IBM DB2 Universal Database
for UNIX**

Quick Beginnings

Version 6

GC09-2836-00

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Before using this information and the product it supports, be sure to read the general information under “Appendix H. Notices” on page 151.

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Contents

Welcome to DB2 Universal Database!

The DB2 Universal Database Quick Beginnings books provide a focused introduction to the installation and configuration of DB2 products.

This *Quick Beginnings* book will guide you through the planning, installation, migration (if necessary), and setup of a DB2 server on a UNIX workstation. Once the DB2 server has been installed, you will install a DB2 client. You will then configure a connection between the client and server, using the Command Line Processor or DB2 GUI tools.

Conventions

This book uses the following highlighting conventions:

- **Boldface** indicates commands or graphical user interface (GUI) controls such as names of fields, folders, icons, or menu choices.
- *Italics* indicates variables that you should replace with your own value. It is also used to indicate book titles and to emphasize words.
- `Monospace` indicates file names, directory paths, and examples of text you enter exactly as shown.

This icon marks a fast path. A fast path guides you to information specific to your configuration where multiple options are available.

This icon marks a tip. It provides additional information that can help you complete a task.

For a complete description of the DB2 library, see “Appendix G. How the DB2 Library Is Structured” on page 135.

- If you do not follow the documented installation method with the recommended defaults, it may be necessary to refer to the *Administration Guide* and the *Command Reference* to complete the installation and configuration.
- The term *Windows 32-bit operating systems* refers to Windows 95, Windows 98, or Windows NT.
- The term *Windows 9x* refers to Windows 95 or Windows 98.
- The term *DB2 client* refers to a DB2 Run-Time Client or a DB2 Administration Client.
- The term *DB2 Universal Database* refers to DB2 Universal Database on OS/2, UNIX, and Windows 32-bit operating systems, unless otherwise stated.

Part 1. Installation and Initial Configuration

Chapter 1. Planning for Installation

If you know that your system meets all the hardware and software requirements, and you want to begin installing your DB2 product right away, go to "Chapter 2. Installing and Configuring DB2 on UNIX Systems" on page 17.

For information on the DB2 family of products, see "Appendix A. About the DB2 Family of Products" on page 75.

There are many components that you might want to use in your environment. Use the product and planning information in this section to ensure that your system meets the prerequisites and to decide which components you want to install.

Before you begin your DB2 product installation, you should determine the requirements for the system that you are planning to install and configure.

Memory Requirements

This section shows the *suggested* amount of memory that is required to run a DB2 product. The memory requirements listed here are estimates; the actual amounts required depend on the functions you are using. Use this information to plan for systems with a large number of concurrent clients or databases.

For information about memory requirements during the day-to-day operations of your databases, refer to the *Administration Guide*.

DB2 Universal Database Requirements

Complete the provided worksheet in Table 1 and calculate the approximate values for memory that your system will require.

Table 1. Memory Requirements for DB2 Universal Database

Number of Clients Connecting to a Server	
___ 5 Concurrent Connections	64 MB
___ 10 Concurrent Connections	80 MB
___ 25 Concurrent Connections	96 MB
___ 50 Concurrent Connections	186 MB
___ DB2 Administration Tools	30 MB
Total Memory Requirements	__ MB

DB2 Client Requirements

The amount of memory you require to run a DB2 Run-Time Client is approximately 16 MB. If you are planning to run a DB2 Administration Client, your client workstation should have approximately 32 MB of available memory.

Disk Requirements

This section shows the *minimum* amount of disk space that is required to install your DB2 product and components. It does not include the disk requirements necessary for the operating system, application development tools, and communications products. Consult each product's documentation for these values. Estimates for disk space requirements are listed here; the actual amounts required depend on the functions you are using.

For information about space requirements for data, refer to the *Administration Guide*.

Estimating Fixed Disk Requirements

To estimate the disk requirements for a particular configuration, add the recommended minimum disk sizes for the products and components that you want to install. Include an allowance for your application data.

Server Components

Use Table 2 to estimate the *approximate* amount of disk space you need to install DB2 and associated components on your operating system.

Table 2. Estimating Disk Requirements

	Recommended Minimum Disk (MB)
DB2 Universal Database for AIX	
DB2 Universal Database	55 MB
DB2 GUI Tools	20 MB
DB2 Connect Support (not available with DB2 Workgroup Edition servers)	1 MB
Online documentation in HTML format (English)	60 MB
Far-East Code Page Conversion Support	5 MB
Total Disk Space Required	__ MB

Table 2. Estimating Disk Requirements (continued)

	Recommended Minimum Disk (MB)
DB2 Universal Database for HP-UX	
DB2 Universal Database	77 MB
DB2 GUI Tools	20 MB
DB2 Connect Support (not available with DB2 Workgroup Edition servers)	1 MB
Online documentation in HTML format (English)	60 MB
Far-East Code Page Conversion Support	5 MB
Total Disk Space Required	__ MB
DB2 Universal Database for Linux	
DB2 Universal Database	31 MB
DB2 GUI Tools	20 MB
DB2 Connect Support (not available with DB2 Workgroup Edition servers)	1 MB
Online documentation in HTML format (English)	50 MB
Far-East Code Page Conversion Support	3.5 MB
Total Disk Space Required	__ MB
DB2 Universal Database for Solaris	
DB2 Universal Database	50 MB
DB2 GUI Tools	20 MB
DB2 Connect Support (not available with DB2 Workgroup Edition servers)	1 MB
Online documentation in HTML format (English)	60 MB
Far-East Code Page Conversion Support	5 MB
Total Disk Space Required	__ MB

The *online documentation in HTML format* component will install the DB2 documentation in a compressed format. You may need extra disk space temporarily for decompression. Once you have finished the installation, remove the fileset to reclaim the disk space.

Client Components

Use Table 3 on page 6 to estimate the amount of disk space you need on each of your client workstations.

If you are planning to use a DB2 client that is not listed in this table, but is supported by DB2, refer to the *Installation and Configuration Supplement* for more information.

If you are installing the Control Center or the online documentation on a Windows NT FAT or a Windows 9x FAT16 disk partition, you may require additional amounts of disk space.

Table 3. Disk Requirements for Client Components

	Recommended Minimum Disk (MB)
AIX	
DB2 Run-Time Client (Base)	25 MB
- Client Configuration Assistant	5 MB
or	
DB2 Administration Client (Base)	25 MB
- DB2 Administration Tools	40 MB
- Client Configuration Assistant	6 MB
Total Disk Space Required	__ MB
HP-UX	
DB2 Run-Time Client (Base)	25 MB
- Client Configuration Assistant	5 MB
or	
DB2 Administration Client (Base)	25 MB
- DB2 Administration Tools	40 MB
- Client Configuration Assistant	6 MB
Total Disk Space Required	__ MB
Linux	
DB2 Run-Time Client (Base)	25 MB
- Client Configuration Assistant	5 MB
or	
DB2 Administration Client (Base)	25 MB
- DB2 Administration Tools	40 MB
- Client Configuration Assistant	6 MB
Total Disk Space Required	__ MB

Table 3. Disk Requirements for Client Components (continued)

	Recommended Minimum Disk (MB)
OS/2	
DB2 Run-Time Client (Base)	11 MB
- Client Configuration Assistant	6 MB
or	
DB2 Administration Client (Base)	11 MB
- DB2 Administration Tools	68 MB
- Client Configuration Assistant	6 MB
Total Disk Space Required	__ MB
Silicon Graphics IRIX	
DB2 Run-Time Client (Base)	25 MB
- Client Configuration Assistant	6 MB
or	
DB2 Administration Client (Base)	25 MB
- DB2 Administration Tools	40 MB
- Client Configuration Assistant	6 MB
Total Disk Space Required	__ MB
Solaris	
DB2 Run-Time Client (Base)	25 MB
- Client Configuration Assistant	6 MB
or	
DB2 Administration Client (Base)	11 MB
- DB2 Administration Tools	68 MB
- Client Configuration Assistant	6 MB
Total Disk Space Required	__ MB

Table 3. Disk Requirements for Client Components (continued)

	Recommended Minimum Disk (MB)
Windows 32-bit Operating Systems	
DB2 Run-Time Client (Base)	11 MB
- Client Configuration Assistant	6 MB
or	
DB2 Administration Client (Base)	11 MB
- DB2 Administration Tools	68 MB
- Client Configuration Assistant	6 MB
Total Disk Space Required	__ MB

Software Requirements

This section outlines the software required to run DB2 products.

Server Product Requirements

Table 4 on page 9 lists the operating system and communications software required for DB2 Universal Database.

Table 4. Software Requirements

Product	Hardware/Software Requirements	Communications
		AIX
• DB2 Universal Database	RISC System/6000 and the following: • AIX Version 4.2 or later	APPC, IPX/SPX, TCP/IP and MPTN (APPC over TCP/IP) • For TCP/IP connectivity, no additional software is required. • IPX/SPX connectivity is provided by: – AIX base operating system 4.2 or later, which supports DB2 direct addressing. – AIX base operating system 4.3 or later (contains Novell Netware Services for AIX Version 4.1), which supports DB2 direct and file server addressing. • For SNA (APPC) connectivity, one of the following communication products is required: – IBM eNetwork Communications Server for AIX V5.0.2.4 – Bull DPX/20 SNA/20 **Notes:** 1. If you want to install the DRDA Application Server function of DB2, you must install the Syncpoint Manager (SPM) and its prerequisites in order to use two-phase commit. 2. If you plan to use DCE (Distributed Computing Environment) with Version 6 of the DB2 Universal Database products, you require a DCE product that is at OSF DCE level 1.1. For DB2 Connect support, you require DB2/MVS Version 5.1 plus its prerequisite, OS/390 DCE Base Services Version 3 for DCE support. With DB2 Connect, you must install DCE Directory Services on the client and the DRDA server. You do not need DCE installed on a DB2 Connect Enterprise Edition server. 3. If you plan to use the Simple Network Management Protocol (SNMP) subagent, you require DPI 2.0 provided by IBM Netfinity Agent. 4. If you plan to use the ADSTAR Distributed Storage Manager (ADSM) facilities for backup and restore of your databases, you require the ADSM Client Version 3 or later.

Table 4. Software Requirements (continued)

Product	Hardware/Software Requirements	Communications
	HP-UX Version 10	
• DB2 Universal Database	HP 9000 series 700 or 800 system and the following: • HP-UX Version 10.20 or later The following patches are required: • For HP-UX Version 10.20 – PHSS_10556 – PHSS_10436 – PHSS_10053 – PHSS_10113 • For systems with the ANSI C or C++ compilers: – PHSS_10261 – PHSS_7505 – PHSS_9096 for C++	APPC and TCP/IP • For TCP/IP connectivity, no additional software is required. • For SNA (APPC) connectivity, both of the following communication products are required: – HP SNAplus2 Link Version A.10.10, and – HP SNAplus2 API Version A.10.10 **Note:** HP-UX does not provide support for inbound client APPC requests. TCP/IP is provided with the HP-UX base operating system. If you plan to use the ADSTAR Distributed Storage Manager (ADSM) facilities for backup and restore of your databases, you require the ADSM Client Version 3 or later.
	HP-UX Version 11	
• DB2 Universal Database	HP 9000 series 700 or 800 system and the following: • HP-UX Version 11.00 or later	APPC or TCP/IP • TCP/IP is provided with the HP-UX base operating system. • For APPC connectivity, HP-UX Version 11.00 requires the following: – SNAplus2 Link R6.11.00.00 – SNAplus2 API R.6.11.00.00 **Note:** HP-UX only supports outbound client APPC requests. It does not provide support for inbound client APPC requests. **Note:** TCP/IP is provided with the HP-UX base operating system. **Note:** If you plan to use DCE (Distributed Computing Environment) with Version 6 of the DB2 Universal Database products, you require a DCE product that is at OSF DCE level 1.1, which is provided by the HP-UX Version 11 and later operating system. With DB2 Connect, you must install DCE Directory Services on the client and the host server. You do not need DCE installed on a DB2 Connect Enterprise Edition server. If you plan to use the ADSTAR Distributed Storage Manager (ADSM) facilities for backup and restore of your databases, you require the ADSM Client Version 3 or later.

Table 4. Software Requirements (continued)

Product	Hardware/Software Requirements	Communications
		Linux
• DB2 Universal Database	• Linux kernel 2.0.35 or higher; • *glibc* Version 2.0.7 or higher; • *pdksh* package (required to run the DB2 command line processor); and • *libstdc++* Version 2.8.0 or higher. To install DB2, you will need *rpm*.	TCP/IP • For TCP/IP connectivity, no additional software is required. • APPC connectivity is not supported in this version of DB2 UDB for Linux.
		Solaris
• DB2 Universal Database	Solaris SPARC-based computer and the following: • Solaris Version 2.5.1 or later The following patches are required for Solaris version 2.5.1: • 101242 Rev. 11 or higher • 103566 Rev. 08 or higher • 103600 Rev. 13 or higher • 103640 Rev. 20 or higher The following patches are required for Solaris version 2.6: • 105568 Rev. 12 or higher • 105210 Rev. 13 or higher • 105181 Rev. 06 or higher	APPC, IPX/SPX, or TCP/IP • TCP/IP is provided with the Solaris base operating system. • IPX/SPX connectivity is provided with SolarNet PC Protocol Services 1.1 with IPX/SPX for the Solaris 2.x Operating Environment. • For APPC connectivity, you require SunLink SNA 9.0 or later, and the following communication products: – SunLink P2P LU6.2 9.0 or later – SunLink PU2.1 9.0 or later – SunLink P2P CPI–C 9.0 or later **Notes:** 1. DB2 Connect for Solaris requires Solaris Version 2.6 or later. 2. If you plan to use DCE (Distributed Computing Environment) with Version 6 of the DB2 Universal Database products, you require Transarc DCE Version 2.0 for Solaris 2.6 or higher. With DB2 Connect, you must install DCE Directory Services on the client and the DRDA server. You do not need DCE installed on a DB2 Connect Enterprise Edition server. 3. If you plan to use the ADSTAR Distributed Storage Manager (ADSM) facilities for backup and restore of your databases, you require the ADSM Client Version 3 or later.

Client Product Requirements

Table 5 on page 12 lists the software requirements needed for a DB2 Administration Client, DB2 Run-Time Client, or a DB2 Software Developer's Kit.

Table 5. Software Requirements for Clients

Component	Hardware/Software Requirements	Communications
• DB2 Run-Time Client for AIX • DB2 Administration Client for AIX • DB2 Software Developer's Kit for AIX	RISC System/6000 and the following: • AIX Version 4.2 or later	APPC or TCP/IP • For APPC connectivity, you require IBM eNetwork Communications Server Version 5.0.2.4 or later for AIX • The AIX base operating system provides TCP/IP connectivity, if selected during install. **Note:** If you plan to use DCE (Distributed Computing Environment), you require a DCE product that is provided by the AIX Version 5 operating system with its latest DCE PTF.
• DB2 Run-Time Client for HP-UX 10.20 • DB2 Administration Client for HP-UX 10.20 • DB2 Software Developer's Kit for HP-UX	HP 9000 Series 700 or 800 system and the following: • HP-UX Version 10.20 or later The following patches are required: • For HP-UX Version 10.20 – PHSS_10556 – PHSS_10436 – PHSS_10053 – PHSS_10113 • For systems with the ANSI C or C++ compilers: – PHSS_10261 – PHSS_7505 – PHSS_9096 for C++	APPC or TCP/IP • For APPC connectivity, HP-UX Version 10.20 requires the following: – SNAplus2 and the following components: - SNAplus2 Link Version A.10.10 - SNAplus2 API Version A.10.10 **Note:** If you plan to use DCE (Distributed Computing Environment) with Version 6 of the DB2 Universal Database products, you require a DCE product that is at OSF DCE level 1.1, which is provided by the HP-UX Version 11 and later operating system. With DB2 Connect, you must install DCE Directory Services on the client and the DRDA server. You do not need DCE installed on a DB2 Connect Enterprise Edition server.
• DB2 Run-Time Client for HP-UX for 11.00 • DB2 Administration Client for HP-UX for 11.00 • DB2 Software Developer's Kit for HP-UX	HP 9000 Series 700 or 800 system and the following: • HP-UX Version 11.00 or later	APPC or TCP/IP • For APPC connectivity, you require either of the following: – SNAplus2 Link R6.11.00.00 – SNAplus2 API R6.11.00.00 **Note:** If you plan to use DCE (Distributed Computing Environment), you require a DCE product that is provided by the HP-UX Version 11 base operating system.

Table 5. Software Requirements for Clients (continued)

Component	Hardware/Software Requirements	Communications
• DB2 Run-Time Client for Linux • DB2 Administration Client for Linux • DB2 Software Developer's Kit for Linux	• Linux kernel 2.0.35 or higher; • *glibc* Version 2.0.7 or higher; • *pdksh* package (required to run the DB2 command line processor); and • *libstdc++* Version 2.8.0 or higher. To install DB2, you will need *rpm*.	TCP/IP • The Linux base operating system provides TCP/IP connectivity, if selected during install. APPC connectivity is not provided in this release.
• DB2 Run-Time Client for OS/2 • DB2 Administration Client for OS/2 • DB2 Software Developer's Kit for OS/2	• OS/2 Warp Version 3 and Version 4 • OS/2 Warp Connect Version 3 • OS/2 Warp Server Version 4 • OS/2 Warp Server Advanced V4 • OS/2 Warp Server Advanced V4 with SMP Feature • OS/2 Warp Server for e-business	APPC, IPX/SPX, NetBIOS, or TCP/IP • For APPC connectivity, you require IBM eNetwork Communications Server for OS/2 Warp Version 5 or IBM eNetwork Personal Communications for OS/2 Warp Version 4.2. • For IPX/SPX connectivity, you require the Novell NetWare client for OS/2 Version 2.10 or later. IPX/SPX can only be used to connect to local databases. It cannot be used to connect to host or AS/400 databases. • For NetBIOS connectivity, you require IBM NTS/2 Version 1.0, IBM eNetwork Communications Server for OS/2 Warp Version 5, IBM eNetwork Personal Communications for OS/2 Warp Version 4.2, or IBM OS/2 LAN Requester. NetBIOS can only be used to connect to local databases. It cannot be used to connect to host or AS/400 databases. • For TCP/IP connectivity, you require IBM TCP/IP Version 2.0 or later. • The OS/2 base operating system provides Named Pipes (Local) connectivity. Named Pipes is supported in DOS and WIN-OS/2 sessions. **Notes:** 1. Net.Data requires OS/2 Warp Version 3 or later and a Web server such as IBM's Internet Connection Server. 2. For DCE Cell Directory Services Support (CDS) for DB2 Clients for OS/2, you must install IBM Distributed Computing Environment Cell Directory Service client, Version 2.10, on each client workstation. 3. If you are planning to use ADSM, PTF 3 for ADSTAR Distributed Storage Manager (ADSM) Version 3 is required for an OS/2 client.

Table 5. Software Requirements for Clients (continued)

Component	Hardware/Software Requirements	Communications
• DB2 Run-Time Client for Silicon Graphics IRIX • DB2 Administration Client for Silicon Graphics IRIX • DB2 Software Developer's Kit for Silicon Graphics IRIX	• Silicon Graphics IRIX, Version 6.x, and the following filesets: – eoe.sw.oampkg – eoe.sw.svr4net The following patches are required for Versions 6.2 and 6.3: – 2791.0 – 3778.0	TCP/IP • The Silicon Graphics IRIX base operating system provides TCP/IP connectivity.
• DB2 Run-Time Client for Solaris • DB2 Administration Client for Solaris • DB2 Software Developer's Kit for Solaris	Solaris SPARC-based computer and the following: • Solaris Version 2.5.1 or later The following patches are required for Solaris version 2.5.1: • 101242 Rev. 11 or higher • 103566 Rev. 08 or higher • 103600 Rev. 13 or higher • 103640 Rev. 20 or higher The following patches are required for Solaris version 2.6: • 105568 Rev. 12 or higher • 105210 Rev. 13 or higher • 105181 Rev. 06 or higher	APPC or TCP/IP • For APPC connectivity, you require SunLink SNA 9.0 or later and the following: – SunLink P2P LU6.2 9.0 or later – SunLink PU2.1 9.0 or later – SunLink P2P CPI–C 9.0 or later • The Solaris base operating system provides TCP/IP connectivity. **Note:** If you plan to use DCE (Distributed Computing Environment), you require a DCE product with Transarc DCE Version 1.1 for Solaris 2.5 and 2.5.1, patch level 18 or higher.
• DB2 Run-Time Client for Windows 9x • DB2 Administration Client for Windows 9x • DB2 Software Developer's Kit for Windows 9x	• Windows 95 4.00.950 or later • Windows 98	IPX/SPX, Named Pipes, NetBIOS, or TCP/IP • The Windows 9x base operating system provides NetBIOS, IPX/SPX, TCP/IP, and Named Pipes connectivity. **Note:** IPX/SPX connectivity is only supported to Windows NT servers. • If you plan to use LDAP (Lightweight Directory Access Protocol), you require the IBM eNetwork LDAP Directory Client Version 3.1. For more information, refer to the *Administration Guide*.

Table 5. Software Requirements for Clients (continued)

Component	Hardware/Software Requirements	Communications
• DB2 Run-Time Client for Windows NT • DB2 Administration Client for Windows NT • DB2 Software Developer's Kit for Windows NT	• Windows NT Version 4.0 with Service Pack 3 or later • Windows Terminal Server (can only run the DB2 Run-Time Client)	APPC, IPX/SPX, Named Pipes, NetBIOS, or TCP/IP • The Windows NT base operating system provides NetBIOS, IPX/SPX, TCP/IP, and Named Pipes connectivity. • For APPC connectivity, you require one of the following products: – IBM eNetwork Communications Server for Windows NT V5.01 or later. – IBM eNetwork Personal Communications for Windows NT V4.2 or later. – Microsoft SNA Server Version 4 Service Pack 2 or later – Wall Data Rumba • If you plan to use DCE (Distributed Computing Environment) with Version 6 of DB2 Universal Database, you will need to ensure that if you are connecting to DB2 for OS/390 V5.1 database that it is enabled for DCE support using OS/390 DCE Base Services Version 3. • If you plan to use LDAP (Lightweight Directory Access Protocol), you require the IBM eNetwork LDAP Directory Client Version 3.1. For more information, refer to the *Administration Guide*. • If you plan to use the ADSTAR Distributed Storage Manager (ADSM) facilities for backup and restore of your databases, you require the ADSM Client Version 3 or later. • If you have the IBM Antivirus program installed on your operating system, it must be Version 3.0 or later.

Possible Client-to-Server Connectivity Scenarios

The following table shows the communication protocols that can be used when connecting a specific LAN, host or AS/400 DB2 client to a specific DB2 server or DB2 Connect server.

DB2 Workgroup, DB2 Enterprise, and DB2 Enterprise - Extended Editions can service requests from host or AS/400 clients (DRDA ARs).

