DB2 Connect Application Server Edition

db2conpe.lic

DB2 Connect Personal Edition

db2conue.lic

DB2 Connect Unlimited Edition

db2dlm.lic

DB2 Data Links Manager

db2gse.lic

DB2 Spatial Extender.

db2gse_geo.lic

DB2 Geodetic Extender.

db2iiae.lic

DB2 Information Integrator Advanced Edition

db2iide.lic

DB2 Information Integrator Developer Edition

db2iire.lic

DB2 Information Integrator Replication Edition

db2iise.lic

DB2 Information Integrator Standard Edition

db2iiue.lic

DB2 Information Integrator Advanced Edition Unlimited

db2nse.lic

Net Search Extender

db2pe.lic

DB2 Personal Edition

db2wm.lic

DB2 Warehouse Manager

db2wse.lic

DB2 Workgroup Server Edition

db2wsue.lic

DB2 Workgroup Server Unlimited Edition

Related tasks:

- “Registering the DB2 product license key using the db2licm command” in the *Installation and Configuration Supplement*
- “Installing a DB2 product manually” in the *Installation and Configuration Supplement*

Registering your DB2 license key using the License Center

The DB2 product uses the license key information contained in the nodelock file. The nodelock file is created or updated using the License Center and specifying the license file for the DB2 product. Creating or updating the nodelock file is referred to as registering the DB2 product license key.

You must register the DB2 product license key on each computer where DB2 is installed.

Procedure:

To register your license key using the License Center:

1. Start the DB2 Control Center and select **License Center** from the **Tools** menu.
2. Select the system for which you are installing a license. The **Installed Products** field will display the name of the product that you have installed.
3. Select **Add** from the **License** menu.
4. In the Add License window, select the **From a file** radio button and select a license file:
 - On Windows servers: x:\db2\license\license_filename
 - On UNIX servers: x:/db2/license/license_filenamewhere x: represents the CD-ROM drive containing DB2 product CD and license_filename for DB2 Universal Database products. For a list of DB2 product license files, see the related links.
5. Click **Apply** to add the license key.

After using the License Center, the DB2 product license key information is contained in the nodelock file in the following directories:

- AIX: /var/iform.
- HP-UX, Linux, or Solaris Operating Environment: /var/lum.
- Windows: DB2PATH/sql1lib/license.

Related tasks:

- “Registering the DB2 product license key using the db2licm command” in the *Installation and Configuration Supplement*
- “Setting the DB2 license policy using the db2licm command” in the *Installation and Configuration Supplement*
- “Setting the DB2 license policy using the License Center” on page 107

Related reference:

- “DB2 product license files” on page 137

Setting the DB2 license policy using the License Center

You can set your license policy using the License Center.

Procedure:

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

1. In the License Center, select **Change** from the **License** menu.
2. In the Change License window, select the type of license that you have purchased:
 - If you purchased a Connector license, select **Connector** and enter the number of user licenses that you have purchased.
 - If you purchased a Concurrent Users license, select **Concurrent users** or **Concurrent connect users** and enter the number of user licenses that you have purchased.
 - If you purchased a Registered Users license, select **Registered users** or **Registered connect users** and click **OK** to close the Change License window and return to the License Center. Click on the **Users** tab and add every registered user ID for which you purchased a license.

There are also processor based licenses. You will also need to modify the number of processor licenses that you have bought:

1. In the License Center, select **Change** from the **License** menu.
2. In the Change License window, enter the number of processor licenses that you have.

Related tasks:

- “Registering the DB2 product license key using the db2licm command” in the *Installation and Configuration Supplement*
- “Registering your DB2 license key using the License Center” on page 138
- “Setting the DB2 license policy using the db2licm command” in the *Installation and Configuration Supplement*

Appendix C. Password rules and maintenance

When choosing a password, be aware that:

- On UNIX[®], your password can be a maximum of eight (8) characters.
- On Windows[®], your password can be a maximum of fourteen (14) characters.

You might be required to perform password maintenance tasks. Since such tasks are required at the server and many users are not able or comfortable working with the server environment, performing these tasks can pose a significant challenge.

DB2[®] UDB provides a way to update and verify passwords without having to be at the server. For example, DB2 for OS/390[®] Version 5 supports the following method of changing a user's password. If an error message SQL1404N "Password expired" is received, use the CONNECT statement to change the password as follows:

```
CONNECT TO <database> USER <userid> USING <password>  
NEW <new_password> CONFIRM <new_password>
```

The "Change password" dialog of the DB2 Configuration Assistant (CA) can also be used to change the password.

Related concepts:

- "General naming rules" in the *Administration Guide: Implementation*

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