Table 6. Possible Client-to-Server Connectivity Scenarios

Client	Server					
	AIX	**HP-UX**	**Linux**	**OS/2**	**Solaris**	**Windows NT**
AS/400 V4R1	SNA	N/A	N/A	SNA	SNA	SNA
AS/400 V4R2	SNA TCP/IP	TCP/IP	TCP/IP	SNA TCP/IP	SNA TCP/IP	SNA TCP/IP
AIX	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
HP-UX	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
Linux	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP
MVS	SNA	N/A	N/A	SNA	SNA	SNA
OS/2	APPC IPX/SPX(1),(2) TCP/IP	TCP/IP	TCP/IP	APPC IPX/SPX(1),(2) NetBIOS TCP/IP	APPC IPX/SPX(1) TCP/IP	APPC IPX/SPX(1) NetBIOS TCP/IP
OS/390	SNA TCP/IP	TCP/IP	TCP/IP	SNA TCP/IP	SNA TCP/IP	SNA TCP/IP
Silicon Graphics IRIX	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP
SQL/DS	SNA	N/A	N/A	SNA	SNA	SNA
Solaris	APPC TCP/IP	TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
VSE & VM V6	SNA	N/A	N/A	SNA	SNA	SNA
VSE V6	SNA	N/A	N/A	SNA	SNA	SNA
VM V6	SNA TCP/IP	TCP/IP	TCP/IP	SNA TCP/IP	SNA TCP/IP	SNA TCP/IP
Windows 9x	TCP/IP	TCP/IP	TCP/IP	NetBIOS TCP/IP	TCP/IP	IPX/SPX(1) NPIPE NetBIOS TCP/IP
Windows NT	APPC IPX/SPX(1) TCP/IP	TCP/IP	TCP/IP	APPC IPX/SPX(1) NetBIOS TCP/IP	APPC IPX/SPX(1) TCP/IP	APPC IPX/SPX(1) NPIPE NetBIOS TCP/IP

1. Direct Addressing
2. File Server Addressing

Chapter 2. Installing and Configuring DB2 on UNIX Systems

This section describes how to install DB2 Universal Database on UNIX-based workstations. If you want to install a DB2 Administration Client, Run-Time Client, or Software Developer's Kit on a UNIX-based workstation, see "Chapter 6. Installing DB2 Clients on UNIX Operating Systems" on page 41. For information on how to deploy this product using a distributed installation, refer to the *Installation and Configuration Supplement*.

We assume in these instructions that you install and configure DB2 Universal Database products using the DB2 Installerprogram. We also assume that you select to install the Control Center, create an instance, and create an Administration Server using the DB2 Installer program.

If you want to install your DB2 product using your UNIX operating system's native installation tools, refer to the *Installation and Configuration Supplement*.

If you need to migrate databases that were created using previous versions of DB2, you must complete certain procedures before and after installing DB2 Universal Database Version 6. See "Appendix C. Migrating from Previous Versions and Releases" on page 105 for further information.

Before You Begin

Before you begin installation, be sure you have the following items and information:

__ 1. Ensure that your system meets all of the memory, hardware, and software requirements to install your DB2 product. For more information, see "Chapter 1. Planning for Installation" on page 3.

__ 2. A username for the default DB2 instance. We recommend that you create a new group and use it as the primary group for the DB2 instance owner.

__ 3. A username for fenced user defined functions (UDFs) and stored procedures. For security reasons, we recommend that you do not use the same username that you reserved for the DB2 instance.

__ 4. A username for the Administration Server. For security reasons, we recommend that you do not use the same username that you reserved for the DB2 instance.

You can have the DB2 Installer create these usernames, or you can create them manually. Usernames should conform to both your operating system's naming rules, and those of DB2. For more information on naming rules, see "Appendix E. Naming Rules" on page 127.

When you use the DB2 Installer program, you should be aware of the following:

- The DB2 Installer's **db2setup** command only works with Bash, Bourne, and Korn shells. Other shells are not supported.
- You can generate a trace log, *db2setup.trc*, to record errors experienced during the installation. Run the **db2setup** command as follows:

  ```
  db2setup -d
  ```

  This creates a trace file, `/tmp/db2setup.trc`.

Installation Steps

To install DB2 Universal Database on UNIX systems, perform the following steps:

Step 1. Identify and Record Parameter Values

Table 7 will help you determine the values required to install DB2 products, set up a DB2 instance and configure the Administration Server. Before proceeding with the installation and configuration, complete the *Your Value* column in the table. If you want to choose the default value for a parameter, you do not need to provide any value in the *Your Value* column for that parameter. In Table 7, the only parameter for which a value is required is *DB2 Product Name*. All other parameters either have a default value or are optional.

Table 7. Parameter Values Required for Installation

Information Required for DB2 Installer	**Default Value**	**Your Value**
Product/Component		
DB2 Product Name[1]	None	
DB2 Product Messages[2]	None	
Documentation[2]	None	
DB2 Instance		
User Name	db2inst1	
UID	System-generated UID	
Group Name	db2iadm1	

Table 7. Parameter Values Required for Installation (continued)

Information Required for DB2 Installer	**Default Value**	**Your Value**
GID	System-generated GID	
Password	ibmdb2	
TCP/IP Service Name	db2cdb2inst1	
TCP/IP Port Number	50001	
IPX/SPX File Server Name	*	
IPX/SPX Object Name	*	
IPX/SPX Socket Number	879E	
IPX/SPX NetWare User ID	None	
IPX/SPX NetWare Password	None	
User Name (UDF)	db2fenc1	
UID (UDF)	System-generated UID	
Group Name (UDF)	db2fadm1	
GID (UDF)	System-generated GID	
Password (UDF)	ibmdb2	
Administration Server		
User Name (DAS)	db2as	
UID (DAS)	System-generated UID	
Group Name (DAS)	db2asgrp	
GID (DAS)	System-generated GID	
Password (DAS)	ibmdb2	
TCP/IP Port Number (DAS)	523	523
IPX/SPX File Server Name (DAS)	*	
IPX/SPX Object Name (DAS)	*	
IPX/SPX Socket Number (DAS)	87A2	87A2
IPX/SPX NetWare User ID (DAS)	None	
IPX/SPX NetWare Password (DAS)	None	

Table 7. Parameter Values Required for Installation (continued)

Information Required for DB2 Installer	Default Value	Your Value
Notes: 1. You must select at least one DB2 product to install. See *Installation and Configuration Supplement* for a list of DB2 products available for installation. 2. You can optionally select one or more filesets in this product. There is a separate fileset for each locale. See *Installation and Configuration Supplement* for the names of filesets for DB2 Product Messages and Documentation.		

Step 2. Update Kernel Configuration Parameters

Depending on your workstation's operating system and its kernel configuration, you may need to update the kernel configuration parameters before installing DB2:

- For HP-UX kernel configuration parameters, see Table 8 on page 21.
- For Solaris kernel configuration parameters, see Table 9 on page 22.

If you are installing a DB2 product on an AIX or Linux workstation, you do not need to update the kernel configuration parameters. To continue the installation on an AIX or Linux workstation, go to "Step 3. Mount the CD-ROM" on page 23.

Recommended Values for HP-UX Version 10 and Version 11

The values in Table 8 on page 21 are the recommended HP-UX kernel configuration parameters.

Table 8. HP-UX Kernel Configuration Parameters (Recommended Values)

Kernel Parameter	Physical Memory		
	64MB - 128MB	**128MB - 256MB**	**256MB+**
maxuprc	256	384	512
maxfiles	256	256	256
nproc	512	768	1024
nflocks	2048	4096	8192
ninode	512	1024	2048
nfile	(4 * ninode)	(4 * ninode)	(4 * ninode)
msgseg	8192	16 384	32 768
msgmnb	65 535 (1)	65 535 (1)	65 535 (1)
msgmax	65 535 (1)	65 535 (1)	65 535 (1)
msgtql	256	512	1024
msgmap	130	258	258
msgmni	128	256	256
msgssz	16	16	16
semmni	128	256	512
semmap	130	258	514
semmns	256	512	1024
semmnu	256	512	1024
shmmax	67 108 864	134 217 728 (2)	268 435 456 (2)
shmseg	16	16	16
shmmni	300	300	300

Notes:

1. Parameters *msgmnb* and *msgmax* must be set to at least 65535.
2. Parameter *shmmax* should be set to 134217728 or 90% of the physical memory (in bytes), whichever is higher. For example, if you have 196 MB of physical memory in your system, set *shmmax* to 184 968 806 (196*0.9*1024*1024).
3. To maintain the interdependency among kernel parameters, change parameters in the same sequence in which they appear in the preceding table.

To change a value, perform the following steps:

Step 1. Enter the **sam** command to start the System Administration Manager (SAM) program.

Step 2. Double-click on the **Kernel Configuration** icon.

Step 3. Double-click on the **Configurable Parameters** icon.

Step 4. Double-click on the parameter that you want to change and enter the new value in the **Formula/Value** field.

Step 5. Click on **OK**.

Step 6. Repeat these steps for all of the kernel configuration parameters that you want to change.

Step 7. When you are finished setting all of the kernel configuration parameters, select **Action->Process New Kernel** from the action menu bar.

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

To continue with the installation on HP-UX systems, proceed to "Step 3. Mount the CD-ROM" on page 23.

Recommended Values for Solaris

The values in Table 9 are the recommended Solaris kernel configuration parameters.

Table 9. Solaris Kernel Configuration Parameters (Recommended Values)

Kernel Parameter	Physical Memory			
	64MB - 128MB	**128MB - 256MB**	**256MB - 512MB**	**512MB+**
msgsys:msginfo_msgmax	65 535(1)	65535(1)	65 535(1)	65 535(1)
msgsys:msginfo_msgmnb	65 535(1)	65 535(1)	65 535(1)	65 535(1)
msgsys:msginfo_msgmap	130	258	258	258
msgsys:msginfo_msgmni	128	256	256	256
msgsys:msginfo_msgssz	16	16	16	16
msgsys:msginfo_msgtql	256	512	1024	1024
msgsys:msginfo_msgseg	8 192	16 384	32 768	32 768
shmsys:shminfo_shmmax	67 108 864	134 217 728(2)	268 435 456(2)	536 870 912(2)
shmsys:shminfo_shmseg	16	16	16	16
shmsys:shminfo_shmmni	300	300	300	300
semsys:seminfo_semmni	128	256	512	1024
semsys:seminfo_semmap	130	258	514	1026
semsys:seminfo_semmns	256	512	1024	2048
semsys:seminfo_semmnu	256	512	1024	2048

Notes:

1. The *msgsys:msginfo_msgmnb* and *msgsys:msginfo_msgmax* parameters must be set to 65535 or larger.
2. The *shmsys:shminfo_shmmax* parameters should be set to the suggested value in the above table, or 90% of the physical memory (in bytes), whichever is higher. For example, if you have 196 MB of physical memory in your system, set the *shmsys:shminfo_shmmax* parameter to 184968806 (196*0.9*1024*1024).

To set a kernel parameter, add a line at the end of the /etc/system file as follows:

```
set parameter_name = value
```

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

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

Sample files for updating the kernel configuration parameters are provided in the /opt/IBMdb2/V6.1/cfg directory. The names for these files are as follows:

kernel.param.64MB
for systems with 64MB–124MB of physical memory

kernel.param.128MB
for systems with 128MB–256MB of physical memory

kernel.param.256MB
for systems with 256MB–512MB of physical memory

kernel.param.512MB
for systems with 512MB–1GB of physical memory

Depending upon the amount of physical memory in your system, append the appropriate kernel configuration parameter file to the /etc/system file. If necessary, change the value of the *shmsys:shminfo_shmmax* parameter as described in Note 2 above.

After updating the /etc/system file, reboot the system.

To continue with the installation on Solaris systems, proceed to "Step 3. Mount the CD-ROM".

Step 3. Mount the CD-ROM

To install your DB2 product using the DB2 Installer program, you must first mount the CD-ROM. Once you have mounted the CD-ROM, you can start the installation.

Go to the section that describes the mounting instructions for the DB2 server that you want to install:

- "Mounting on AIX Systems" on page 24
- "Mounting on HP-UX Systems" on page 25
- "Mounting on Linux Systems" on page 25
- "Mounting on Solaris Systems" on page 25

Mounting on AIX Systems

To mount the CD-ROM on AIX, perform the following steps:

Step 1. Log in as a user with `root` authority.

Step 2. Insert the CD-ROM in the drive.

Step 3. Create a directory to mount the CD-ROM by entering the following command:

```
mkdir -p /cdrom
```

where `cdrom` represents the CD-ROM mount directory.

Step 4. Allocate a CD-ROM file system by entering the following command:

```
smitty storage
```

Step 5. Select **File Systems**.

Step 6. Select **Add / Change / Show / Delete File Systems**.

Step 7. Select **CDROM File Systems**.

Step 8. Select **Add CDROM File System**.

Step 9. Select **Device Name**.

Device names for CD-ROM file systems must be unique. If there is a duplicate device name, you may need to delete a previously-defined CD-ROM file system or use another name for your directory.

Step 10. In the pop-up window, enter the following as **mount point**:

```
/cdrom
```

Step 11. Mount the CD-ROM file system by entering the following command:

```
smit mountfs
```

Step 12. Enter a value in the **FILE SYSTEM** name field. For example, the name could be `/dev/cd0`.

Step 13. Enter a value in the **Directory over which to mount** field. For example, this value could be `/cdrom`.

Step 14. Enter a value in the **Type of Filesystem** field. For example, this value could be `cdrfs`.

Step 15. Set the **Mount as READ-ONLY system** to `Yes`.

Step 16. Click on **OK**.

Step 17. Log out.

After mounting the CD-ROM, proceed to “Step 4. Install the DB2 Products” on page 26.

Mounting on HP-UX Systems

To mount the CD-ROM on HP-UX, perform the following steps:

Step 1. Log in as a user with `root` authority.

Step 2. Insert the CD-ROM in the drive.

Step 3. Mount it by entering the following commands:

```
mkdir /cdrom
/usr/sbin/mount /dev/dsk/c0t2d0 /cdrom
```

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

Step 4. Log out.

The CD-ROM may also be mounted using the System Administration (**SAM**) tool. Consult your HP-UX documentation for more information about **SAM**.

After mounting the CD-ROM, proceed to "Step 4. Install the DB2 Products" on page 26.

Mounting on Linux Systems

To mount the CD-ROM on Linux, perform the following steps:

Step 1. Log in as a user with `root` authority.

Step 2. Insert the CD-ROM in the drive and mount it with a command similar to the following:

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

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

Step 3. Log out.

After mounting the CD-ROM, proceed to "Step 4. Install the DB2 Products" on page 26.

Mounting on Solaris Systems

To mount the CD-ROM on Solaris, perform the following steps:

Step 1. Log in as a user with `root` authority.

Step 2. If the Volume Manager is not running on your system, enter the following commands to mount the CD-ROM:

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

where */cdrom/unnamed_cdrom* represents the CD-ROM mount directory.

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

If the Volume Manager (vold) is running on your system, the CD-ROM is automatically mounted as:

```
/cdrom/unnamed_cdrom
```

Step 3. Log out.

Step 4. Install the DB2 Products

After you mount the CD-ROM file system, use the DB2 Installer program to install DB2.

DB2 for UNIX Version 6 products can co-exist on the same machine with previous versions of DB2.

To install your DB2 product, perform the following steps:

Step 1. Log in as root.

Step 2. Insert the CD-ROM into the drive.

Step 3. Change to the directory where the CD-ROM is mounted by entering the following command:

- On AIX, HP-UX, or Linux:

  ```
  cd /cdrom
  ```

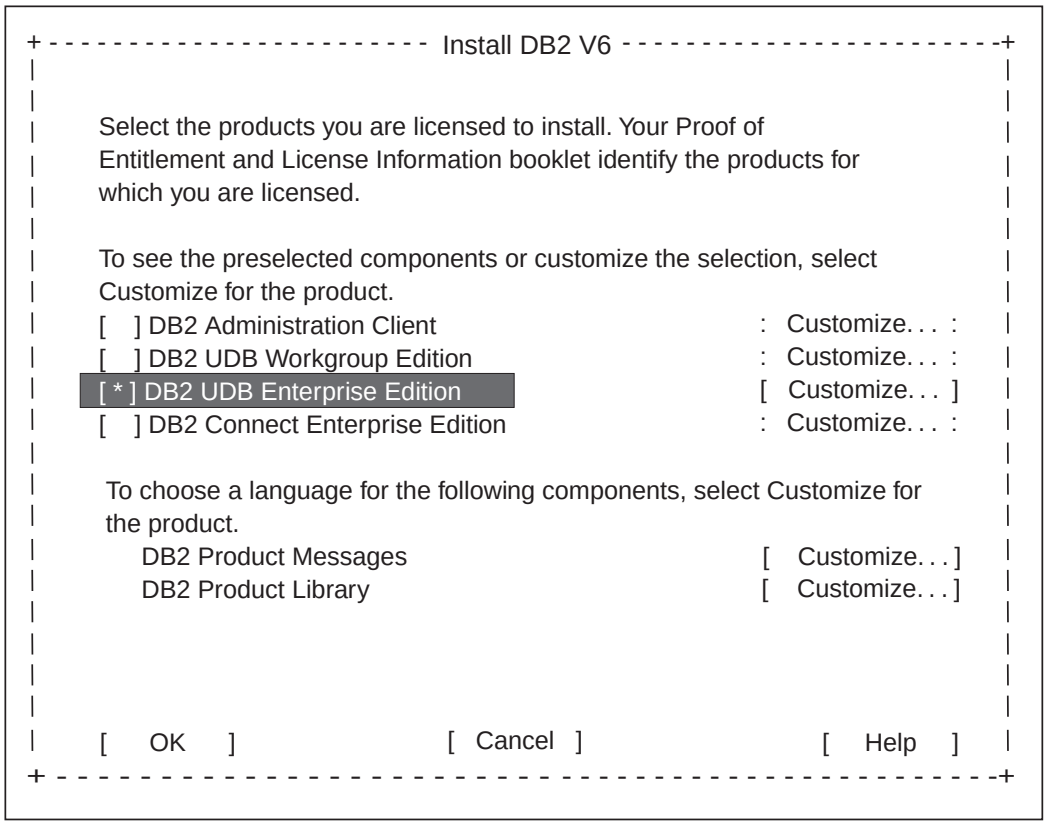
- On Solaris:

  ```
  cd /cdrom/unnamed_cdrom
  ```

  where `/cdrom` is the mount point of the CD-ROM drive on AIX, HP-UX, or Linux, and `/cdrom/unnamed_cdrom` is the mount point of the CD-ROM on Solaris.

Step 4. Enter the **./db2setup** command to start the DB2 Installerprogram. The **Install DB2 V6** window opens.

It will take some time for the DB2 Installerprogram to start up, as it is scanning your system for information.



Step 5. From the product list on the *Install DB2 V6* screen, select the products that you want to install.

Press the **Tab** key to change the highlighted option and the **Enter** key to select or deselect an option.

To display the components for a DB2 product that you want to install, select **Customize**. To go back to a previous windows at any times, select **Cancel**.

To refresh the current screen, press the **F5** key or **Ctrl+L**.

When you have finished selecting the DB2 product and its components, select **OK** to complete the installation.

For more information or assistance during the installation of any DB2 product or component, select **Help**.

When installation is complete, DB2 software is installed in the *DB2DIR* directory,

where *DB2DIR*	= /usr/lpp/db2_06_01	on AIX
	= /opt/IBMdb2/V6.1	on HP-UX, Solaris, or SGI IRIX
	= /usr/IBMdb2/V6.1	on Linux

You can use the DB2 Installer program to create an additional instance, create an Administration Server, or add additional products or components after your initial installation. To create or add a new instance, an Administration Server, or additional DB2 products and components, enter the following command:

On AIX

```
/usr/lpp/db2_06_01/install/db2setup
```

On HP-UX, Solaris, or SGI IRIX

```
/opt/IBMdb2/V6.1/install/db2setup
```

On Linux

```
/usr/IBMdb2/V6.1/install/db2setup
```

Verifying the Installation

If you did not install the DB2 tools, you can verify the installation by creating the SAMPLE database and connecting to it using the command line processor as follows:

Step 1. Log on to the system as a user with system administrative (SYSADM) authority.

Step 2. Enter the **db2sampl** command to create the SAMPLE database.

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

Step 3. Start the database manager by entering the **db2start** command.

Step 4. Enter the following commands 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
```

For information about entering DB2 commands, see “Entering Commands Using the Command Center” on page 99 or “Entering Commands Using the Command Line Processor” on page 100.

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.

Software Registration

DB2 software registration is handled automatically if you installed your DB2 product from a CD-ROM using the DB2 Installer program. If you installed DB2 using your UNIX operating system's native installation tools, you must use the **db2licm** command to register DB2. Refer to the *Command Reference* for more information.

Part 2. Installing and Configuring DB2 Clients

Chapter 3. Installing DB2 Clients

This section describes how to install a DB2 Administration Client, a DB2 Run-Time Client, or a DB2 Software Developer's Kit on your workstation. For information on how to deploy this product using a distributed installation, refer to the *Installation and Configuration Supplement*.

DB2 Administration Clients are available for the following platforms: AIX, HP-UX, Linux, OS/2, Silicon Graphics IRIX, Solaris, Windows 9x, and Windows NT.

DB2 Run-Time Clients and DB2 Software Developer's Kits are available for the following platforms: AIX, HP-UX, Linux, OS/2, Silicon Graphics IRIX, Solaris, Windows 9x, and Windows NT.

Clients that connect to a server must have the appropriate DB2 Administration Client, DB2 Run-Time Client, or DB2 Software Developer's Kit installed.

You may install a DB2 client on any number of workstations. For information about licensing, refer to your *License Information Booklet*.

Go to the section that provides installation instructions for the DB2 client that you want to install:

- "Chapter 4. Installing DB2 Clients on Windows 32-Bit Operating Systems" on page 35
- "Chapter 5. Installing DB2 Clients on OS/2 Operating Systems" on page 39
- "Chapter 6. Installing DB2 Clients on UNIX Operating Systems" on page 41

For information on how to install all other Version 6 DB2 clients or DB2 Software Developer's Kits, refer to the *Installation and Configuration Supplement*.

To download installation packages for all supported DB2 clients, which include pre-Version 6 DB2 clients such as DOS, Macintosh, SCO OpenServer, SCO Unixware, SINIX, and Windows 3.x, connect to the IBM DB2 Client Application Enabler Web site at http://www.software.ibm.com/data/db2/db2tech/clientpak.html.

Chapter 4. Installing DB2 Clients on Windows 32-Bit Operating Systems

This section contains the information you need to install a DB2 client or DB2 Software Developer's Kit on Windows 32-bit operating systems.

Before You Begin

Before you begin the installation, be sure that you have the following items and information:

__ 1. Ensure that your system meets all of the memory, hardware, and software requirements to install your DB2 product. For more information, see "Chapter 1. Planning for Installation" on page 3.

__ 2. A user account to perform the installation.

Windows 9x
Any valid Windows 9x user.

Windows NT
Any user account that does not belong to the *Guests* group on the machine where the account is defined.

Installation Steps

To install a DB2 Client or Software Developer's Kit, perform the following steps:

Step 1. Log on to the system with the user account that you created to perform the installation.

Step 2. Shut down any other programs so that the setup program can update files as required.

Step 3. Insert the appropriate CD-ROM into the drive. The auto-run feature automatically starts the setup program. The setup program 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, see the tip that follows.

To manually invoke the setup program, perform the following steps:

a. Click on **Start** and select the **Run** option.

b. In the **Open** field, enter the following command:

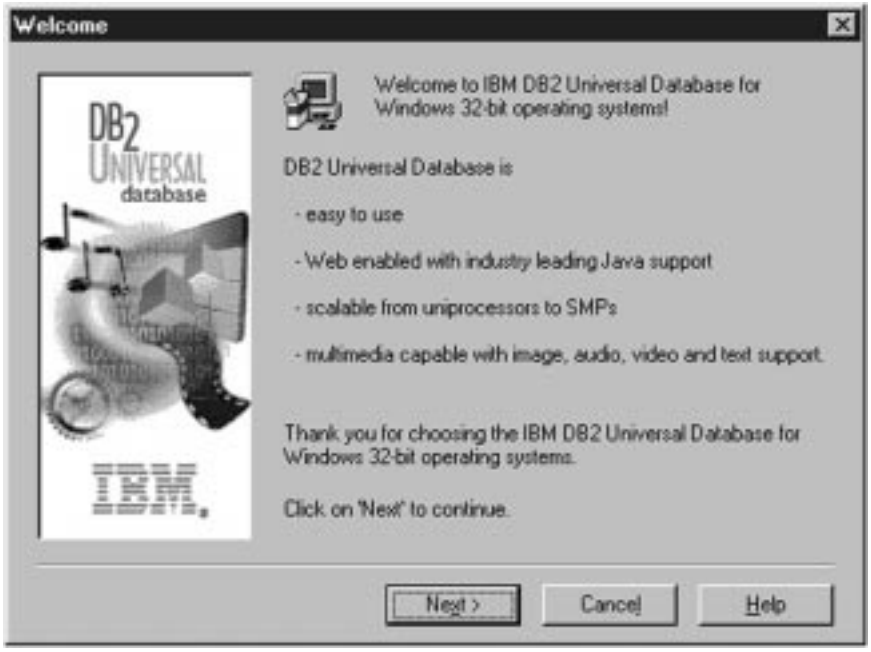
   `x:\setup /i language`

   where:

   - *x:* represents your CD-ROM drive
   - *language* represents the country code for your language (for example, EN for English). Table 17 on page 132 lists the code for each available language.

c. Click on **OK**.

Step 4. The Welcome window opens.



Step 5. Respond to the setup program's prompts. Online help is available to guide you through the remaining steps. Invoke online help by clicking on the **Help** push button, or by pressing the **F1** key at any time.

You can click on the **Cancel** push button at any time to end the installation.

For information on errors encountered during installation, see the db2.log file. The db2.log file stores general information and error messages resulting from the install and uninstall activities. By default, the db2.log file is located in the x:\db2log directory, where x: represents the drive on which your operating system is installed.

For more information, refer to the *Troubleshooting Guide*.

The setup program has:

- Created DB2 program groups and items (or shortcuts).
- Updated the Windows registry.
- Created a default client instance called DB2.

To configure your client to access remote servers, go to "Chapter 7. Configuring Client-to-Server Communications Using the Client Configuration Assistant" on page 51.

Chapter 5. Installing DB2 Clients on OS/2 Operating Systems

This section contains the information that you need to install a DB2 client or Software Developer's Kit on OS/2 operating systems. If you have a pre-Version 6 DB2 client for OS/2, the WIN-OS/2 support installed will be kept at its current level.

If you want to run Windows 3.x applications on your OS/2 system, you must also install the DB2 Client Application Enabler for Windows 3.x on your system. For more information, connect to the IBM DB2 Client Application Enabler Web site at http://www.software.ibm.com/data/db2/db2tech/clientpak.html.

Before You Begin

Before you begin the installation, be sure that you have the following items and information:

__ 1. Ensure that your system meets all of the memory, hardware, and software requirements to install your DB2 product. For more information, see "Chapter 1. Planning for Installation" on page 3.

__ 2. A user ID to perform the installation.

If UPM is installed, the user ID you specify must have *Administrator* or *Local Administrator* authority. Create a user ID with these characteristics if necessary.

If UPM is not installed, DB2 will install it and set up the userid `USERID` with password `PASSWORD`.

__ 3. To verify that DB2 installed correctly, you will need to have a user account that belongs to the System Administrative (SYSADM) group, is 8 characters or less, and complies with all of DB2's naming rules.

By default, any user that belongs to the *Local Administrators* group, on the local machine where the account is defined, has SYSADM authority on the instance. For more information, see "Working with the System Administrative Group" on page 102. For more information on valid DB2 usernames, see "Appendix E. Naming Rules" on page 127.

Installation Steps

To install a DB2 client or Software Developer's Kit for OS/2, perform the following steps:

Step 1. Insert the appropriate CD-ROM into the drive.

Step 2. Open an OS/2 command window and set the directory to your CD-ROM drive by entering the following command:

```
x:\install
```

where *x:* represents your CD-ROM drive.

Step 3. The Welcome window opens.

Step 4. Respond to the install program's prompts. Online help is available to guide you through the remaining steps. Invoke online help by clicking on the **Help** push button, or by pressing the **F1** key at any time.

For information on errors encountered during installation, see the `l1.log` and `l2.log` files. These files store general information and error messages resulting from installation and uninstall activities. By default, these files are located in the `x:\db2log` directory; where x: represents the drive on which your operating system is installed.

For more information, refer to the *Troubleshooting Guide*.

To configure your client to access remote servers, go to "Chapter 7. Configuring Client-to-Server Communications Using the Client Configuration Assistant" on page 51.

Chapter 6. Installing DB2 Clients on UNIX Operating Systems

This section contains the information that you need to install a DB2 client or Software Developer's Kit on UNIX operating systems.

If you want to remove a DB2 product, go to "Appendix D. Removing DB2 Products" on page 121.

Before You Begin

Before you begin installing a DB2 client or Software Developer's Kit using the DB2 Installer program, you need to gather the following information:

__ 1. Ensure that your system meets all of the memory, hardware, and software requirements to install your DB2 product. For more information, see "Chapter 1. Planning for Installation" on page 3.

__ 2. A username for the default DB2 instance. We recommend that you create a new group and use it as the primary group for the DB2 instance owner.

When you use the DB2 Installer program, you should be aware of the following:

- The DB2 Installer's **db2setup** command only works with Bash, Bourne, and Korn shells. Other shells are not supported.
- You can generate a trace log, *db2setup.trc*, to record errors experienced during the installation. Run the **db2setup** command as follows:

  ```
  db2setup -d
  ```

  This creates a trace file, `/tmp/db2setup.trc`.

Installation Steps

To install a DB2 client or Software Developer's Kit on AIX, HP-UX, Linux, Silicon Graphics IRIX, and Solaris systems, perform the following steps:

Step 1. Update Kernel Configuration Parameters

To run a DB2 client or Software Developer's Kit on a HP-UX, or Solaris system, you may have to update some kernel configuration parameters.

Go to the section that describes the kernel configuration parameters for the DB2 client that you want to install:

- "Recommended Values for HP-UX Version 10 and Version 11"
- "Recommended Values for Solaris" on page 43

You do *not* need to update any kernel configuration parameters to run a DB2 client or Software Developer's Kit on an AIX, Linux, or SGI IRIX workstation. If you are installing a DB2 client or Software Developer's Kit on AIX, Linux, or SGI IRIX, go to "Step 2. Mount the CD-ROM" on page 43.

Recommended Values for HP-UX Version 10 and Version 11

Table 10 lists the recommended values for HP-UX kernel configuration parameters. These values are valid for HP-UX 10 and HP-UX 11.

Table 10. HP-UX Kernel Configuration Parameters (Recommended Values)

Kernel Parameter	Recommended Value
msgseg	8192
msgmnb	65535 (1)
msgmax	65535 (1)
msgssz	16

Notes:

1. Parameters msgmnb and msgmax must be set to 65535 or higher.
2. To maintain the interdependency among kernel parameters, change parameters in the same sequence in which they appear in Table 10.

To change a value, perform the following steps:

Step 1. Enter the **sam** command to start the System Administration Manager (SAM) program.

Step 2. Double-click on the **Kernel Configuration** icon.

Step 3. Double-click on the **Configurable Parameters** icon.

Step 4. Double-click on the parameter that you want to change and enter the new value in the **Formula/Value** field.

Step 5. Click on **OK**.

Step 6. Repeat these steps for all of the kernel configuration parameters that you want to change.

Step 7. When you are finished setting all of the kernel configuration parameters, select **Action->Process New Kernel** from the action menu bar.

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

Go to “Step 2. Mount the CD-ROM” to continue with the installation.

Recommended Values for Solaris

Table 11 lists the recommended values for Solaris kernel configuration parameters.

Table 11. Solaris Kernel Configuration Parameters (Recommended Values)

Kernel Parameter	Recommended Value
msgsys:msginfo_msgmax	65535 (1)
msgsys:msginfo_msgmnb	65535 (1)
msgsys:msginfo_msgseg	8192
msgsys:msginfo_msgssz	16

Notes:

1. Parameters msgsys:msginfo_msgmnb and msgsys:msginfo_msgmax must be set to 65535 or higher.

To set a kernel parameter, add a line at the end of the /etc/system file as follows:

```
set parameter_name = value
```

where *parameter_name* represents the parameter you want to change.

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

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

After changing the kernel parameters, reboot the system so that the changes can take effect.

Go to “Step 2. Mount the CD-ROM” to continue with the installation.

Step 2. Mount the CD-ROM

To install your DB2 product using the DB2 Installer program, you must first mount the CD-ROM.

Go to the section that describes the mounting instructions for a DB2 client that you want to install:

- "Mounting on AIX Systems"
- "Mounting on HP-UX Systems" on page 45
- "Mounting on Linux Systems" on page 45
- "Mounting on Silicon Graphics IRIX" on page 45
- "Mounting on Solaris Systems" on page 46

Mounting on AIX Systems

To mount the CD-ROM on AIX, perform the following steps:

Step 1. Log in as a user with `root` authority.

Step 2. Insert the CD-ROM in the drive.

Step 3. Create a directory to mount the CD-ROM by entering the following command:

```
mkdir -p /cdrom
```

where `cdrom` represents the CD-ROM mount directory.

Step 4. Allocate a CD-ROM file system by entering the following command:

```
smitty storage
```

Step 5. Select **File Systems**.

Step 6. Select **Add / Change / Show / Delete File Systems**.

Step 7. Select **CDROM File Systems**.

Step 8. Select **Add CDROM File System**.

Step 9. Select **Device Name**.

Device names for CD-ROM file systems must be unique. If there is a duplicate device name, you may need to delete a previously-defined CD-ROM file system or use another name for your directory.

Step 10. In the pop-up window, enter the following as **mount point**:

```
/cdrom
```

Step 11. Mount the CD-ROM file system by entering the following command:

```
smit mountfs
```

Step 12. Enter a value in the **FILE SYSTEM** name field. For example, the name could be `/dev/cd0`.

Step 13. Enter a value in the **Directory over which to mount** field. For example, this value could be `/cdrom`.

Step 14. Enter a value in the **Type of Filesystem** field. For example, this value could be `cdrfs`.

Step 15. Set the **Mount as READ-ONLY system** to Yes.

Step 16. Click on **OK**.

Step 17. Log out.

Go to "Step 3. Perform the Installation" on page 46 to continue with the installation.

Mounting on HP-UX Systems

To mount the CD-ROM on HP-UX, perform the following steps:

Step 1. Log in as a user with root authority.

Step 2. Insert the CD-ROM in the drive.

Step 3. Mount it by entering the following commands:

```
mkdir /cdrom
/usr/sbin/mount /dev/dsk/c0t2d0 /cdrom
```

where /cdrom represents the CD-ROM mount point.

Step 4. Log out.

The CD-ROM may also be mounted using the System Administration (**SAM**) tool. Consult your HP-UX documentation for more information about **SAM**.

Go to "Step 3. Perform the Installation" on page 46 to continue with the installation.

Mounting on Linux Systems

To mount the CD-ROM on Linux, perform the following steps:

Step 1. Log in as a user with root authority.

Step 2. Insert the CD-ROM in the drive and mount it with a command similar to the following:

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

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

Step 3. Log out.

Go to "Step 3. Perform the Installation" on page 46 to continue with the installation.

Mounting on Silicon Graphics IRIX

Perform the following steps to mount the CD-ROM on Silicon Graphics IRIX operating systems:

1. Log in as a user with root authority.
2. Insert the appropriate CD-ROM into the drive and mount it using the **mount** command as follows:

   ```
   mount -t iso9660 device mount_point
   ```

   For example, to mount the CD-ROM as /cdrom, enter the following commands:

   ```
   mkdir /cdrom
   mount -t iso9660  /dev/scsi/sc0d7l0 /cdrom
   ```

3. Log out.

Go to "Step 3. Perform the Installation" to continue with the installation.

Mounting on Solaris Systems

To mount the CD-ROM on Solaris, perform the following steps:

Step 1. Log in as a user with root authority.

Step 2. If the Volume Manager is not running on your system, enter the following commands to mount the CD-ROM:

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

where */cdrom/unnamed_cdrom* represents the CD-ROM mount directory.

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

If the Volume Manager (vold) is running on your system, the CD-ROM is automatically mounted as:

```
/cdrom/unnamed_cdrom
```

Step 3. Log out.

Go to "Step 3. Perform the Installation" to continue with the installation.

Step 3. Perform the Installation

After you mount the CD-ROM file system, use the DB2 Installer program to install a DB2 product.

If you are installing a DB2 client from a remote server, it is better to use the **telnet** command to open a telnet session instead of using the **rlogin** command to connect to your remote server.

Step 1. Log in as user with `root` authority.

Step 2. Insert the appropriate CD-ROM into the drive.

Step 3. Change to the directory where the CD-ROM is mounted by entering the following command:

```
cd /cdrom
```

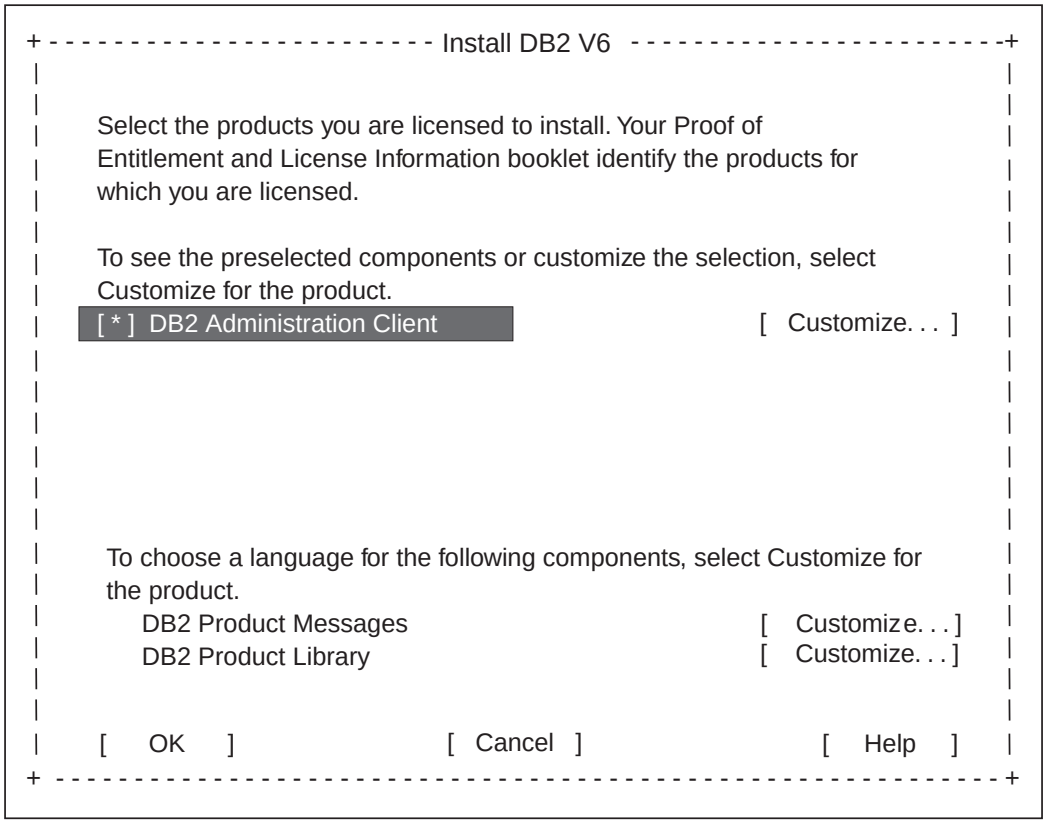
where `/cdrom` is the mount point of the CD-ROM drive.

Step 4. Change to the directory where the install image for the DB2 product that you want to install is located.

DB2 install images are available in the following directories (assuming that the mount point for the CD-ROM is `/cdrom`):

AIX	/cdrom/db2/aix
HP-UX Version 10	/cdrom/db2/hpux10
HP-UX Version 11	/cdrom/db2/hpux11
Linux	/cdrom/db2/linux
SGI	/cdrom/db2/sgi
Solaris	/cdrom/unnamed_cdrom/db2/solaris

Step 5. Enter the **./db2setup** command to start the DB2 Installer program. The Install DB2 V6 window opens.



Step 6. From the product list on the **Install DB2 V6** window, select the product that you want to install and select **OK**.

Press the Tab key to change the highlighted option and the Enter key to select or deselect the option you want.

To display the required and optional components for a product you want to install, select **Customize**. To go back to a previous window at any time, select **Cancel**. You can invoke the online help by clicking on **Help**.

To refresh the current screen, press the **F5** key or **Ctrl+L**.

This completes the installation. The DB2 software is installed in the *DB2DIR* directory,

where *DB2DIR*	= /usr/lpp/db2_06_01	on AIX
	= /opt/IBMdb2/V6.1	on HP-UX, Solaris, or SGI IRIX
	= /usr/IBMdb2/V6.1	on Linux

You can use the DB2 Installer program to create an additional instance, create an Administration Server, or add additional products or components after your initial installation. To create or add a new instance, an Administration Server, or additional DB2 products and components, enter the following command:

On AIX

```
/usr/lpp/db2_06_01/install/db2setup
```

On HP-UX, Solaris, or SGI IRIX

```
/opt/IBMdb2/V6.1/install/db2setup
```

On Linux

```
/usr/IBMdb2/V6.1/install/db2setup
```

To configure your client to access a remote DB2 server, see "Chapter 8. Configuring Client-to-Server Communications Using the Command Line Processor" on page 63.

Chapter 7. Configuring Client-to-Server Communications Using the Client Configuration Assistant

To configure communications from a DB2 client to a server, the remote server must be configured to accept inbound client requests. By default, the server installation program automatically detects and configures most protocols on the server for inbound client connections.

If you have added a new protocol to your network that is not detectable, or wish to modify any of the default settings, refer to the *Installation and Configuration Supplement*.

If you are adding a host or AS/400 database, refer to the Configuring DB2 Connect to Host or AS/400 Communications Using the Client Configuration Assistant section in your *DB2 Connect Quick Beginnings* manual.

The information in this section describes how to use the Client Configuration Assistant (CCA) to configure your OS/2, Windows 9x, or Windows NT clients to access remote servers. To complete the steps in this section, you should be familiar with how to start the CCA, for more information, see “Starting the Client Configuration Assistant” on page 97.

With the CCA, you can:

- Configure database connections that applications can use.
- Update or delete existing configured database connections.
- Display the information for existing configured connections.
- Test a connection to a database.
- Enable or disable databases to be configured as CLI or ODBC data sources.
- Export client profiles, or import client and server profiles which contain information for the setup of a client.
- Update client configuration settings.
- Discover remote databases (if enabled).
- Bind user applications and utilities to databases.
- Change your server password.

The CCA provides three methods to set up a database connection to a server:

- Using a profile.
- Searching the network for databases.
- Manually entering database and communication protocol information for a server.

When you add a database using this configuration method, the Client Configuration Assistant will generate a default node name for the server where the database resides.

Configuration Steps

To configure your workstation to access a database on a remote server, perform the following steps:

Step 1. Log on to the system with a valid DB2 user ID. For more information, see "Appendix E. Naming Rules" on page 127.

If you are adding a database to a system that has a DB2 or DB2 Connect server product installed, log on to this system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority on the instance. For more information, see "Working with the System Administrative Group" on page 102.

This restriction is controlled by the *catalog_noauth* database manager configuration parameter. For more information, refer to the *Administration Guide*.

Step 2. Start the CCA. For more information, see "Starting the Client Configuration Assistant" on page 97.

The Welcome window opens each time you start the CCA, until you add at least one database to your client.

Step 3. Click on the **Add Database** or **Add** push button to configure a connection.

Go to the section that describes the configuration method that you want to use:

- "Adding a Database Using a Profile".
- "Adding a Database Using Discovery" on page 54.
- "Adding a Database Manually" on page 56.

Adding a Database Using a Profile

A profile contains information about instances and databases on a system, and databases within each instance. For information on profiles, see "Creating and Using Profiles" on page 58.

If your administrator provided you with a profile, perform the following steps:

Step 1. Select the **Use an access profile** radio button and click on the **Next** push button.

Step 2. Click on the **...** push button and select a profile.

Step 3. Enter a local database alias name in the **Database alias** field and add a comment that describes this database in the **Comment** field. Click on the **Next** push button.

If you do not specify a database alias name, the default will be the same as the remote database alias name.

Step 4. Register this database as an ODBC data source.

If you are not planning to use ODBC, click on the **Done** push button and go to the next step.

a. Ensure that the **Register this database for ODBC** check box is selected.

b. Select the radio button that describes how you would like to register this database:

- If you would like all users on your system to have access to this data source, select the **As a system data source** radio button.
- If you would like only the current user to have access to this data source, select the **As a user data source** radio button.

c. If you would like to create an ODBC data source file to share database access, select the **Create a file data source** check box and enter the path and filename for this file in the **File data source name** field.

d. Click on the **Optimize for application** drop down box and select the application for which you want to tune the ODBC settings.

e. Click on the **Done** push button to add the database that you selected. The Confirmation window opens.

Step 5. Click on the **Test Connection** push button to test the connection. The Connect to DB2 Database window opens.

If the database that you want to add was not added successfully, click on the **Change** push button to change any settings that you may have incorrectly specified or click on the **Help** push button for more information. For even more detailed information, refer to the *Troubleshooting Guide*.

Step 6. Enter your user ID and password and click on **OK**. If the connection is successful, a message confirming the connection appears.

Step 7. You are now able to use this database. To finish using the Add Database SmartGuide, click on the **Close** push button; you can then add more databases by clicking on the **Add** push button or exit the CCA.

Adding a Database Using Discovery

This option cannot return information about pre-Version 5 DB2 systems or any systems where an Administration Server is not running. For more information, refer to the *Administration Guide.*

You can use the Discovery feature to search the network for databases. To add a database to your system using Discovery, perform the following steps:

Step 1. Select the **Search the network** radio button and click on the **Next** push button.

Step 2. Click on the **[+]** sign beside the **Known Systems** icon to list all the systems known to your client.

Step 3. Click on the **[+]** sign beside a system to get a list of the instances and databases on it. Select the database that you want to add, click on the **Next** push button, and proceed to Step 4.

If the system that contains the database that you want to add is not listed, perform the following steps:

a. Click on the **[+]** sign beside the **Other Systems (Search the network)** icon to search the network for additional systems.

b. Click on the **[+]** sign beside a system to get a list of the instances and databases on it.

c. Select the database that you want to add, click on the **Next** push button, and proceed to Step 4.

The Client Configuration Assistant may be unable to detect a remote system if:

- The Administration Server is not running on the remote system.
- The Discovery function times out. By default, the Discovery function will search the network for 40 seconds; this may not be long enough to detect the remote system. You can set the *DB2DISCOVERYTIME* registry variable to specify a longer period of time.
- The network that the Discovery request is running on is configured so that the Discovery request does not reach the remote system desired.
- You are using NetBIOS as the Discovery protocol. You may need to set the *DB2NBDISCOVERRCVBUFS* registry variable to a larger value to enable the client to receive more concurrent Discovery replies.

For more information, refer to the *Administration Guide.*

If the system that you want to add is still not listed, it can be added to the list of systems by performing the following steps:

a. Click on the **Add System** push button

b. Enter the required communication protocol parameters for the remote Administration Server and click on **OK**. A new system is added. For more information, click on the **Help** push button.

c. Select the database that you want to add and click on the **Next** push button.

Step 4. Enter a local database alias name in the **Database alias** field and add a comment that describes this database in the **Comment** field. Click on the **Next** push button.

If you do not specify a database alias name, the default will be the same as the remote database alias name.

Step 5. Register this database as an ODBC data source.

If you are not planning to use ODBC, click on the **Done** push button and go to the next step.

a. Ensure that the **Register this database for ODBC** check box is selected.

b. Select the radio button that describes how you would like to register this database:

- If you would like all users on your system to have access to this data source, select the **As a system data source** radio button.
- If you would like only the current user to have access to this data source, select the **As a user data source** radio button.

c. If you would like to create an ODBC data source file to share database access, select the **Create a file data source** check box and enter the path and filename for this file in the **File data source name** field.

d. Click on the **Optimize for application** drop down box and select the application for which you want to tune the ODBC settings.

e. Click on the **Done** push button to add the database that you selected. The Confirmation window opens.

Step 6. Click on the **Test Connection** push button to test the connection. The Connect to DB2 Database window opens.

If the database that you want to add was not added successfully, click on the **Change** push button to change any settings that you may have incorrectly specified or click on the **Help** push button for more information. For even more detailed information, refer to the *Troubleshooting Guide*.

Step 7. Enter your user ID and password and click on **OK**. If the connection is successful, a message confirming the connection appears.

Step 8. You are now able to use this database. To finish using the Add Database SmartGuide, click on the **Close** push button; you can then add more databases by clicking on the **Add** push button or exit the CCA.

Adding a Database Manually

If you have the protocol information for the server that you want to connect to, you can manually enter all of the configuration information. This method is analogous to entering commands via the command line processor, however, the parameters are presented graphically for you.

To add a database to your system manually, perform the following steps:

Step 1. Select the **Manually configure a connection to a DB2 database** radio button and click on the **Next** push button.

If you are not using Lightweight Directory Access Protocol (LDAP), this tab will not be shown, skip this step and go to Step 3.

Step 2. Select the radio button that corresponds to the location where you would like your DB2 directories to be maintained.

- If you would like to maintain the DB2 directories locally, select the **Add database to your local machine** radio button and click on the **Next** push button.
- If you would like to maintain the DB2 directories globally at an LDAP server, select the **Add database using LDAP** radio button and click on the **Next** push button.

Step 3. Select the radio button that corresponds to the protocol that you want to use from the **Protocol** list and click on the **Next** push button.

If you have installed a DB2 Connect product or the DB2 Connect Server Support feature available with DB2 Enterprise Edition or DB2 Enterprise - Extended Edition, and have selected the **TCP/IP** or **APPC** radio button, select the radio button from the **Target operating system** list that corresponds to the type of system where the database that you are trying to connect to resides.

Step 4. Enter the required communication protocol parameters and click on the **Next** push button. For more information, click on the **Help** push button.

Step 5. Enter the database alias name of the remote database that you want to add in the **Database name** field and a local database alias name in the **Database alias** field. Add a comment that describes this database in the **Comment** field and click on the **Next** push button.

If you are adding a database that resides on a host or AS/400 system, the **Database name** field will appear as follows:

OS/390 or MVS
Location name

AS/400
RDB name

VM or VSE
DBNAME

When a database is created on the remote server, if a database alias is not specified during database creation, the database is created with a database alias=*database_name*; otherwise, the database alias is the name that was specified when the database was created.

Step 6. Register this database as an ODBC data source.

a. Ensure that the **Register this database for ODBC** check box is selected.

b. Select the radio button that describes how you would like to register this database:

- If you would like all users on your system to have access to this data source, select the **As a system data source** radio button.
- If you would like only the current user to have access to this data source, select the **As a user data source** radio button.

c. If you would like to create an ODBC data source file to share database access, select the **Create a file data source** check box and enter the path and filename for this file in the **File data source name** field.

d. Click on the **Optimize for application** drop down box and select the application for which you want to tune the ODBC settings.

e. Click on the **Done** push button to add the database that you selected. The Confirmation window opens.

If you are adding a database using the *manual* method, you can also select the **Node Options** tab, the **Security Options** tab, or the **Host or AS/400 Options** tab (if you are adding a host or AS/400 database) to specify more detailed catalog information. Refer to the online help in each tab for more information.

If you want to use the default settings for the node, security, and host or AS/400 (if applicable) options, click on the **Done** push button and go to the next step.

Step 7. Click on the **Test Connection** push button to test the connection. The Connect to DB2 Database window opens.

If the database that you want to add was not added successfully, click on the **Change** push button to change any settings that you may

have incorrectly specified or click on the **Help** push button for more information. For even more detailed information, refer to the *Troubleshooting Guide*.

Step 8. Enter your user ID and password and click on **OK**. If the connection is successful, a message confirming the connection appears.

Step 9. You are now able to use this database. To finish using the Add Database SmartGuide, click on the **Close** push button; you can then add more databases by clicking on the **Add** push button or exit the CCA.

You can use the Export feature of the CCA to create a Client Profile for an existing client configuration and use it to create identical target clients across your network. A Client Profile contains database connection, ODBC/CLI, and configuration information for an existing client. Use the CCA Import feature to set up multiple clients across your network. Each target client will have the same configuration and settings as the existing client. For more information on creating and using Client Profiles, see "Creating and Using Profiles".

You have now completed all the tasks that are involved in Quick Beginnings and are ready to start using DB2 Universal Database.

If you want to deploy this product using a distributed installation, refer to the *Installation and Configuration Supplement*.

Creating and Using Profiles

The information in this section describes how to create and use profiles to set up connections between DB2 clients and servers. You can use either a *Server Profile* or a *Client Profile* to configure database connections on a client.

Go to the section that describes the type of profile that you want to use:

- "Server Profiles".
- "Client Profiles" on page 59.

Server Profiles

A Server Profile contains information about instances on a server system, and databases within each instance. The information for each instance includes the protocol information required to set up a client to connect to databases in that instance.

To generate a Server Profile, use the Export Server Profile function provided in the Control Center. When a profile is generated, it includes instances that

have the *discover_inst* database manager configuration parameter and databases with the *discover_db* database configuration parameter set to *ENABLE*. The *discover* parameter in the Administration Server's configuration file must be set to either *SEARCH* or *KNOWN* to generate a profile for a server system.

The default settings for these configuration parameters enable you to discover all instances and databases on your network. For information on setting the *discover_inst*, *discover_db*, and *discover* configuration parameters, refer to the *Administration Guide*.

We recommend that you create a Server Profile only after you have created the DB2 databases that you want your remote clients to access.

To create a Server Profile, perform the following steps:

Step 1. Start the Control Center. For more information, refer to "Starting the Control Center" on page 98.

Step 2. Select the system that you want to create a profile for and click on the right mouse button.

If the system that you want to create a profile for is not shown, select the **Systems** icon, click on the right mouse button, and select the **Add** option. Click on the **Help** push button and follow the online help.

Step 3. Select the **Export server profile** option.

Step 4. Enter a path and filename for this profile and click on the **Export** push button.

You are ready to use this profile on your system. For more information on how to add a database to your system using a Server Profile, go to "Configuration Steps" on page 52.

Client Profiles

Information in a Client Profile can be used to configure clients using the Import function in the Client Configuration Assistant (CCA). These clients can import all or a subset of the configuration information in a profile.

This scenario assumes that the database connections configured on one client will be exported and used to set up one or more clients.

A Client Profile is generated from a client using the Export function of the CCA. The information contained in a Client Profile is determined during the export process. Depending on the settings chosen, it can contain the existing client's:

- Database connection information (including CLI or ODBC settings).
- Client settings (including database manager configuration parameters, DB2 registry variables).
- CLI or ODBC common parameters.
- Configuration data for the local APPC or NetBIOS communications subsystem.

To create a Client Profile, perform the following steps:

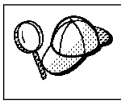
Step 1. Start the CCA. For more information, see "Starting the Client Configuration Assistant" on page 97.

Step 2. Click on the **Export** push button. The Select Export Option window opens.

Step 3. Select one of the following export options:

- If you want to create a profile that contains all of the databases cataloged on your system, and all of the configuration information for this client, select the **All** radio button, click on **OK**, and go to Step 6.
- If you want to create a profile that contains all of the databases cataloged on your system *without* any of the configuration information for this client, select the **Database connection information** radio button, click on **OK**, and go to Step 6.
- If you want to select a subset of the databases that are cataloged on your system, or a subset of the configuration information for this client, select the **Customize** radio button, click on **OK**, and go to the next step.

Step 4. Select the databases to be exported from the **Available DB2 databases** box and add them to the **Selected databases** box by clicking on the > push button.



To add all of the available databases to the **Databases to be exported** box, click on the >> button.

Step 5. Select the check boxes from the **Select custom export option** box that correspond to the options that you want to set up for the target client.

To customize settings, click on the appropriate **Customize** push button. The settings that you customize will only affect the profile to be exported, no changes will be made to your workstation. For more information, click on the **Help** push button.

Step 6. Click on **OK**. The Export Client Profile window opens.

Step 7. Enter a path and file name for this Client Profile and click on **OK**. The DB2 Message window opens.

Step 8. Click on **OK**.

To import a Client Profile, perform the following steps:

Step 1. Start the CCA. For more information, see "Starting the Client Configuration Assistant" on page 97.

Step 2. Click on the **Import** push button. The Select Profile window opens.

Step 3. Select a Client Profile to import and click on **OK**. The Import Profile window opens.

Step 4. You can select to import all or a subset of the information in a Client Profile. Select one of the following import options:

- To import all the databases defined in a Client Profile, select the **All** radio button.
- To import a specific database, or settings, that are defined in a Client Profile, select the **Customize** radio button. Select the check boxes that correspond to the options that you want to customize.

Step 5. Click on **OK**.

If you selected the **All** radio button, you are now ready to start using your DB2 product. For more advanced topics, refer to the *Administration Guide* and the *Installation and Configuration Supplement* online document.

Step 6. You are presented with a list of systems, instances, and databases. Select the database that you want to add and click on the **Next** push button.

Step 7. Enter a local database alias name in the **Database alias** field and add a comment that describes this database in the **Comment** field. Click on the **Next** push button.

If you do not specify a database alias name, the default will be the same as the remote database alias name.

Step 8. Register this database as an ODBC data source.

If you are not planning to use ODBC, click on the **Done** push button and go to the next step.

a. Ensure that the **Register this database for ODBC** check box is selected.

b. Select the radio button that describes how you would like to register this database:

- If you would like all users on your system to have access to this data source, select the **As a system data source** radio button.
- If you would like only the current user to have access to this data source, select the **As a user data source** radio button.

c. If you would like to create an ODBC data source file to share database access, select the **Create a file data source** check box and enter the path and filename for this file in the **File data source name** field.

d. Click on the **Optimize for application** drop down box and select the application for which you want to tune the ODBC settings.

e. Click on the **Done** push button to add the database that you selected. The Confirmation window opens.

Step 9. Click on the **Test Connection** push button to test the connection. The Connect to DB2 Database window opens.

If the database that you want to add was not added successfully, click on the **Change** push button to change any settings that you may have incorrectly specified or click on the **Help** push button for more information. For even more detailed information, refer to the *Troubleshooting Guide*.

Step 10. Enter your user ID and password and click on **OK**. If the connection is successful, a message confirming the connection appears.

Step 11. You are now able to use this database. To finish using the Add Database SmartGuide, click on the **Close** push button; you can then add more databases by clicking on the **Add** push button or exit the CCA.

Chapter 8. Configuring Client-to-Server Communications Using the Command Line Processor

To configure a client to communicate with a server, the remote server must be configured to accept in-bound requests for the communication protocol that you want to use. By default, the installation program automatically detects and configures any protocols running on your server.

If you have added a new protocol to your network, or wish to change any of the default settings on the server, refer to the *Installation and Configuration Supplement*.

This section describes how to configure a client to communicate with a server using the command line processor.

If you plan to use an OS/2 or Windows 32-bit client to communicate with a server, the Client Configuration Assistant (CCA) makes it easy to automate configuration and administration tasks. If you have installed the CCA, it is recommended that you use this tool to configure your DB2 clients for communications.

See "Chapter 7. Configuring Client-to-Server Communications Using the Client Configuration Assistant" on page 51 for more information.

For instructions on entering DB2 commands, see "Entering Commands Using the Command Center" on page 99 or "Entering Commands Using the Command Line Processor" on page 100.

Go to the section that describes how to configure communications to access a remote server using the communication protocol of your choice:

- For TCP/IP, see "Configuring TCP/IP on the Client".
- For APPC, refer to the *Installation and Configuration Supplement*.

Configuring TCP/IP on the Client

This section assumes that TCP/IP is functional on the client and server workstations. See "Software Requirements" on page 8 for the communication protocol requirements for your platform. See "Possible Client-to-Server Connectivity Scenarios" on page 15 for the supported communication protocols for your particular client and server.

To set up TCP/IP communications on a DB2 client, perform the following steps:

Step 1. Identify and record parameter values.

Step 2. Configure the client:

a. Resolve the server's host address.

b. Update the services file.

c. Catalog a TCP/IP node.

d. Catalog the database.

Step 3. Test the connection between the client and server.

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

If you are experiencing problems with your TCP/IP connection, refer to the *Troubleshooting Guide* for information on how to adjust this parameter and other common TCP/IP problems.

Step 1. Identify and Record Parameter Values

As you proceed through the configuration steps, complete the *Your Value* column in the following table. You can fill in some of the values before you start configuring this protocol.

Table 12. TCP/IP Values Required at the Client

Parameter	Description	Sample Value	Your Value
Host Name • Hostname (*hostname*) or • IP address (*ip_address*)	Use the *hostname* or *ip_address* of the remote server workstation. To resolve this parameter: • Enter the **hostname** command at the server to obtain the *hostname*. • Contact your network administrator to obtain the *ip_address* or enter the **ping** *hostname* command.	serverhost or 9.21.15.235	

Table 12. TCP/IP Values Required at the Client (continued)

Parameter	Description	Sample Value	Your Value

Service Name
• Connection Service name (*svcename*) or
• Port number / Protocol (*port_number/tcp*)
	Values required in the `services` file.
	
	The Connection Service name is an arbitrary name that represents the Connection port number (*port_number*) on the client.
	
	The port number for the client must be the same as the port number that the *svcename* parameter maps to in the `services` file at the server. (The *svcename* parameter is located in the database manager configuration file on the server.) This value must not be in use by any other applications, and must be unique within the `services` file.
	
	Contact your database administrator for the values used to configure the server.
		`server1`
		
		`3700/tcp`	

Node name (*node_name*)	A local alias, or nickname, that describes the node to which you are trying to connect. You can choose any name you want; however, all node name values within your local node directory must be unique.	`db2node`	

Step 2. Configure the Client

The following steps configure this protocol on the client. Replace the sample values with your worksheet values.

A. Resolve the Server's Host Address

If your network has a name server, or you are planning to directly specify the IP address (*ip_address*) of the server, skip this step and proceed to "Step B. Update the Services File" on page 66.

The client must know the address of the server to which it is attempting to establish communications. If a name server does not exist on your network, you may directly specify a hostname that maps to the IP address (*ip_address*) of the server in the local `hosts` file. See Table 13 on page 66 for the location of

the hosts file for your particular platform.

If you are planning on supporting a UNIX client that is using Network Information Services (NIS), and you are not using a name server on your network, you must update the hosts file located on your NIS master server.

Table 13. Location of the Local Hosts and Services Files

Platform	Location
OS/2	Specified by the *etc* environment variable. Enter the **set etc** command to determine the location of your local hosts or services files.
Windows NT	Located in the winnt\system32\drivers\etc directory.
Windows 9x	Located in the windows directory.
UNIX	Located in the /etc directory.

Edit the client's hosts file and add an entry for the server's hostname. For example:

```
9.21.15.235     serverhost   # host address for serverhost
```

where:

9.21.15.235 represents the *ip_address*

serverhost represents the *hostname*

represents a comment describing the entry

If the server is not in the same domain as the client, you must provide a fully qualified domain name such as serverhost.vnet.ibm.com, where vnet.ibm.com is the domain name.

Step B. Update the Services File

If you are planning to catalog a TCP/IP node using a port number (*port_number*), skip this step and go to "Step C. Catalog a TCP/IP Node" on page 67.

Using a local text editor, add the Connection Service name and port number to the client's services file for TCP/IP support. For example:

```
server1  3700/tcp  # DB2 connection service port
```

where:

server1 represents the Connection Service name

3700 represents the Connection port number

tcp represents the communication protocol that you are using

represents a comment describing the entry

The port number used on the client must match the port number used on the server.

If you are planning on supporting a UNIX client that uses Network Information Services (NIS), you must update the services file located on your NIS master server.

The file called services is located in the same directory as the local hosts file that you may have edited in "A. Resolve the Server's Host Address" on page 65.

See Table 13 on page 66 for the location of the services file for your particular platform.

Step C. Catalog a TCP/IP Node

You must add an entry to the client's node directory to describe the remote node. This entry specifies the chosen alias (*node_name*), the *hostname* (or *ip_address*), and the *svcename* (or *port_number*) that the client will use to access the remote server.

To catalog a TCP/IP node, perform the following steps:

Step 1. Log on to the system with a valid DB2 user ID. For more information, see "Appendix E. Naming Rules" on page 127.

If you are adding a database to a system that has a DB2 or DB2 Connect server product installed, log on to this system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority on the instance. For more information, see "Working with the System Administrative Group" on page 102.

This restriction is controlled by the *catalog_noauth* database manager configuration parameter. For more information, refer to the *Administration Guide*.

Step 2. If you are using a UNIX client, set up the instance environment and invoke the DB2 command line processor. Run the start-up script as follows:

```
. INSTHOME/sqllib/db2profile    (for Bash, Bourne or Korn shell)
source INSTHOME/sqllib/db2cshrc (for C shell)
```

where *INSTHOME* is the home directory of the instance.

Step 3. Catalog the node by entering the following commands:

```
catalog tcpip node node_name remote [hostname|ip_address] \
server [svcename|port_number]
terminate
```

For example, to catalog the remote server *serverhost* on the node called *db2node*, using the service name *server1*, enter the following:

```
catalog tcpip node db2node remote serverhost server server1
terminate
```

To catalog a remote server with the IP address *9.21.15.235* on the node called *db2node*, using the port number *3700*, enter the following:

```
catalog tcpip node db2node remote 9.21.15.235 server 3700
terminate
```

If you need to change values that were set with the **catalog node** command, perform the following steps:

Step 1. Run the **uncatalog node** command in the command line processor as follows:

```
uncatalog node node_name
```

Step 2. Recatalog the node with the values that you want to use.

Step D. Catalog the Database

Before a client application can access a remote database, the database must be cataloged on the server node and on any client nodes that will connect to it. When you create a database, it is automatically cataloged on the server with the database alias (*database_alias*) the same as the database name (*database_name*). The information in the database directory, along with the information in the node directory, is used on the client to establish a connection to the remote database.

To catalog a database on the client, perform the following steps:

Step 1. Log on to the system with a valid DB2 user ID. For more information, see "Appendix E. Naming Rules" on page 127.

If you are adding a database to a system that has a DB2 or DB2 Connect server product installed, log on to this system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority on the instance. For more information, see "Working with the System Administrative Group" on page 102.

This restriction is controlled by the *catalog_noauth* database manager configuration parameter. For more information, refer to the *Administration Guide*.

Step 2. Fill in the *Your Value* column in the following worksheet.

Table 14. Worksheet: Parameter Values for Cataloging Databases

Parameter	Description	Sample Value	Your Value
Database name (*database_name*)	The database alias (*database_alias*) of the *remote* database. When you create a database, it is automatically cataloged on the server with the database alias (*database_alias*) the same as the database name (*database_name*).	sample	
Database alias (*database_alias*)	An arbitrary local nickname for the remote database, on the client. If you do not provide one, the default is the same as the database name (*database_name*). This is the name that you use when connecting to a database from a client.	tor1	
Node name (node_name)	The name of the node directory entry that describes where the database resides. Use the same value for node name (*node_name*) that you used to catalog the node in the previous step.	db2node	

Step 3. If you are using a UNIX client, set up the instance environment and invoke the DB2 command line processor. Run the start-up script as follows:

```
. INSTHOME/sqllib/db2profile    (for Bash, Bourne or Korn shell)
source INSTHOME/sqllib/db2cshrc (for C shell)
```

where *INSTHOME* represents the home directory of the instance.

Step 4. Catalog the database by entering the following commands:

```
catalog database database_name as database_alias at node node_name
terminate
```

For example, to catalog a remote database called *sample* so that it has the alias *tor1*, on the node *db2node*, enter the following commands:

```
catalog database sample as tor1 at node db2node
terminate
```

If you need to change values that were set with the **catalog** *database* command, perform the following steps:

Step a. Run the **uncatalog** *database* command as follows:

```
uncatalog database database_alias
```

Step b. Recatalog the database with the value that you want to use.

Step 3. Test the Client-to-Server Connection

When you have finished configuring the client for communications, perform the following steps to test the connection:

You will need to connect to a remote database to test the connection.

Step 1. Start the database manager by entering the **db2start** command on the server (if it was not automatically started at boot time).

Step 2. Enter the following command to connect the client to the remote database:

```
connect to database_alias user userid using password
```

The values for *userid* and *password* must be valid for the system on which they are authenticated. By default, authentication takes place on the server for a DB2 server and on the host or AS/400 machine for a DB2 Connect server.

If the connection is successful, you will get a message showing the name of the database to which you have connected. You are now able to retrieve data from that database. For example, to retrieve a list of all the table names listed in the system catalog table, enter the following SQL command in the Command Center or command line processor:

```
"select tabname from syscat.tables"
```

When you are finished using the database connection, enter the **connect reset** command to end the database connection.

You are now ready to start using DB2. For more advanced topics, refer to the *Administration Guide* and the *Installation and Configuration Supplement*.

Troubleshooting the Client-to-Server Connection

If the connection fails, check the following items:

At the *server*:

__ 1. The *db2comm* registry value includes the value `tcpip`.

Check the settings for the *db2comm* registry value by entering the **db2set DB2COMM** command. For more information, refer to the *Administration Guide*.

__ 2. The `services` file was updated correctly.

__ 3. The service name (*svcename*) parameter was updated correctly in the database manager configuration file.

__ 4. The security service was started. Enter the **net start db2ntsecserver** command (for Windows NT servers only).

__ 5. The database was created and cataloged properly.

__ 6. The database manager was stopped and started again (enter the **db2stop** and **db2start** commands on the server).

If there are problems starting a protocol's connection managers, a warning message appears and the error messages are logged in the `db2diag.log` file.

For more information on the `db2diag.log` file, refer to the *Troubleshooting Guide*.

At the *client*:

__ 1. If used, the `services` and `hosts` files were updated correctly.

__ 2. The node was cataloged with the correct hostname (*hostname*) or IP address (*ip_address)*.

__ 3. The port number must match, or the service name must map to, the port number used on the server.

__ 4. The node name (*node_name*) that was specified in the database directory points to the correct entry in the node directory.

__ 5. The database was cataloged properly, using the *server's* database alias (*database_alias*) that was cataloged when the database was created on the server, as the database name (*database_name*) on the client.

If the connection still fails after you verify these items, refer to the *Troubleshooting Guide*.

Part 3. Appendixes

Appendix A. About the DB2 Family of Products

The DB2 Family of Products consists of DB2 Universal Database (UDB) and DB2 Connect, as well as some associated DB2 products. Each product is available in different versions that address the needs of today's marketplace. This section provides a brief description of the IBM DB2 Family of Products:

DB2 Universal Database

DB2 Universal Database Enterprise - Extended Edition

DB2 UDB Enterprise - Extended Edition provides a relational database management system that is web-enabled with Java support; scalable from single processors to symmetric multiprocessors; and multimedia capable with image, audio, video, and text support. With DB2 Universal Database, local and remote client applications can create, update, control, and manage relational databases using Structured Query Language (SQL), DB2 APIs (Application Programming Interfaces), ODBC (Open Database Connectivity), JDBC (Java Database Connectivity), SQLJ (Embedded SQL for Java), or DB2 CLI (Call Level Interface).

DB2 Universal Database Enterprise - Extended Edition offers the ability to partition a database across multiple independent machines of a common platform. To the end-user and application developer, the partitioned database still appears as a single database on a single machine. This fully scalable database system enables an application to use multiple machines for a database that is too large for a single machine to handle efficiently. SQL operations and utilities can execute in parallel both within and between the individual database partitions, which can speed up the execution time of a single query or command.

DB2 Universal Database Enterprise - Extended Edition includes DB2 Connect functionality that allows access to DB2 databases on AS/400, MVS/ESA, OS/390, VM, or VSE systems. This product also includes the Federated Database Object Support feature which provides transparent read access to a collection of heterogeneous and semiautonomous data sources, and the ability to perform Distributed Requests.

This product is currently available for AIX, Solaris, and Windows NT operating systems.

DB2 Universal Database Enterprise Edition

DB2 UDB Enterprise Edition provides a relational database management system that is web-enabled with Java support; scalable from single processors to symmetric multiprocessors; and multimedia

capable with image, audio, video, and text support. With DB2 Universal Database, local and remote client applications can create, update, control, and manage relational databases using Structured Query Language (SQL), DB2 APIs (Application Programming Interfaces), ODBC (Open Database Connectivity), JDBC (Java Database Connectivity), SQLJ (Embedded SQL for Java), or DB2 CLI (Call Level Interface).

DB2 Universal Database Enterprise Edition also includes the DB2 Connect functionality that allows access to DB2 databases on AS/400, MVS/ESA, OS/390, VM, and VSE systems. This product also includes the Federated Database Object Support feature which provides transparent read access to a collection of heterogeneous and semiautonomous data sources, and the ability to perform Distributed Requests.

This product is currently available on AIX, HP-UX, Linux, OS/2, Solaris and Windows NT operating systems.

DB2 Universal Database Workgroup Edition

DB2 UDB Workgroup Edition provides a relational database management system that is web-enabled with Java support; scalable from single processors to symmetric multiprocessors; and multimedia capable with image, audio, video, and text support. With DB2 Universal Database, local and remote client applications can create, update, control, and manage relational databases using Structured Query Language (SQL), DB2 APIs (Application Programming Interfaces), ODBC (Open Database Connectivity), JDBC (Java Database Connectivity), SQLJ (Embedded SQL for Java), or DB2 CLI (Call Level Interface).

This product is currently available for Linux, OS/2, and Windows NT.

DB2 Universal Database Personal Edition

DB2 UDB Personal Edition provides a relational database management system that is web-enabled with Java support; and multimedia capable with image, audio, video, and text support. DB2 Universal Database enables local applications to create, update, control, and manage relational databases using the same rich set of APIs as DB2 Enterprise Edition.

DB2 Personal Edition can also act as a client to access remote DB2 servers and can accept inbound Administration Client requests to remotely manage its resources.

This product is currently available for OS/2, Linux, Windows 9x, and Windows NT.

DB2 Universal Database Satellite Edition

DB2 Satellite Edition is a small-footprint version of DB2 Universal

Database that is appropriate for single-user systems, both mobile and branch offices, that occasionally connect to a DB2 control server to exchange data with corporate systems. Administration of DB2 Satellite Edition is scalable, and can be performed through batch jobs that are stored in a control database that resides on a DB2 Workgroup, DB2 Enterprise, or DB2 Enterprise - Extended Edition server.

This product is currently available for Windows 9x and Windows NT.

DB2 Connect

DB2 Connect Enterprise Edition

DB2 Connect Enterprise Edition is a connectivity server that concentrates and manages connections from multiple desktop clients and web applications to DB2 database servers running on host or AS/400 systems. IBM's DB2 for AS/400, DB2 for OS/390, and DB2 for VSE & VM databases continue to be the systems of choice for managing most critical data for the world's largest organizations. While these host and AS/400 databases manage the data, there is a great demand to integrate this data with applications running on Windows, UNIX, OS/2 and Apple workstations.

DB2 Connect Enterprise Edition enables local and remote client applications to create, update, control, and manage DB2 databases and host systems using Structured Query Language (SQL), DB2 APIs (Application Programming Interfaces), ODBC (Open Database Connectivity), JDBC (Java Database Connectivity), SQLJ (Embedded SQLJ for Java), or DB2 CLI (Call Level Interface). In addition, DB2 Connect supports Microsoft Windows data interfaces such as ActiveX Data Objects (ADO), Remote Data Objects (RDO), and OLE DB.

DB2 Connect Enterprise Edition is currently available for AIX, HP-UX, Linux, OS/2, Solaris, and Windows NT operating systems. These servers provide support for applications running on Windows 3.1, Windows 9x, Windows NT, UNIX (AIX, SCO UnixWare 7, Solaris, HP-UX, Linux, Silicon Graphics IRIX, SINIX), OS/2, and Apple Macintosh workstations.

DB2 Connect Personal Edition

DB2 Connect Personal Edition provides access from a single workstation to DB2 databases residing on servers such as MVS/ESA, OS/390, OS/400, VM and VSE, as well as to DB2 Universal Database servers on Windows NT, UNIX, and OS/2. DB2 Connect Personal Edition provides the same rich set of APIs as DB2 Connect Enterprise Edition, and also features integrated SNA support on all Windows platforms.

This product is currently available for OS/2, Linux, Windows 9x, and Windows NT operating systems.

Associated DB2 Products

DB2 Universal Developer's Edition

DB2 Universal Developer's Edition provides all the tools and software you need to create and test multimedia database client/server applications that can run on any DB2 UDB product.

DB2 Universal Developer's Edition contains a collection of DB2 Universal Database servers, DB2 clients, DB2 Connect products, DB2 Software Developer's Kits, extenders for audio, video, image, and text, and application development tools for all supported operating systems.

DB2 Personal Developer's Edition

DB2 Personal Developer's Edition provides all the tools and software you need to create and test multimedia database applications that run only on DB2 UDB Personal Edition products.

The DB2 Personal Developer's Edition contains a collection of DB2 Universal Database servers, DB2 clients, DB2 Connect Personal Edition, DB2 Software Developer's Kits, extenders for audio, video, image, and text, and application development tools for all supported operating systems.

DB2 Run-Time Client CD-ROMs

DB2 Run-Time Client CD-ROMs contain all the latest DB2 Run-Time Clients. A DB2 Run-Time Client provides the ability for workstations from a variety of platforms to access DB2 databases. These workstations are known as DB2 Run-Time Clients.

DB2 Run-Time Client CD-ROMs are included with all DB2 server and DB2 Developer's Edition product packages.

DB2 Administration Client CD-ROMs

DB2 Administration CD-ROMs contain all the latest DB2 Administration Clients.

A DB2 Administration Client provides the ability for workstations from a variety of platforms to access and administer DB2 databases. These workstations are known as DB2 Administration Clients. The DB2 Administration Client that matches the operating system of the DB2 product that is installed is included as a component with all DB2 Universal Database and DB2 Connect products.

The DB2 Administration Client has all of the features of the DB2 Run-Time Client and also includes all the DB2 Administration GUI tools, documentation, and support for Thin Clients. The DB2

Administration Client CD-ROMs are included with all DB2 server and DB2 Developer's Edition product packages.

DB2 DataJoiner

DB2 DataJoiner allows you to access data residing on multiple and diverse platforms, both IBM and multi-vendor, relational and non-relational, as a single database image. With DB2 DataJoiner, you can access all the data in your enterprise as if it were local.

DB2 Data Links Manager

DB2 Data Links Manager manages data files that are not normally found in a database (for example, engineering blueprints or medical x-rays). These data files can be on a file system outside of the database. Manipulation of this data is managed and controlled by DATALINK values in a DB2 database. Use DB2 Data Links Manager to control access to files that are external to a DB2 database.

This product is currently available for AIX and Windows NT operating systems.

DB2 Query Patroller

DB2 Query Patroller provides query and resource management for decision support systems enabling the success of highly scalable data warehouses. As an application, it takes ODBC queries from a client, analyzes them and then dynamically distributes the workload across different nodes on the DB2 UDB Enterprise - Extended Edition installation.

This product is currently available for AIX and Solaris operating systems.

DB2 Net.Data

IBM Net.Data is an application that allows Web developers to easily build dynamic Internet applications using ″Web Macros″. Net.Data Web Macros have the simplicity of HTML and the power of dynamic SQL. Net.Data provides database connectivity to a variety of data sources including information stored in relational databases and flat files. Data sources, such as DB2, Oracle, and Sybase, and DRDA enabled data sources, can be on a wide range of platforms.

DB2 Enterprise - Extended Edition, DB2 Enterprise Edition, and DB2 Workgroup Edition are commonly referred to as servers or DB2 servers throughout this book.

Working with DB2 Data

As well as providing a relational database to store your data, DB2 lets you issue requests to administer, query, update, insert, or delete data using local or remote client applications.

Accessing DB2 Data from Remote Clients

DB2 clients provide a run-time environment that enables client applications to access one or more remote databases. With a DB2 Administration Client, you can remotely administer DB2 or DB2 Connect servers. Local applications, and all Java applications (either local or remote), access a database through a DB2 client. All remote applications that are not Java applets must have a DB2 client installed on the client machine before they can access the remote database.

DB2 Version 6 clients are supported on:

- Windows 9x or Windows NT
- UNIX (AIX, HP-UX, Linux, SGI IRIX, and Solaris)
- OS/2

DB2 clients for the following releases and platforms are available for download from the web:

- DB2 Version 1.2 for DOS
- DB2 Version 2.1 for Macintosh
- DB2 Version 2.1 for SCO Open Server
- DB2 Version 5.2 for SCO UnixWare 7
- DB2 Version 2.1 for SINIX
- DB2 Version 5.2 for Windows 3.1

To obtain these clients, connect to the IBM DB2 clients web site at `http://www.software.ibm.com/data/db2/db2tech/clientpak.html`

Figure 1 on page 81 shows a server that is being accessed by local and remote applications. Remote applications must have the appropriate DB2 client installed to enable applications to access data on the remote server.

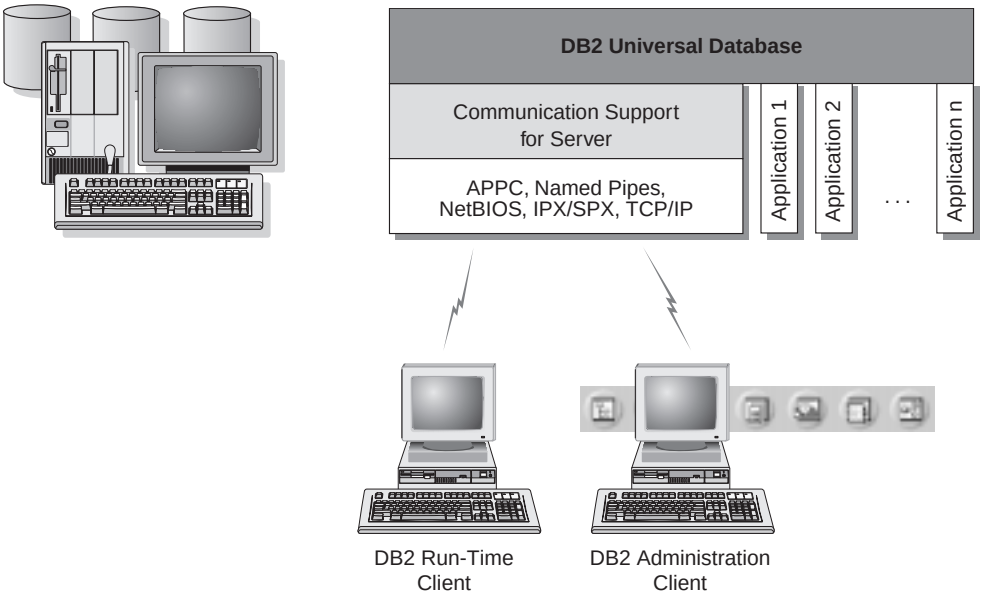


Figure 1. DB2 Server with Local Applications and Remote Clients

Accessing Multiple DB2 Servers

Once a network is operational and protocols are functional on all workstations, LAN-to-LAN connections between DB2 servers and clients require no additional software.

For example, you can have a server on a Windows NT workstation that is connected to a LAN, and another server on a UNIX workstation connected to a LAN. As long as there is a connection between the two LANs, clients on either network can access either server. See Figure 2 on page 82.

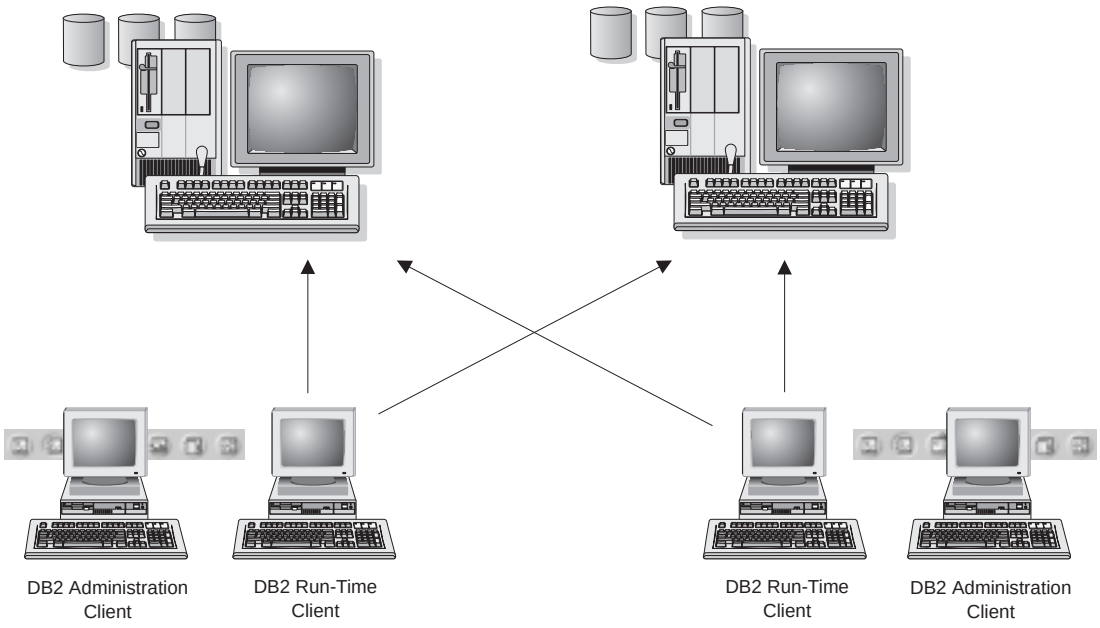


Figure 2. Accessing Data on Multiple Servers

Within a single transaction, databases on both servers are accessed and updated, and the integrity of the data on both servers is maintained. This is commonly known as two-phase commit, or distributed-unit-of-work access. Refer to the *Administration Guide* for more information.

Accessing Host or AS/400 DB2 Data from the Desktop Using DB2 Connect Enterprise Edition

A DB2 server with the DB2 Connect Server Support feature installed, or a DB2 Connect server, enables DB2 clients on a LAN access to data that is stored on host or AS/400 systems.

DB2 Universal Database Enterprise Edition and DB2 Universal Database Enterprise - Extended Edition include the **DB2 Connect Server Support** component. All references to DB2 Connect Enterprise Edition also apply to the DB2 Connect Server Support component.

DB2 Connect Enterprise Edition is most appropriate for environments where:

- Host and AS/400 database servers do not support native TCP/IP connectivity and direct connectivity from desktop workstations via SNA is not desirable.
- Application is implemented using data-aware Java applets.
- Web servers are used to implement web-based applications.
- Middle-tier application server is employed.
- Transaction monitor such as CICS, Encina, Microsoft Transaction Server (MTS), Tuxedo, Component Broker, and MQSeries are used.

Applications are provided with transparent access to host or AS/400 data through a standard architecture for managing distributed data. This standard is known as Distributed Relational Database Architecture (DRDA). Use of DRDA allows your applications to establish a fast connection to host and AS/400 databases without expensive host components or proprietary gateways.

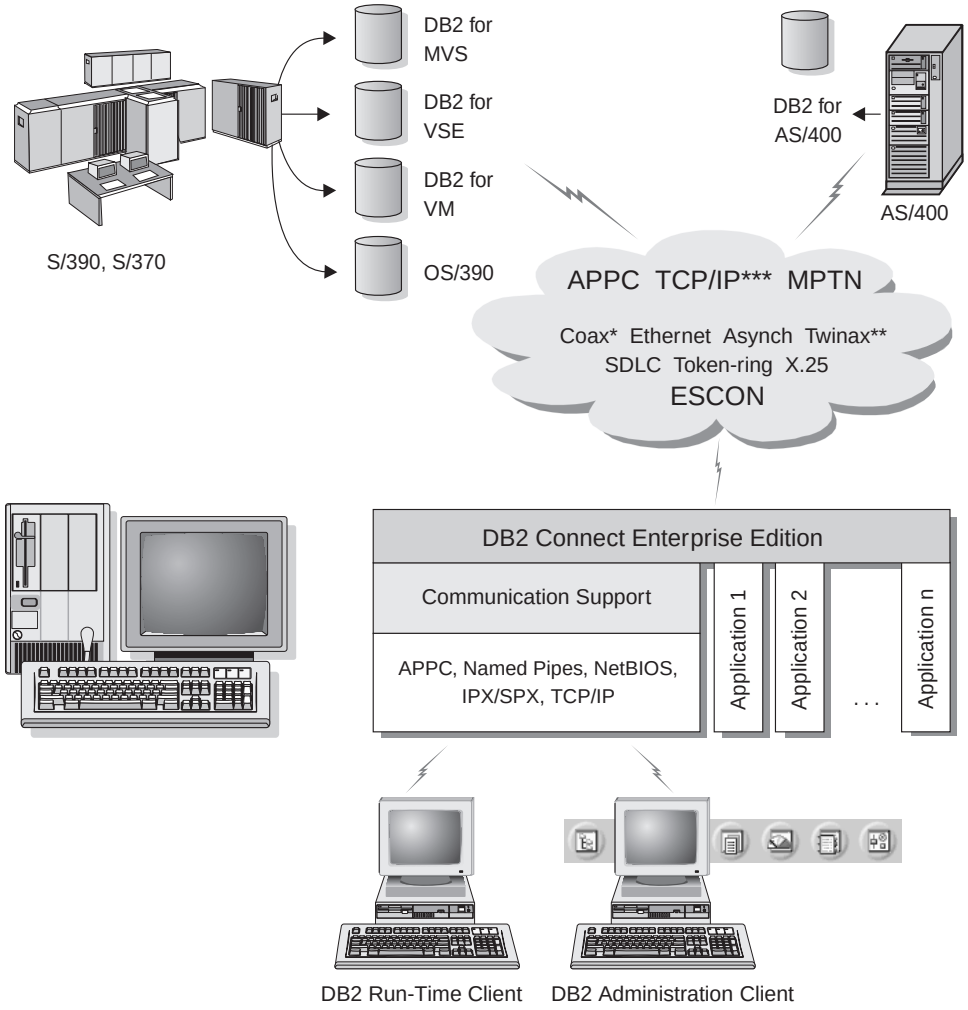
A great deal of the data in many large organizations is managed by DB2 for AS/400, DB2 for MVS/ESA, DB2 for OS/390, or DB2 for VSE & VM. Applications that run on any of the supported platforms can work with this data transparently, as if a local database server managed it. DB2 Connect Enterprise Edition is required for supporting applications which access host or AS/400 data and exploit transaction monitors (for example, CICS, Encina, Microsoft Transaction Server) as well as applications that are implemented as Java applets. In addition, you can use a wide range of off-the-shelf or custom-developed database applications with DB2 Connect and its associated tools. For example, you can use DB2 Connect products with:

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

Although DB2 Connect is often installed on an intermediate server machine to connect DB2 clients to a host or AS/400 database, it is also installed on machines where multiple local users want to access the host or AS/400 servers directly. For example, DB2 Connect may be installed on a large machine with many local users. It may also be installed on a Web server, Transaction Processor (TP) monitor, or other 3-tier application server machines with multiple local SQL application processes and threads. In these cases, you can choose to install DB2 Connect on the same machine for simplicity, or on a separate machine to off-load CPU cycles.

A DB2 server with the DB2 Connect functionality installed, or a DB2 Connect server, enables multiple clients to connect to host or AS/400 data and can significantly reduce the effort that is required to establish and maintain access to enterprise data. Figure 3 on page 85 illustrates IBM's solution for environments in which you want to use a DB2 client making an indirect connection to a host or AS/400 database server through DB2 Connect Enterprise Edition.

In the example, you could replace the DB2 Connect server with a DB2 server that has the DB2 Connect Server Support component installed.



Not all protocols are supported for all platforms.

* For Host connections only

** For AS/400

*** TCP/IP connectivity requires DB2 for OS/390 V5R1, DB2 for AS/400 V4R2, or DB2 for VM V6.1

Figure 3. DB2 Connect Enterprise Edition

Accessing DB2 Data from the Web Using Java

Java Database Connectivity (JDBC) and Embedded SQL for Java (SQLJ) are provided with DB2 to allow you to create applications that access data in DB2 databases from the Web.

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

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

The JDBC server and the DB2 client must reside on the same machine as the Web server. The JDBC server calls the DB2 client to connect to local, remote, host, and AS/400 databases. When the applet requests a connection to a DB2 database, the JDBC client opens a TCP/IP connection to the JDBC server on the machine where the Web server is running. See Figure 4 on page 87 for an example of a Java-enabled browser accessing data from remote DB2 databases.

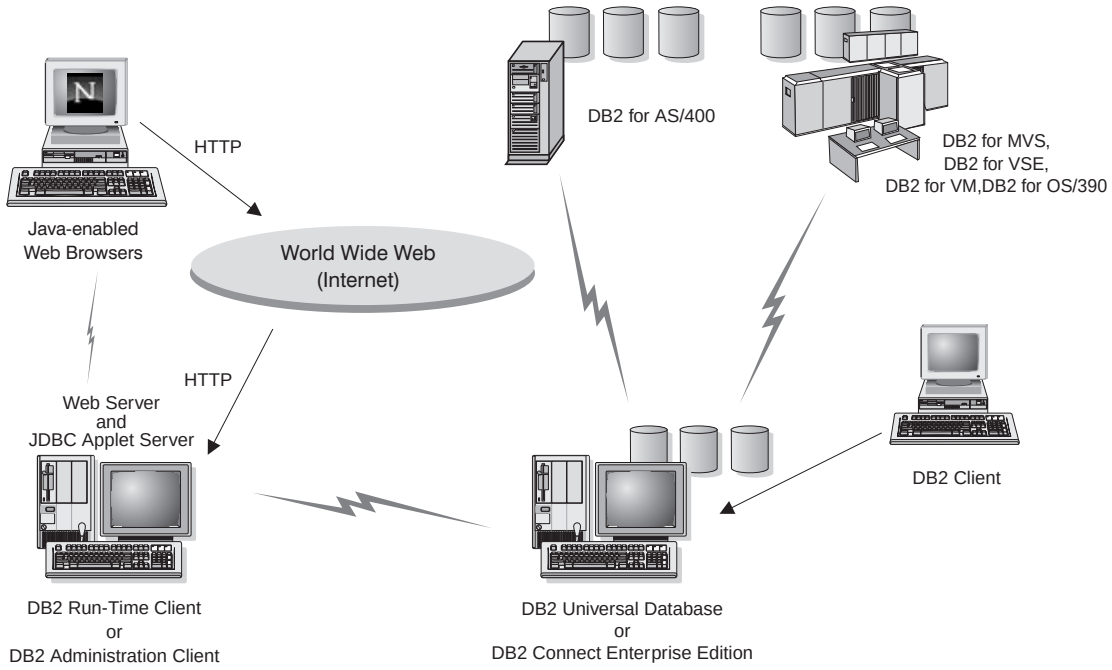


Figure 4. Accessing Data Stored on DB2 Using JDBC

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

For more information on Java enablement, refer to the DB2 Java Enablement web page at `http://www.software.ibm.com/data/db2/java/`. For more information on the JDBC API, point your browser to `http://splash.javasoft.com/`.

Accessing DB2 Data from the Web Using Net.Data

Net.Data is provided with DB2 to allow you to create applications that access data in DB2 databases from the Web.

Use *Net.Data* to create applications that are stored on a Web server and viewable from any Web browser. While viewing these documents, users can either select automated queries or define new ones that retrieve the specified information directly from a DB2 database.

Automated queries do not require user input; they are links in an HTML document and, when selected, they trigger existing SQL queries and return the results from a DB2 database. These links can be triggered repeatedly to access current DB2 data. Customized queries require user input. Users define the search characteristics on the Web page by selecting options from a list or by entering values in fields. They submit the search by clicking on a push button. Net.Data uses the information that is supplied by the user to dynamically build a complete SQL statement, and it sends the query to the DB2 database.

A demonstration of Net.Data applications is available from the IBM Software Net.Datapage at `http://www.software.ibm.com/data/net.data`.

Net.Data can be installed with a DB2 server to allow local access to databases. Net.Datacan be installed with a DB2 client to allow remote access to databases. In both cases, Net.Data and the Web server must be installed on the same system. See Figure 5 for an example of a workstation with Net.Data that is being used to access data from a remote DB2 database.

Accessing DB2 Data Using DB2 Net.Data

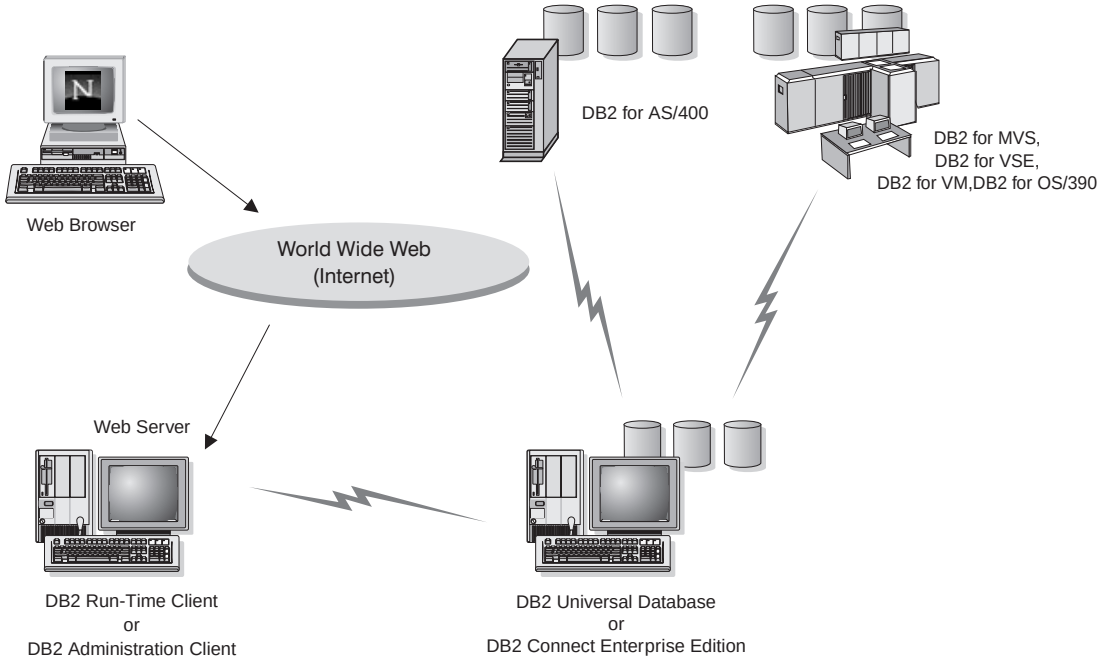


Figure 5. Accessing Internet Data Stored on DB2 Using Net.Data

Accessing DB2 Data from Host and AS/400 Client Machines

The DRDA Application Server (DRDA AS) functionality gives clients or applications on host and AS/400 machines transparent access to data stored on a LAN-based DB2 Universal Database server. This access is provided through Distributed Relational Database Architecture (DRDA), a standard architecture for managing data. You can configure your server to act as a DRDA AS for host and AS/400 clients or applications; these clients or applications are known as DRDA Application Requesters (DRDA AR).

The DRDA AS feature is available for:

- DB2 Universal Database Enterprise - Extended Edition
- DB2 Universal Database Enterprise Edition
- DB2 Workgroup Edition

For information on how to set up your DB2 Universal Database server as a DRDA AS, refer to the *Installation and Configuration Supplement*.

Administering Instances and Databases with the DB2 Administration Tools

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

The Control Center for Version 6 has additional support for DB2 UDB for OS/390.

Note: This option is only available on DB2 Enterprise Edition, DB2 Enterprise - Extended Edition, DB2 Connect Personal Edition, and DB2 Connect Enterprise Edition.

If you want to access DB2 for OS/390 functions from the Control Center:

1. Verify the following information with your systems administrator:
   a. You have a DB2 for OS/390 license (Version 5 or later).
   b. You are using DB2 UDB for Enterprise Edition.
2. Apply a function modification identifier. Read the DB2 for OS/390 Program Directory. The program directory identifies and describes the contents of FMIDs for each tape or cartridge.
3. Apply any additional service to DB2 as described in the program directory.
4. Ensure that you enabled the stored procedures address space.

Managing Instances and Database Objects Using the Control Center

The Control Center displays instances and database objects (such as table spaces, tables, and packages) and their relationships to each other. Using the Control Center, you can manage local and remote servers from a single point of control. See Figure 6 for an example of the main Control Center window.

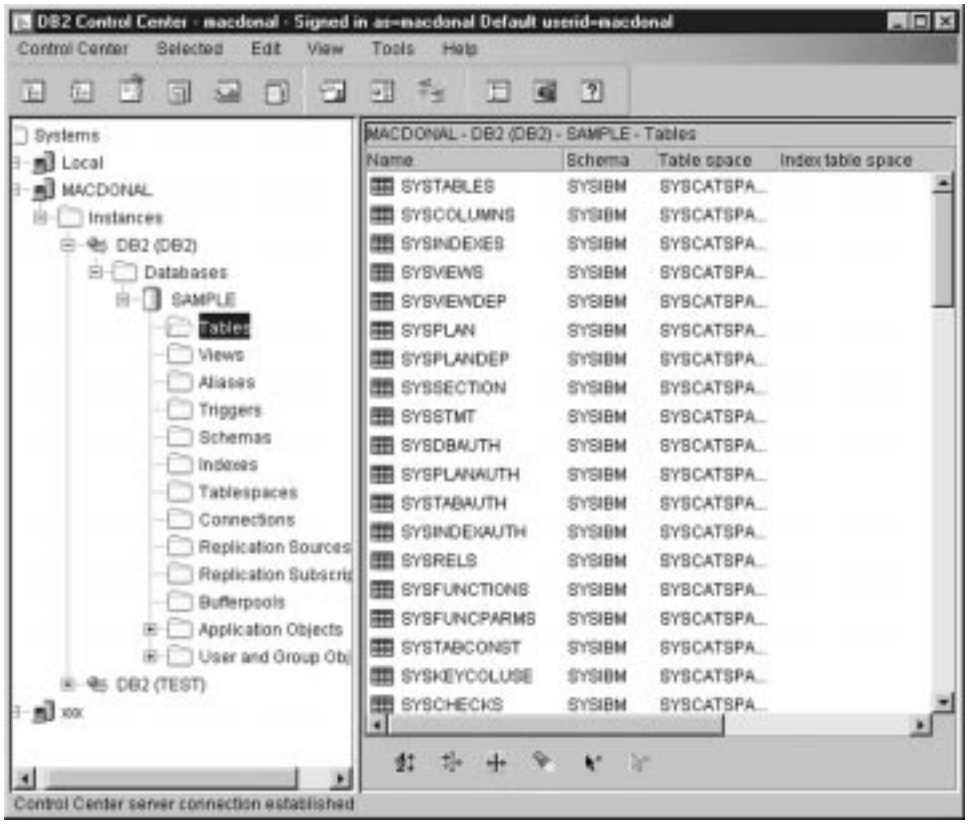


Figure 6. Control Center Main Window

From the Control Center, you can perform operations on database objects. These operations include:

- Create and drop a database
- Create, alter, and drop a table space or table
- Create, alter, and drop an index
- Backup and recover a database or table space
- Define the replication sources and subscriptions to replicate data between systems

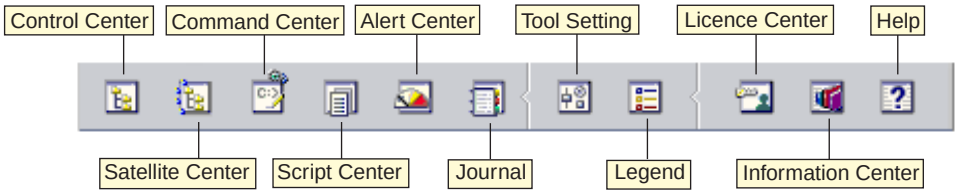
- Monitor resources and events on a server.

You can also control DB2 instances by:

- Maintaining communication protocols
- Setting database manager and database configuration values that affect performance.

SmartGuides are provided to help you perform complex tasks. For example, a SmartGuide is available to tune the performance of your system. See "Completing Tasks with SmartGuides" on page 135 for descriptions of the various SmartGuides and how to start them.

The Control Center provides additional functionality to assist you in managing your servers:



Control Center
Use the Control Center to start another session of the Control Center to administer a server.

Satellite Center
Use the Satellite Center to manage the Satellites that are served by a particular DB2 Control Server. It provides create, remove, modify, and manage functions for Satellites and Groups. You can also create and manage scripts to administer the Satellites.

Command Center
Use the Command Center to enter DB2 commands and SQL statements in an interactive window and see the execution result in a result window. You can scroll through the results and save the output to a file.

Script Center
Use the Script Center to create scripts, which you can store and invoke at a later time. These scripts can contain DB2 commands, SQL statements, as well as operating system commands. Scripts can be scheduled to run unattended. These jobs can be run once or set up to run on a repeating schedule; a repeating schedule is particularly useful for tasks like backup.

Alert Center
Use the Alert Center to monitor your system for early warnings of potential problems or to automate actions to correct problems discovered.

Journal
Use the Journal to view all available information about jobs that are pending execution, executing, or that have completed execution. You can also view the recovery history log, the alerts log, and the messages log; and review the results of jobs that are run unattended.

Tools Setting
Use the Tools Setting to change the settings for the DB2 Administration Tools.

License Center
Use the License Center to manage licenses and display license status and usage of any DB2 products installed on your system. You can also use the License Center to configure your system for proper license monitoring.

Information Center
The Information Center provides quick access to DB2 product information. This product information includes such items as: database tasks, reference material, DB2 documentation, troubleshooting aids, sample programs for application development, and DB2 web-related URLs.

You can also analyze performance using the DB2 Performance Monitor and Visual Explain. These tools are available from the Control Center.

Use the **DB2 Performance Monitor** to monitor the performance of your system. You can monitor activity by sampling data over a period of time or using data for a particular event. See “Monitoring Databases Using DB2 Performance Monitor” on page 93 for more information.

Use **Visual Explain** to view the access plan for explained SQL statements as a graph. You can use the information available from the graph to tune your SQL queries for better performance. See “Viewing SQL Access Plans Using Visual Explain” on page 93 for more information.

You can find additional information in the *Administration Guide* or in the online help.

Managing Communications on the Server

The Control Center allows you to view, update, and reset server protocol settings. These functions are accessed by clicking with the right mouse button

on an instance and selecting the **Setup communications** option from the pop-up menu. This tool helps database administrators to:

- Configure communication parameters in the database manager by clicking with the right mouse button on an instance and selecting the **Configure** option from the pop-up menu.

By default, the setup program automatically detects and configures most communication protocols that it detects on your system.

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

DB2 Personal Edition does not accept inbound client requests for data. You can only configure inbound communications on a DB2 Personal Edition workstation to allow administrative requests from a DB2 Administration Client.

For information on how to configure server communications, refer to the *Installation and Configuration Supplement*.

Monitoring Databases Using DB2 Performance Monitor

With the DB2 Performance Monitor, you can:

- Identify and analyze performance problems in database applications or the database manager.
- Use the early warning system to detect potential problems.
- Automate actions to correct problems that are discovered.
- Define your own statistics, in addition to the default set that is provided.

You can choose to monitor the current state of database activity or collect information when specific events occur. The Performance Monitor allows you to capture point-in-time information at specified intervals. The Event Analyzer allows you to view information about the occurrence of events such as deadlocks and transaction completions.

For additional information, refer to the *Administration Guide* or the online help.

Viewing SQL Access Plans Using Visual Explain

Visual Explain helps database administrators and application developers to:

- View the access plan chosen by the database manager's optimizer for a given SQL statement.
- Tune SQL statements for better performance.
- Design application programs and databases.

- View all the details of an access plan, including the statistics in the system catalogs.
- Decide whether or not to add an index to a table.
- Identify the source of problems by analyzing the access plan or performance of SQL statements.
- Use the portable snapshot function to view snapshots from any remote DB2 server.
- Display access plans for queries on all supported DB2 configurations.

For additional information, refer to the *Administration Guide* or the online help.

Managing Connections to Databases Using the Client Configuration Assistant

The Client Configuration Assistant (CCA) helps you manage your database connections to remote servers. The CCA is available on OS/2 and Windows 32-bit operating systems. This is the preferred method to set up any OS/2, Windows 9x, or Windows NT client to communicate with a server.

You can use the command line processor to set up DB2 clients on any platform. For more information, see "Chapter 8. Configuring Client-to-Server Communications Using the Command Line Processor" on page 63.

With the Client Configuration Assistant, you can:

- Catalog databases so that they can be used by applications. Three methods are available:
  - Search the network for available databases and selecting one. Client access is automatically set up for that database.
  - Use a database access profile provided by a database administrator to automatically define your connections. Client access is automatically set up for that database.
  - Manually configure a connection to a database by entering the required connection parameters.
- Remove cataloged databases, or change the properties of a cataloged database.
- Test connections to local or remote databases identified on your system.
- Bind applications to a database by selecting utilities or bind files from a list.
- Tune the client configuration parameters on your system. Parameters are logically grouped and suggested settings are provided on the interface as parameters are selected.

Understanding the Administration Server

The Administration Server responds to requests from the DB2 Administration Tools and the Client Configuration Assistant (CCA). The DB2 Administration Tools allow you to start, stop, and set database manager configuration parameters for servers. These tools are also used by the CCA to catalog databases for a client.

The Administration Server must reside on every server that you want to administer and detect. The Administration Server is automatically created and started for you; its default name is DB2DAS00.

Developing Applications Using the DB2 Software Developer's Kit

The DB2 Software Developer's Kit is a collection of tools that are designed to meet the needs of database application developers. It includes libraries, header files, documented APIs, and sample programs to build character-based, multimedia, or object-oriented applications.

A platform-specific version of the DB2 Software Developer's Kit is available for each of the supported operating systems and is currently available in the DB2 Universal Developer's Edition and the DB2 Personal Developer's Edition. Applications that are developed with the DB2 Software Developer's Kit will run on any platform where the equivalent DB2 client component is installed. Through a DB2 client, these applications can access all servers and, by using the DB2 Connect product (or the DB2 Connect functionality supplied with DB2 Enterprise - Extended or DB2 Enterprise Edition), they can also access DB2 Universal Database for AS/400, DB2 Universal Database for OS/390, and DB2 for VSE & VM database servers.

The DB2 Software Developer's Kit allows you to develop applications that use the following interfaces:

- Embedded SQL
- Call Level Interface (CLI) development environment (which is compatible with ODBC from Microsoft)
- Java Database Connectivity (JDBC)
- Embedded SQL for Java (SQLJ)
- DB2 Application Programming Interfaces (APIs) that use administrative functions to manage a DB2 database.

The DB2 Software Developer's Kit includes:

- Precompilers for Java, C, C++, COBOL, and FORTRAN.

- Libraries, include files, and code samples to develop applications that use SQLJ and DB2 CLI.
- JDBC and SQLJ support to develop Java applications and applets.
- Interactive SQL, through the CLP, to prototype SQL statements and perform ad-hoc database queries.
- An API to enable other application development tools to implement precompiler support for DB2 directly with their products.
- An SQL92 and MVS Conformance Flagger to identify embedded SQL statements in applications not conforming to the ISO/ANSO SQL92 Entry Level standard, or which are not supported by DB2 for OS/390.

For complete information on the functionality of the Software Developer's Kit, and instructions on how to use them, as well as a full list of supported compilers for your platform, refer to the *Application Building Guide*.

Running Your Own Applications

Various types of applications can access DB2 databases:

- Applications developed using a DB2 Software Developer's Kit that include embedded SQL (including Java SQLJ applications and applets), APIs, stored procedures, user-defined functions, calls to DB2 CLI, or calls to JDBC applications and applets.
- ODBC applications such as Lotus Approach.
- Net.Data macros containing HTML and SQL.

The DB2 CLI/ODBC driver is an optional component during a DB2 client install. It is required to run CLI, ODBC, JDBC, and some SQLJ applications.

For more information on running your own applications, refer to the *Installation and Configuration Supplement*.

Appendix B. Basic Task Knowledge

This section describes the basic tasks that you will need to know to use this product effectively.

Go to the task that you want to perform:

Starting the Software Registration Tool

Start the Software Registration Tool as follows:

Windows 9x or Windows NT
Click on **Start** and select **Programs->DB2 for Windows->Registration**

UNIX DB2 software registration is handled automatically if you installed your DB2 product from CD-ROM using the DB2 Installer program. If you installed DB2 using your UNIX operating system's native installation tools, you must enter the **db2licm** command to register DB2. See the *Command Reference* for further information.

Starting the Client Configuration Assistant

Start the Client Configuration Assistant (CCA) as follows:

OS/2 Click on **OS/2 Warp**, and select **DB2 for OS/2–>Client Configuration Assistant**

Windows 9x or Windows NT
Click on **Start** and select **Programs->DB2 for Windows->Client Configuration Assistant**

You can also start the CCA by entering the **db2cca** command at a command prompt.

Starting the Control Center

Start the Control Center in one of the following ways:

On OS/2

- Enter the **db2cc** command at a command prompt.

  or

- Click on the **OS/2 Warp** button and select **DB2 for OS/2–>Control Center**.

  Note: You must have the prerequisite Java Runtime Environment (JRE) level to launch the Control Center using this command. For more information, refer to the Control Center readme, which can be found in the `x:\sqllib\cc\prime` directory, where *x:* is drive where you installed your DB2 product.

On UNIX

- Enter the **db2cc** command at a command prompt.

  Note: You must have the prerequisite Java Runtime Environment (JRE) level to launch the Control Center using this command. For more information, refer to the Control Center README, which can be found in the *INSTHOME*`/sqllib/cc/prime` directory, where *INSTHOME* is the home directory of the instance owner.

On Windows 9x or Windows NT

- Enter the **db2cc** command at a command prompt.

  or

- Click on **Start** and select **Programs->DB2 for Windows->Control Center**.

You can also run the Control Center as an applet through a web browser. For more information, refer to the Control Center readme, which can be found in the `x:\sqllib\cc\prime` directory, where *x:* is drive where you installed your DB2 product.

Entering Commands Using the Command Center

This section describes how to enter commands using the Command Center. The Command Center provides an interactive window to:

- Run SQL statements, DB2 commands, and operating system commands.
- See the execution result of SQL statements and DB2 commands in a results window. You can scroll through the results and save the output to a file.
- Save a sequence of SQL statements and DB2 commands to a script file. You can then schedule the script to run as a job. When a saved script is modified, all jobs dependent on the saved script inherit the new modified behavior.
- Recall and run a script file.
- See the execution plan and statistics associated with a SQL statement before execution. You do this by invoking Visual Explain in the interactive window.
- Get quick access to database administrative tools from the main tool bar.
- Display all the command scripts known to the system through the Script Center, with summary information listed for each.

Start the Command Center in one of the follows ways:

- Click on the **Command Center** icon in the Control Center.
- Enter the **db2cctr** command.

  Note: You must have the prerequisite Java Runtime Environment (JRE) level to launch the Command Center using this command.
- Launch the Command Center from the toolbar as follows:

  On Windows 9x or Windows NT

  – Click on the **Start** button and select **Programs->DB2 for Windows->Command Center**.

  On OS/2

  – Click on the **OS/2 Warp** button and select **DB2 for OS/2 –>Command Center**.

The Command Center contains a large input area in which you enter your commands. To run the commands you have entered, click on the **Execution** icon (the gears icon), or press **CTRL+Enter**.

In the Command Center, you do not have to enter a command with the db2 prefix; instead you just enter the DB2 command. For example:

```
list database directory
```

To enter operating system commands, precede the operating-system command with an exclamation mark (!). For example:

```
!dir
```

If you want to enter multiple commands, you must end each command with the termination character, then press then **Enter** key to start the next command on a new line. The default termination character is a semicolon (;). To specify a different termination character, click on the **Tools Settings** icon in the menu toolbar.

For example, you could connect to a database called SAMPLE and list all the system tables by entering the following command:

```
connect to sample;
list tables for system
```

After you have clicked on the **Execution** icon (or pressed **CTRL+Enter**), the Command Center switches to the Results window which informs you how the commands are proceeding.

To recall commands that you have entered, select the **Script** Tab, click on the drop down box, and select a command.

To save commands as scripts, select **Script->Save as** from the menu bar. For more information, click on the **Help** push button or press the **F1** key.

If you want to store commonly used SQL statements or DB2 commands as scripts, click on the **Script Center** icon from the main tool bar. For more information, click on the **Help** push button or press the **F1** key.

Entering Commands Using the Command Line Processor

You can use the command line processor to enter DB2 commands, SQL statements, and operating system commands. It operates in the following modes:

Command Line Mode
: The DB2 command line processor behaves like a command window from your operating system. You can enter operating system commands, DB2 commands, or SQL statements and view their output.

Interactive Input Mode
The db2 prefix that you use for DB2 commands (in Command Line Mode) is pre-entered for you. You can enter operating systems commands, DB2 commands, or SQL statements and view their output.

File Input Mode
Processes commands that are stored in a file. For information on the file input mode, refer to the *Command Reference*.

Command Line Mode

To invoke a DB2 Command window, do the following:

OS/2 Click on **OS/2 Warp**, and select **DB2 for OS/2->Command Line Processor**, or open any command window.

Windows 9x or Windows NT
Click on **Start** and select **Programs->DB2 for Windows->Command Window**

You can also invoke the DB2 command window by entering the **db2cmd** command at an MS-DOS prompt.

UNIX Open any operating system command window.

If you are entering commands via the Command Window, you must include the db2 prefix. For example:

```
db2 list database directory
```

If the DB2 command contains characters that have special meaning on the operating system you are using, you will need to enter the command in quotation marks to ensure that it is run properly.

For example, the following command would retrieve all the information from the *employee* table, even if the * character has a special meaning on the operating system:

```
db2 "select * from employee"
```

If you need to enter a long command that does not fit on one line, use the line continuation character, \. When you have reached the end of the line, press the **Enter** key to continue entering the command on the next line. For example:

```
db2 select empno, function, firstname, lastname, birthdate, from \
db2 (cont.) => employee where function='service' and \
db2 (cont.) => firstname='Lily' order by empno desc
```

Interactive Input Mode

To invoke the command line processor in interactive input mode, do the following:

OS/2 Click on **OS/2 Warp**, and select **DB2 for OS/2–>Command Line Processor** or enter the **db2** command.

Windows 9x or Windows NT
Click on **Start**, and select **Programs->DB2 for Windows->Command Line Processor**.

You can also invoke the command line processor in interactive input mode by entering the **db2cmd** command followed by the **db2** command at an MS-DOS prompt.

UNIX Enter the **db2** command from the command line processor

In interactive input mode, the prompt looks like this:

```
db2 =>
```

In interactive input mode, you do not have to enter DB2 commands with a db2 prefix; instead, you just enter the DB2 command. For example:

```
db2 => list database directory
```

To enter operating system commands in interactive mode, precede the operating-system command with an exclamation mark (!). For example:

```
db2 => !dir
```

If you need to enter a long command that does not fit on one line, use the line continuation character, \. When you have reached the end of the line, press the **Enter** key to continue entering the command on the next line. For example:

```
db2 => select empno, function, firstname, lastname, birthdate, from \
db2 (cont.) => employee where function='service' and \
db2 (cont.) => firstname='Lily' order by empno desc
```

To end interactive input mode, enter the **quit** command.

For more information on advanced topics using the CLP, refer to the *Command Reference*.

Working with the System Administrative Group

By default, System Administrative (SYSADM) authority is granted to the following:

UNIX Any valid DB2 username that belongs to the primary group of the instance owner's user ID.

Appendix C. Migrating from Previous Versions and Releases

This section describes how to migrate previous versions of DB2 to the Version 6 format.

DB2 Universal Database Version 6 supports the migration of DB2 Version 2.x, Database Server Version 4x, and DB2 Version 5.x to a format usable by DB2 Version 6.

Migrating from Previous Versions of DB2

This section describes the steps required to migrate either a DB2 Common Server Version 2.x, a Database Server Version 4.x, or a DB2 Universal Database Version 5.x database system to a Version 6 database system.

The migration process for Database Server Version 4 is identical to that used for DB2 Common Server Version 2. Whenever Version 2 is mentioned in this section, the same information also applies to Version 4.

DB2 migration involves the following procedures:

- "Pre-Migration"
- "Migrating Instances" on page 106.
- "Migrating Databases" on page 116.
- "Optional Post Migration Actions" on page 117.

To avoid difficulties during database migration, read this entire appendix before starting the migration process.

Pre-Migration

To ensure that all databases on your system can be migrated to DB2 Version 6, perform the following steps:

Step 1. Complete all database transactions.

Step 2. Ensure all applications disconnect from each database.

Step 3. Ensure all databases are cataloged.

The **db2ckmig** database migration verification command does not verify uncataloged databases. See "Step 2. Verify that Databases Can Be Migrated" on page 107 for a description of how **db2ckmig** works.

Step 4. Make a backup copy of all databases. Refer to the *Administration Guide* for your DB2 product for information on making a backup copy of a database and to the *Command Reference* for the syntax of the backup command.

Note: Make sure that this is the most recent backup copy of the database before you start the next procedure.

Step 5. Stop the database manager by entering the **db2stop** command.

Step 6. Ensure that the instance environment setup script, **db2profile**, under the instance's INSTHOME/sqllib/ directory is of the proper Bourne shell syntax.

Ensure that each export statement is separated into different lines. For example:

```
DB2INSTANCE=db2inst1
export DB2INSTANCE
```

Migrating Instances

This procedure describes how to migrate DB2 instances that were created using a previous version of DB2.

Before you can migrate an instance to use the latest version of DB2, you must install DB2 Version 6 on your system.

If there are several DB2 instances using previous versions of DB2, you do not need to migrate all of these instances at this time. Instances that are not migrated will continue to use previous versions of DB2.

Each DB2 instance must be migrated separately. To successfully migrate a DB2 instance, perform the following steps:

Step 1. Prepare the DB2 instance for migration.

Step 2. Verify that the databases can be migrated. There are also migration considerations you should take into account if you are using the Version 2 user exit program.

Step 3. Migrate the DB2 instance.

If you want to migrate several instances, you must repeat these steps for each instance.

Step 1. Prepare the DB2 Instance for Migration

Before you can migrate a DB2 instance, all applications using any databases owned by this instance must be completed. To prepare a DB2 instance for migration, perform the following steps:

Step 1. Log in as the DB2 instance owner.

Step 2. Ensure that there are no applications using any databases owned by this DB2 instance. To get a list of all applications owned by the instance, enter the **db2 list applications** command.

You can end a session by entering the **db2 terminate** command. It is not recommended to force termination of applications using the **db2 force applications all** command, since some applications may have unexpected behavior when terminated using this command. See the *Command Reference* for usage and details of this command.

Step 3. When all applications are complete, stop all database server processes owned by the DB2 instance by entering the **db2stop** command.

Step 4. Stop the DB2 license daemon by entering the **db2licm end** command.

Step 5. Stop all command line processor sessions by entering the **db2 terminate** command in each session that was running the command line processor.

Step 6. Enter the **db2_kill** command to clean up any remaining DB2 resources.

Step 7. Log off.

The DB2 instance is now ready for migration.

Step 2. Verify that Databases Can Be Migrated

DB2 provides the **db2ckmig** migration command which is used to verify whether all cataloged databases can be migrated. The **db2imigr** command in "Step 3. Migrate the DB2 Instance" on page 114 uses the **db2ckmig** command to verify whether the cataloged databases can be migrated.

To ensure that you can migrate the instance to the DB2 Version 6 format, you should run the **db2ckmig** command. If instance migration failed, you must correct errors reported by this command. You can choose to run the **db2ckmig** command again to verify that the errors have been corrected and then migrate the instance.

For detailed information about the **db2ckmig** command, refer to the *Command Reference*.

To verify that all cataloged databases can be migrated, perform the following steps:

Step 1. Log in as the instance owner.

Step 2. Enter the following command:

```
DB2DIR/bin/db2ckmig -h -a 0 -l INSTHOME/migration.log
```

where *DB2DIR* = /usr/lpp/db2_06_01 on AIX
= /opt/IBMdb2/V6.1 on HP-UX, Solaris, or SGI IRIX

and INSTHOME is the home directory of the instance and migration.log is the name for the output file.

Step 3. Check the log file. The log file displays the errors that occur when you run the **db2ckmig** command. If it shows any errors, see Table 15 for suggested corrective actions..

Step 4. Check that the migration log file is empty before continuing with the instance migration.

Step 5. Backup the database after making corrections.

Table 15. Correcting Error Messages

Error	**Action**
A database is in backup pending state	Perform a backup of the database.
A database is in roll-forward pending state	Recover the database as required. Perform or resume a roll-forward database to end of logs and stop.
Table space ID is not in normal state	Recover the database and table space as required. Perform or resume a roll-forward database to end of logs and stop.
A database is in an inconsistent state	Restart the database to return it to a consistent state.

Table 15. Correcting Error Messages (continued)

Error	Action
The Version 2 database contains database objects that have a schema name of SYSCAT, SYSSTAT, or SYSFUN	These schema names are reserved for the Version 6 database manager. To correct this error, perform the following steps: Step 1. Back up the database. Step 2. Export the data from the database object (catalogs or tables). Step 3. Drop the object. Step 4. Recreate the object with another schema name. Step 5. Import/Load the data into the object. Step 6. Run the **db2ckmig** command against the database again, ensuring that the database passes the **db2ckmig** check. Step 7. Make a backup copy of the database. For more information, refer to the *Administration Guide*.

Table 15. Correcting Error Messages (continued)

Error	Action
The Version 2 database contains database objects that have a dependency on the SYSFUN.DIFFERENCE function. Possible violated database objects are: • Constraint • Function • Trigger • View	The SYSFUN.DIFFERENCE function must be dropped and recreated during database migration. However, if there is a database object that is dependent on this function, migration will fail. To correct this error: **Constraint** Enter the **alter table** command to drop the constraint. **Function** Enter the **drop function** command to drop the function dependent on SYSFUN.DIFFERENCE. **Trigger** Enter the **drop trigger** command to drop the trigger. **View** Enter the **drop view** command to drop the view. **Note:** Any package dependent on the SYSFUN.DIFFERENCE function will be marked inoperative after migration. Therefore, the **db2ckmig** command will not report any package that is dependent on the SYSFUN.DIFFERENCE function. For more information, refer to the *Administration Guide.*

Table 15. Correcting Error Messages (continued)

Error	Action
The database contains user-defined distinct types (UDTs) that use the type name BIGINT, DATALINK, REAL or REFERENCE.	These data type names are reserved for the Version 6 database manager. To correct this error, perform the following steps: Step 1. Back up the database. Step 2. Export the data from any tables that are dependent on the data types. Step 3. Drop any tables dependent on the data types, and then drop the data types. These drops may drop other objects such as views, indexes, triggers, or functions. Step 4. Create data types with different type names and recreate the tables using the new data type names. Recreate any dropped views, indexes, triggers, or functions. Step 5. Import/Load the data into the object. Step 6. Run the **db2ckmig** command against the database again, ensuring that the database passes the **db2ckmig** check. Step 7. Make a backup copy of the database. For more information, refer to the *Administration Guide*.

Table 15. Correcting Error Messages (continued)

Error	Action
Structured type and function have the same name.	A structured type and function (with no arguments) belonging to the same schema cannot have the same name. The type or function and objects using the type or function have to dropped and recreated using another name. To correct this error, perform the following steps: Step 1. Back up the database. Step 2. Export the data from any tables that are dependent on the structured types or functions. Step 3. Drop any tables dependent on the structured types or functions, and then drop the structured types or functions. These drops may drop other objects such as views, indexes, triggers, or functions. Step 4. Create structured types or functions with different type or function names and recreate the tables using the new data type or function names. Recreate any dropped views, indexes, triggers, or functions. Step 5. Import/Load the data into the object. Step 6. Run the **db2ckmig** command against the database again, ensuring that the database passes the **db2ckmig** check. Step 7. Make a backup copy of the database. For more information, refer to the *Administration Guide.*

All local databases now have the same authentication type as the instance where they reside; the authentication type in the database directory is ignored by DB2 Version 6 servers. If a warning is logged due to a conflicting authentication type, and you want a database to retain its previous authentication type, then you can do one of the following:

- Change the authentication type of the instance to the previous one.

- Move the database to another instance that has the required authentication type.

Before changing the authentication type of the instance, you should make sure that the new authentication type will be appropriate for all databases residing there. Be certain to consider the security implications of the different authentication types.

If there are databases that you do not want to migrate, you can uncatalog them (along with all aliases). The **db2ckmig** command does not perform any verification of uncataloged databases.

Refer to the *Administration Guide* for more information about the actions required to correct these conditions.

Migration Considerations for the Version 2.x User Exit Program

These instructions apply only to the DB2 Version 2.x **db2uexit** user exit program. If you are not using the Version 2.x **db2uexit** user exit program, skip this section and go to "Installing DB2 Version 6" on page 114.

DB2 Version 6 uses the **db2uexit** user exit program to archive and retreive log files. For more information on the **db2uexit** interfaces, refer to the *Administration Guide*.

If you are using the Version 2.x user exit program, you should consider the following before migrating instances:

- If the Version 2.x **db2uexit** program is installed in the `INSTHOME/sqllib/adm` directory before migration, it will remain in this directory after migration. The DB2 Version 6 **db2uext2** program will be also installed in this directory. Its function is to invoke **db2uexit** using the Version 2 interface. This allows the old user exit program to be used on DB2 Version 6.
- If **db2uexit** is installed in a directory other than `INSTHOME/sqllib/adm`, it will not be installed after migration. For example, if **db2uexit** was in the `INSTHOME/sqllib/bin` directory, after migration the **db2uexit** file will not be in the `INSTHOME/sqllib/bin` directory.
- If you want to continue using the old user exit after migration, you must copy **db2uexit** to the `INSTHOME/sqllib/adm` directory. Then, copy **db2uext2.v2** from the `DB2DIR/misc` directory to the `INSTHOME/sqllib/adm` directory and rename it to **db2uext2**. Enter the following command to copy the file:

  ```
  cp DB2DIR/misc/db2uext2.v2 INSTHOME/sqllib/adm/db2uext2
  ```

  where *DB2DIR* = /usr/lpp/db2_06_01 on AIX

= /opt/IBMdb2/V6.1 on HP-UX, Solaris, or SGI IRIX

Note: You must ensure that **db2uext2** is owned by the instance owner and is executable by the owner.

If you are migrating from DB2 Version 2.x, you should modify your user exit program to use the DB2 Version 6 interfaces. The new user exit program **db2uexit** should replace **db2uext2** in the INSTHOME/sqllib/adm directory.

Installing DB2 Version 6

After you have successfully completed the pre-installation checks, you can now start installing DB2 Version 6 using either the interactive or distributed method. During the installation of DB2 Version 6, instance migration for instances created in previous versions of DB2 occurs. For installation procedures, see the following sections:

- "Chapter 2. Installing and Configuring DB2 on UNIX Systems" on page 17 for interactive installation.
- *Installation and Configuration Supplement* for distributed installation.

Step 3. Migrate the DB2 Instance

Only local cataloged databases that reside in the DB2 instance are checked for migration. Uncataloged databases may be unusable after the instance has been migrated. Refer to the *Administration Guide* for further information.

After an instance is ready for migration, use the **db2imigr** command to migrate the instance as follows:

1. Log in as user with root authority.

If the *library_path* environment variable is set to /usr/lib on AIX or /opt/lib on HP-UX, or Solaris, and there is a link in /usr/lib or /opt/lib to the Version 6 libdb2 shared library, this can cause an error when using the **db2imigr** command. To fix the error, you should reset the *library_path* environment variable so that it does not reference the libraries in those paths by entering the following command:

```
unset library_path
```

where *library_path* represents:

- *LIBPATH* on AIX
- *SHLIB_PATH* on HP-UX
- *LD_LIBRARY_PATH* on Solaris

After migrating the DB2 instance, you should reset *LIBPATH* to its original setting.

2. Run the **db2imigr** command as follows:

```
DB2DIR/instance/db2imigr [-d] [-a AuthType] [-u fencedID] InstName
```

where *DB2DIR* = /usr/lpp/db2_06_01 on AIX
= /opt/IBMdb2/V6.1 on HP-UX, Solaris, or SGI IRIX

and where:

-d Sets the debug mode that you can use for problem determination. This parameter is optional.

-a *AuthType*
Specifies the authentication type for the instance. Valid authentication types are (SERVER), (CLIENT), and (DCS). If the *-a* parameter is not specified, the authentication type defaults to (SERVER), if a DB2 server is installed. Otherwise, the *AuthType* is set to (CLIENT). This parameter is optional.

Notes:

a. The authentication type of the instance applies to all databases owned by the instance.
b. While authentication type (DCE) is an optional parameter, it is not valid to choose (DCE) for this command.

-u *fencedID*
Is the user under which the fenced user-defined functions (UDFs) and stored procedures will execute. This parameter is optional only when a DB2 Run-Time Client is installed. It is required for all other DB2 products.

InstName
Is the login name of the instance owner.

3. If there are any errors in verifying that all databases can be migrated, see Table 15 on page 108 and take the suggested corrective actions. Then, reenter the **db2imigr** command.

If you are migrating a DB2 Version 2.1 or Version 5 instance, created on AIX, and the instance uses the environment variable *DB2SORT* set to a keyword *SMARTSORT*, you must set the registry value *db2sort* after the instance is migrated to Version 6. Set the *db2sort* registry value to the run time library for the sort command as follows:

```
db2set DB2SORT="/usr/lib/libsort.a"
```

Migrating Databases

To migrate databases owned by an instance, perform the following steps:

Step 1. Log on with a user ID that has SYSADM authority.

Step 2. Ensure that the databases you want to migrate are cataloged.

Step 3. Migrate the database. Refer to the *Command Reference* for the database migration syntax command.

Trouble-Shooting Database Migration Errors

The SQL1704N warning message, **Database migration failed** with reason code 6, is received because of a failure to relocate the database. To correct this error, you should check the `db2diag.log` file and do the following if you receive the following messages.

Table 16. Correcting SQL1704N warning messages

Error Message	Cause/Action
Mount unmounted filesystem(s) failed. Manual remount is required before retrying migration. Please check **fname**.	A problem was encountered when unmounting some of the filesystems. Attempts to clean up these unmounted filesystems also failed. Check the **fname** file and remount the listed filesystems before retrying the migration.
Unmount mounted filesystem(s) failed. No database relocation is done.	Attempts to unmount some filesystem(s) failed. Remount the unmounted filesystems and try the database migration again.
Remount unmounted filesystem(s) to new mount points failed. Restart of database migration is needed.	Attempts to remount filesystems to new mount points failed. Retry database migration.

Optional Post Migration Actions

There are optional activities you may want to undertake following database migration. You can also apply these optional activities to a down-level database backup which is restored to Version 6, because at the end of the restore, the database is migrated to Version 6.

- **Migration of Unique Indexes (db2uiddl)**

  DB2 Versions 5 and 6 support deferred checking for duplicate index key values until the end of UPDATE statements. This ensures that temporary duplicate index key values which *may* be present in mid-UPDATE, but no longer are present at the end of the UPDATE, will not cause the statement to fail.

  With DB2 Version 2 the same UPDATE statement may fail because checking for duplicate key index values is performed row by row as the statement processes the table. For example, if a row with value 1 is changed to value 2, but a row with value 2 already exists, a duplicate value 2 will be detected causing the DB2 Version 2 UPDATE statement to fail.

  Version 2.x and 5.x unique indexes are not automatically migrated to Version 6 semantics for several reasons:

  – Converting unique indexes is a very time-consuming operation.
  – You may have applications that depend on the previous version's unique index semantics.
  – You may want to manage the staged conversion of unique indexes on your own schedule, when needed, using the **db2uiddl** command.

All existing applications will continue to work even if the unique indexes are not converted to Version 6 semantics. You have to convert unique indexes to Version 6 semantics only if support for deferred uniqueness checking is required.

To convert unique indexes, you need to perform the following steps:

Step 1. Log in with a user account that has SYSADM authority. See "Working with the System Administrative Group" on page 102 for more information.

Step 2. Start the database manager by entering the **db2start** command.

Step 3. Run the **db2uiddl** command against your migrated database. Refer to the *Command Reference* for the syntax of this command.

The **db2uiddl** command searches the database catalog tables and generates all the CREATE UNIQUE INDEX statements for user tables in an output file.

Step 4. Review the output generated from the **db2uiddl** command. We recommend that you remove any unwanted indexes from the

output file to reduce the time needed to execute it. Comments in the output will flag other situations that require your attention.

Step 5. Connect to the database by entering the **db2 connect to** *database_alias* command. where *database_alias* is the alias of the database you are migrating.

Step 6. Execute the output file, generated by the **db2uiddl** command, as a DB2 Command Line Processor command file, using a command similar to the following:

```
db2 -tvf filename
```

where `filename` is the name of the file generated by the **db2uiddl** command.

Step 7. Disconnect from the database by entering the **db2 connect reset** command.

DB2 interprets the re-creation of an existing unique index using the **db2uiddl** command to signal that the index is ready to be converted to Version 6 semantics.

- **Update Statistics**

  When database migration is completed, the old statistics that are used to optimize query performance are retained in the catalogs. However, Version 6 of DB2 has statistics that are modified or do not exist in Versions 2.x or 5.x. To take advantage of these, you may want to execute the **runstats** command on tables, particularly those tables that are critical to the performance of your SQL queries.

  Refer to the *Command Reference* for the syntax of the **runstats** command. For details on the statistics, refer to the *Administration Guide.*

- **Rebind Packages**

  During database migration, all existing packages are invalidated. After the migration process, each package is rebuilt when it is used for the first time by the Version 6 database manager.

  For better performance we recommend that you run the **db2rbind** command to rebuild all packages stored in the database. In DB2 Version 6 this command has a new option, **all**, which, when specified, rebinds all packages (valid and invalid). If the **all** option is not specified with the **db2rbind** command, only those packages marked as invalid are rebound. Refer to the *Command Reference* for the syntax of this command.

- **Update database and database manager configuration**

  Some of the database configuration parameters are changed to Version 6 defaults or to other values during database migration. The same is true for database manager configuration parameters which may have changed to Version 6 defaults or to other values. Refer to the *Administration Guide* for more information about configuration parameters.

We recommend that you run the DB2 Performance Monitor for suggestions in choosing appropriate configuration parameters. For more information, refer to the *Administration Guide*.

- **Migrate Explain Tables**

  To migrate the explain tables in a database that has been migrated to Version 6, run the following command:

  ```
  db2exmig -d dbname -e explain_schema [-u userid password]
  ```

  where:

  – *dbname* represents the database name. This parameter is required.

  – *explain_schema* represents the schema name of the explain tables to be migrated. This parameter is required.

  – *userid* and *password* represent the current user's ID and password. These parameters are optional.

  The explain tables belonging to the user ID that is running **db2exmig**, or that is used to connect to the database, will be migrated. The explain tables migration tool will rename the Version 2 or Version 5 tables, create a new set of tables, using the **EXPLAIN.DDL**, and copy the contents of the old tables to the new tables. Finally, it will drop the old tables. The migration utility, **db2exmig**, will preserve any user added columns on the explain tables.

Migrating from HP-UX Version 10 to Version 11

Before you migrate databases or instances from HP-UX Version 10 to Version 11, perform the following steps:

Note: These steps must be performed before you upgrade your operating system from HP-UX Version 10 to Version 11.

Step 1. Stop all DB2 instances using the **db2stop** command.

Step 2. Stop the Administration Server using the **db2admin stop** command.

Step 3. Back up all files under the instance's `sqllib` directory and any tablespaces. Refer to the *Administration Guide* for more information.

Step 4. Back up all files under the Administration Server's `sqllib` directory, if you created an Administration Server.

Step 5. Back up the DB2 registry repository located in `/var/opt/db2/v6.1`.

Step 6. Back up or record all DB2-related entries from the `/etc/passwd`, `/etc/group`, and `/etc/services` files.

Step 7. Remove the entire DB2 product using the instructions in "Appendix D. Removing DB2 Products" on page 121.

You can now migrate your operating system to HP-UX Version 11.

You may also want to migrate all your other non-DB2 applications at the same time. In this case, you need to perform all your pre-migration procedures at this time before the operating system is migrated. Please refer to the migration instructions that are provided with those applications for more information. DB2 pre-migration procedures should be independent of the order of your overall pre-migration plan.

After your operating system has been migrated and all your standard UNIX services are up and running, perform the following steps:

Step 1. Install DB2. For more information see “Chapter 2. Installing and Configuring DB2 on UNIX Systems” on page 17.

Step 2. Recreate the DB2-specific user, group and TCP services entries in the `/etc/passwd`, `/etc/group`, and `/etc/services` files.

Step 3. Restore the instance’s `sqllib` directory. Refer to the *Administration Guide* for further information.

Step 4. Restore the Administration Server’s `sqllib` directory. Refer to the *Administration Guide* for further information.

Step 5. Restore the DB2 registry repository to `/var/opt/db2/v6.1`. For more information refer to the *Administration Guide*.

Step 6. Update the DB2 instances that you have, one at a time. For more information refer to the *Administration Guide*.

Step 7. Update the Administration Server. For more information refer to the *Administration Guide*.

Step 8. Perform the post migration procedures described in “Optional Post Migration Actions” on page 117.

Step 9. Start all DB2 instances and the Administration Server as required. For more information refer to the *Administration Guide*.

Appendix D. Removing DB2 Products

This section shows you how to remove DB2 from your UNIX system.

To remove DB2, perform the following steps:

Step 1. Stop the Administration Server.

Step 2. Stop all DB2 Instances.

Step 3. Remove the Administration Server.

Step 4. Remove DB2 Instances. This step is optional.

Step 5. Remove the DB2 products.

Step 1. Stop the Administration Server

You must stop the Administration Server before you remove DB2 products. To stop the Administration Server, you need to perform the following steps:

Step 1. Log in as user with `root` authority.

Step 2. Stop the Administration Server.

To stop the Administration Server, perform the following steps:

Step a. Log in as the Administration Server owner.

Step b. Run the start up script as follows:

```
. INSTHOME/sqllib/db2profile (for Bash, Bourne or Korn shell)
source INSTHOME/sqllib/db2cshrc (for C shell)
```

where *INSTHOME* is the home directory of the instance.

Step c. Stop the Administration Server by entering the following command:

```
db2admin stop
```

Step 2. Stop All DB2 Instances

You must stop all DB2 Instances before you remove DB2. To stop a DB2 instance, perform the following steps:

Step 1. To obtain a list of the names of all DB2 instances on your system, enter the following command:

```
DB2DIR/bin/db2ilist
```

where *DB2DIR* = /usr/lpp/db2_06_01 on AIX

= /opt/IBMdb2/V6.1 on HP-UX, Solaris, or SGI IRIX

= /usr/IBMdb2/V6.1 on Linux

Step 2. Stop the instance.

To stop a database instance, perform the following steps:

Step a. Log in as the instance owner.

Step b. Run the start up script as follows:

```
. INSTHOME/sqllib/db2profile    (for Bash, Bourne or Korn shell)
source INSTHOME/sqllib/db2cshrc (for C shell)
```

where INSTHOME is the home directory of the instance that you want to use.

Step c. Stop the DB2 database manager by entering the **db2stop** command from a command line.

Step 3. Repeat steps 2 and 3 for each instance.

Step 3. Remove the Administration Server

You must remove the Administration Server before you remove DB2. To remove the Administration Server, you need to perform the following steps:

Step 1. Log in as user with root authority.

Step 2. Obtain the name of the Administration Server by entering the following command:

```
DB2DIR/bin/dasilist
```

Step 3. Log in as the Administration Server owner.

Step 4. Run the start up script as follows:

```
. INSTHOME/sqllib/db2profile (for Bash, Bourne, or Korn shell)
source INSTHOME/sqllib/db2cshrc (for C shell)
```

where *INSTHOME* is the home directory of the instance.

Step 5. Back up the files in the ASHOME/sqllib directory, if needed, where ASHOME is the home directory of the Administration Server.

Step 6. Log off.

Step 7. Log in as *root* and remove the Administration Server by entering the following command:

```
DB2DIR/instance/dasidrop ASName
```

where *ASName* represents the name of the administration instance being removed.

The **dasidrop** command removes the /sqllib directory under the home directory of the Administration Server.

Step 4. Remove DB2 Instances

You can optionally remove some or all of the DB2 Version 6 instances on your system. Once an instance is removed, all the DB2 databases owned by the instance, if any, will not be usable. Remove DB2 instances only if you are not planning to use DB2 Version 6 products, or if you do not want to migrate existing instances to a later version of DB2.

To remove an instance, perform the following steps:

Step 1. Log in as the instance owner.

Step 2. Stop the instance by issuing the **db2stop** command.

Step 3. Back up files in the INSTHOME/sqllib directory, if needed, where INSTHOME is the home directory of the instance owner.

You might want to save the database manager configuration file, db2systm, the db2nodes.cfg file, or user defined function or fenced stored procedure applications in INSTHOME/sqllib/function, where INSTHOME is the home directory of the instance owner.

Step 4. Log off as the instance owner.

Step 5. Log in as user with root authority.

Step 6. Remove the instance by entering the following command:

```
DB2DIR/instance/db2idrop InstName
```

where DB2DIR	= /usr/lpp/db2_06_01	on AIX
	= /usr/IBMdb2/V6.1	on Linux
	= /opt/IBMdb2/V6.1	HP-UX, Solaris, or SGI IRIX

and where *InstName* is the login name of the instance.

Step 7. Optionally, as a user with root authority, remove the instance owner's user ID and group (if used only for that instance). Do not remove these if you are planning to re-create the instance.

This step is optional since the instance owner and the instance owner group may be used for other purposes.

The **db2idrop** command removes the instance entry from the list of instances and removes the INSTHOME/sqllib directory, where *INSTHOME* is the home directory of the instance.

Step 5. Remove DB2 Products

You must stop all outstanding DB2 processes before removing the DB2 products.

The following steps describe how to remove DB2 products on UNIX operating systems.

Remove DB2 Products on AIX Systems

You can remove the DB2 products on AIX using the **SMIT** interface. To remove a DB2 product, perform the following steps:

Step 1. Log in as user with `root` authority.

Step 2. Type **smit install_remove** to proceed directly to the Remove Software Products screen.

Step 3. Press **F4** to display a list of the software to remove. Press **F7** at some or all of the entries that have a prefix of `db2_06_01`.

For a detailed description of the software packages, refer to the *Installation and Configuration Supplement*.

Step 4. Press Enter to start removing the DB2 products.

You can also remove all DB2 Version 6 products on AIX using the **installp** command with the de-install option:

```
installp -u db2_06_01
```

Remove DB2 Products on HP-UX Systems

You can remove the DB2 products on the HP-UX operating system using the **swremove** program as follows:

Step 1. Log in as user with `root` authority.

Step 2. Use **swremove** to remove some or all of the DB2 Version 6 products.

Remove DB2 Products on Linux Systems

You can remove the DB2 products on Linux using the **db2_deinstall** command as follows:

Step 1. Log in as user with `root` authority.

Step 2. Enter the **db2_deinstall -n** command. This command is found on the DB2 Version 6 product CD.

Remove DB2 Products on Solaris Systems

You can remove the DB2 products on the Solaris operating system using the **db2_deinstall** command as follows:

Step 1. Log in as user with `root` authority.

Step 2. Enter the **db2_deinstall -n** command. This command is found on the DB2 Version 6 product CD.

Appendix E. Naming Rules

Go to the section that describes the naming rules that you require information on:

General Naming Rules

Unless otherwise specified, all names can include the following characters:

- A through Z

When used in most names, characters A through Z are converted from lowercase to uppercase.

- 0 through 9
- @, #, $, and _ (underscore)

Unless otherwise specified, all names must begin with one of the following characters:

- A through Z
- @, #, and $

Do not use SQL reserved words to name tables, views, columns, indexes, or authorization IDs.

For a list of SQL reserved words, refer to *SQL Reference*.

Database, Database Alias, and Catalog Node Name Rules

Database names are the identifying names assigned to databases in the database manager.

Database alias names are synonyms given to remote databases. Database aliases must be unique within the System Database Directory in which all aliases are stored.

When naming a database or database alias, see "General Naming Rules" on page 127.

In addition, the name you specify can *only* contain 1 to 8 characters.

To avoid potential problems, do not use the special characters @, #, and $ in a database name if you intend to have a client remotely connect to a host database. Also, because these characters are not common to all keyboards, do not use them if you plan to use the database in another country.

Object Name Rules

Database objects include:

- Tables
- Views
- Columns
- Indexes
- User-defined functions (UDFs)
- User-defined types (UDTs)
- Triggers
- Aliases
- Table spaces
- Schemas

When naming database objects, see "General Naming Rules" on page 127.

In addition, the name you specify:

- Can contain 1 to 18 characters *except* for the following:
  - Table names (including view names, summary table names, alias names, and correlation names), which can contain up to 128 characters; and
  - column names, which can contain up to 30 characters
- Cannot be any of the SQL reserved words that are listed in the *SQL Reference*.

Using delimited identifiers, it is possible to create an object that violates these naming rules; however, subsequent use of the object could result in errors.

For example, if you create a column with a + or − sign included in the name and you subsequently use that column in an index, you will experience problems when you attempt to reorganize the table. To avoid potential problems with the use and operation of your database, *do not* violate these rules.

Username, User ID, Group Name, and Instance Name Rules

Usernames or *User IDs* are the identifiers assigned to individual users. When naming users, groups, or instances, see "General Naming Rules" on page 127.

In addition, the name you specify:

- Can contain 1 to 8 characters
- Cannot be any of the following:
  - USERS
  - ADMINS
  - GUESTS
  - PUBLIC
  - LOCAL
- Cannot begin with:
  - IBM
  - SQL
  - SYS
- Cannot include accented characters
- In general, when naming users, groups, or instances:

  OS/2 Use uppercase names.

  UNIX Use lowercase names.

  Windows 32-bit operating systems
  Use any case.

Workstation Name (nname) Rules

A *workstation* name specifies the NetBIOS name for a database server or client that resides on the local workstation. This name is stored in the database manager configuration file. The workstation name is known as the *workstation nname*. When naming workstations, see "General Naming Rules" on page 127.

In addition, the name you specify:

- Can contain 1 to 8 characters
- Cannot include &, #, and @
- Must be unique within the network

DB2SYSTEM Naming Rules

DB2 uses the *DB2SYSTEM* name to identify a physical DB2 machine, system, or workstation within a network. On UNIX, the DB2SYSTEM name defaults to the TCP/IP hostname. On OS/2, you must specify the *DB2SYSTEM* name during install. On Windows 32-bit operating systems, you do not need to specify a *DB2SYSTEM* name; the DB2 setup program detects the NT Computer name and assigns it to *DB2SYSTEM*.

When creating a *DB2SYSTEM* name, see "General Naming Rules" on page 127.

In addition, the name you specify:

- Must be unique within a network
- Can contain a maximum of 21 characters

Password Rules

When determining passwords, consider the following rules:

OS/2 A maximum of 14 characters.

UNIX A maximum of 8 characters.

Windows 9x or Windows NT
A maximum of 14 characters.

Appendix F. National Language Support (NLS)

This section contains information about the National Language Support (NLS) provided by DB2, including information about supported locales and code sets. For information on developing applications that use NLS, refer to the *Application Development Guide.*

Language and Codeset Support for UNIX Operating Systems

DB2 supports many code sets and locales without translating the messages for the corresponding languages. Supporting a locale means that you can create and use a database in that locale, but you may have to view all panels and messages in a different language, if translated messages are not available in DB2. For a complete list of locales supported, refer to the *Administration Guide.*

If you want to operate in a different language environment, do the following:

1. Ensure that the appropriate message option for the desired language has been installed.
2. Set the *LANG* environment variable to the desired locale.

   For example, to use `fr_FR` messages on DB2 for AIX, you must have the `fr_FR` message option installed and must set *LANG* to `fr_FR`.

The selected message catalog filesets are placed in the following directories on the target workstation:

DB2 for AIX
`/usr/lpp/db2_06_01/msg/%L`

DB2 for HP-UX
`/opt/IBMdb2/V6.1/msg/%L`

DB2 for Linux
`/usr/IBMdb2/V6.1/msg/%L`

DB2 for Solaris
`/opt/IBMdb2/V6.1/msg/%L`

where *%L* is equal to the locale name of the message catalog.

Code Page and Language Support for OS/2 and Windows Operating Environments

During installation of DB2, the country, codepage, and regional settings are established. However, you can change these settings after installing DB2: including regional settings such as code page, country language (for monetary, date, and numeric formatting), and time zone. When a new connection to a database is made, the database manager uses these new values.

You must ensure that your regional settings are set correctly. DB2 may not produce the expected results if the country, code page, or regional settings are incorrect for the intended language.

Table 17 shows the languages into which the DB2 messages are translated.

Note: The code page values in the table that follows are also used as directory names on DB2 CD-ROMs. For example, a reference to *x*:*language*\win32\install would be *x*:\en\win32\install for English. For more detailed information on the languages and code pages support, refer to the *Administration Guide*.

Table 17. Languages and Code Pages

Country Code	Language
bg	Bulgarian
br	Brazilian Portuguese
cn	Simplified Chinese (PRC)
cz	Czech
de	German
dk	Danish
en	English
es	Spanish
fi	Finnish
fr	French
gr	Greek
hu	Hungarian
il	Hebrew
it	Italian
jp	Japanese
kr	Korean

Table 17. Languages and Code Pages (continued)

Country Code	Language
nl	Dutch
no	Norwegian
pl	Polish
pt	Portuguese
ru	Russian
se	Swedish
si	Slovenian
tr	Turkish
tw	Traditional Chinese (Taiwan)

Appendix G. How the DB2 Library Is Structured

The DB2 Universal Database library consists of SmartGuides, online help, books and sample programs in HTML format. This section describes the information that is provided, and how to access it.

To access product information online, you can use the Information Center. You can view task information, DB2 books, troubleshooting information, sample programs, and DB2 information on the Web. See "Accessing Information with the Information Center" on page 146 for details.

Completing Tasks with SmartGuides

SmartGuides help you complete some administration tasks by taking you through each task one step at a time. SmartGuides are available through the Control Center and the Client Configuration Assistant. The following table lists the SmartGuides.

Note: Create Database, Index, and Configure Multisite Update SmartGuide are available for the partitioned database environment.

SmartGuide	Helps You to...	How to Access...
Add Database	Catalog a database on a client workstation.	From the Client Configuration Assistant, click **Add**.
Back up Database	Determine, create, and schedule a backup plan.	From the Control Center, click with the right mouse button on the database you want to back up and select **Backup**->**Database using SmartGuide**.
Configure Multisite Update SmartGuide	Perform a multi-site update, a distributed transaction, or a two-phase commit.	From the Control Center, click with the right mouse button on the **Database** icon and select **Multisite Update**.
Create Database	Create a database, and perform some basic configuration tasks.	From the Control Center, click with the right mouse button on the **Databases** icon and select **Create**->**Database using SmartGuide**.

SmartGuide	Helps You to...	How to Access...
Create Table	Select basic data types, and create a primary key for the table.	From the Control Center, click with the right mouse button on the **Tables** icon and select **Create->Table using SmartGuide**.
Create Table Space	Create a new table space.	From the Control Center, click with the right mouse button on the **Table spaces** icon and select **Create->Table space using SmartGuide**.
Index	Advise which indexes to create and drop for all your queries.	From the Control Center, click with the right mouse button on the **Index** icon and select **Create->Index using SmartGuide**.
Performance Configuration	Tune the performance of a database by updating configuration parameters to match your business requirements.	From the Control Center, click with the right mouse button on the database you want to tune and select **Configure using SmartGuide**.
Restore Database	Recover a database after a failure. It helps you understand which backup to use, and which logs to replay.	From the Control Center, click with the right mouse button on the database you want to restore and select **Restore->Database using SmartGuide**.

Accessing Online Help

Online help is available with all DB2 components. The following table describes the various types of help. You can also access DB2 information through the Information Center. For information see "Accessing Information with the Information Center" on page 146.

Type of Help	Contents	How to Access...
Command Help	Explains the syntax of commands in the command line processor.	From the command line processor in interactive mode, enter: ? *command* where *command* is a keyword or the entire command. For example, `? catalog` displays help for all the CATALOG commands, while `? catalog database` displays help for the CATALOG DATABASE command.

Type of Help	Contents	How to Access...
Control Center Help *Client Configuration Assistant Help* *Event Analyzer Help* *Command Center Help*	Explains the tasks you can perform in a window or notebook. The help includes prerequisite information you need to know, and describes how to use the window or notebook controls.	From a window or notebook, click the **Help** push button or press the F1 key.

Message Help	Describes the cause of a message, and any action you should take.	From the command line processor in interactive mode, enter:
		
		`? XXXnnnnn`
		
		where *XXXnnnnn* is a valid message identifier.
		
		For example, `? SQL30081` displays help about the SQL30081 message.
		
		To view message help one screen at a time, enter:
		
		`? XXXnnnnn | more`
		
		To save message help in a file, enter:
		
		`? XXXnnnnn > filename.ext`
		
		where *filename.ext* is the file where you want to save the message help.

SQL Help	Explains the syntax of SQL statements.	From the command line processor in interactive mode, enter: `help statement` where *statement* is an SQL statement. For example, **help** SELECT displays help about the SELECT statement. **Note:** SQL help is not available on UNIX-based platforms.
SQLSTATE Help	Explains SQL states and class codes.	From the command line processor in interactive mode, enter: **?** *sqlstate* or **?** *class-code* where *sqlstate* is a valid five-digit SQL state and *class-code* is the first two digits of the SQL state. For example, `? 08003` displays help for the 08003 SQL state, while `? 08` displays help for the 08 class code.

DB2 Information – Hardcopy and Online

The table in this section lists the DB2 books. They are divided into two groups:

Cross-platform books
These books contain the common DB2 information for all platforms.

Platform-specific books
These books are for DB2 on a specific platform. For example, there are separate *Quick Beginnings* books for DB2 on OS/2, on Windows NT, and on the UNIX-based platforms.

Cross-platform sample programs in HTML
These samples are the HTML version of the sample programs that are installed with the SDK. They are for informational purposes and do not replace the actual programs.

Most books are available in HTML and PostScript format, or you can choose to order a hardcopy from IBM. The exceptions are noted in the table.

On OS/2 and Windows platforms, HTML documentation files can be installed under the doc\html subdirectory. Depending on the language of your system, some files may be in that language, and the remainder are in English.

On UNIX platforms, you can install multiple language versions of the HTML documentation files under the doc/%L/html subdirectories. Any documentation that is not available in a national language is shown in English.

You can obtain DB2 books and access information in a variety of different ways:

View See "Viewing Online Information" on page 145.

Search See "Searching Online Information" on page 148.

Print See "Printing the PostScript Books" on page 148.

Order See "Ordering the Printed Books" on page 149.

Name	Description	Form Number File Name for Online Book	HTML Directory
	Cross-Platform Books		

Name	Description	Form Number File Name for Online Book	HTML Directory
Administration Guide	*Administration Guide, Design and Implementation* contains information required to design, implement, and maintain a database. It also describes database access using the Control Center(whether local or in a client/server environment), auditing, database recovery, distributed database support, and high availability. *Administration Guide, Performance* contains information that focuses on the database environment, such as application performance evaluation and tuning. You can order both volumes of the *Administration Guide* in the English language in North America using the form number SBOF-8922.	Volume 1 SC09-2839 db2d1x60 Volume 2 SC09-2840 db2d2x60	db2d0
Administrative API Reference	Describes the DB2 application programming interfaces (APIs) and data structures you can use to manage your databases. Explains how to call APIs from your applications.	SC09-2841 db2b0x60	db2b0
Application Building Guide	Provides environment setup information and step-by-step instructions about how to compile, link, and run DB2 applications on Windows, OS/2, and UNIX-based platforms. This book combines the *Building Applications* books for the OS/2, Windows, and UNIX-based environments.	SC09-2842 db2axx60	db2ax
APPC, CPI-C and SNA Sense Codes	Provides general information about APPC, CPI-C, and SNA sense codes that you may encounter when using DB2 Universal Database products. **Note:** Available in HTML format only.	No form number db2apx60	db2ap

Name	Description	Form Number File Name for Online Book	HTML Directory
Application Development Guide	Explains how to develop applications that access DB2 databases using embedded SQL or JDBC, how to write stored procedures, user-defined types, user-defined functions, and how to use triggers. It also discusses programming techniques and performance considerations. This book was formerly known as the *Embedded SQL Programming Guide*.	SC09-2845 db2a0x60	db2a0
CLI Guide and Reference	Explains how to develop applications that access DB2 databases using the DB2 Call Level Interface, a callable SQL interface that is compatible with the Microsoft ODBC specification.	SC09-2843 db2l0x60	db2l0
Command Reference	Explains how to use the command line processor, and describes the DB2 commands you can use to manage your database.	SC09-2844 db2n0x60	db2n0
Data Movement Utilities Guide and Reference	Explains how to use the Load, Import, Export, Autoloader, and Data Propogation utilities to work with the data in the database.	SC09-2858 db2dmx60	db2dm
DB2 Connect Personal Edition Quick Beginnings	Provides planning, installing, and configuring information for DB2 Connect Personal Edition.	GC09-2830 db2c1x60	db2c1
DB2 Connect User's Guide	Provides concepts, programming and general usage information about the DB2 Connect products.	SC09-2838 db2c0x60	db2c0
Connectivity Supplement	Provides setup and reference information on how to use DB2 for AS/400, DB2 for OS/390, DB2 for MVS, or DB2 for VM as DRDA application requesters with DB2 Universal Database servers, and on how to use DRDA application servers with DB2 Connect application requesters. **Note:** Available in HTML and PostScript formats only.	No form number db2h1x60	db2h1
Glossary	Provides a comprehensive list of all DB2 terms and definitions. **Note:** Available in HTML format only.	No form number db2t0x50	db2t0

Name	Description	Form Number File Name for Online Book	HTML Directory
Installation and Configuration Supplement	Guides you through the planning, installation, and set up of platform-specific DB2 clients. This supplement contains information on binding, setting up client and server communications, DB2 GUI tools, DRDA AS, distributed installation, and the configuration of distributed requests and access methods to heterogeneous data sources.	GC09-2857 db2iyx60	db2iy
Message Reference	Lists messages and codes issued by DB2, and describes the actions you should take.	GC09-2846 db2m0x60	db2m0
Replication Guide and Reference	Provides planning, configuration, administration, and usage information for the IBM Replication tools supplied with DB2.	SC26-9642 db2e0x60	db2e0
SQL Getting Started	Introduces SQL concepts, and provides examples for many constructs and tasks.	SC09-2856 db2y0x60	db2y0
SQL Reference, Volume 1 and Volume 2	Describes SQL syntax, semantics, and the rules of the language. Also includes information about release-to-release incompatibilities, product limits, and catalog views. You can order both volumes of the *SQL Reference* in the English language in North America with the form number SBOF-8923.	SBOF-8923 Volume 1 db2s1x60 Volume 2 db2s2x60	db2s0
System Monitor Guide and Reference	Describes how to collect different kinds of information about databases and the database manager. Explains how to use the information to understand database activity, improve performance, and determine the cause of problems.	SC09-2849 db2f0x60	db2f0
Troubleshooting Guide	Helps you determine the source of errors, recover from problems, and use diagnostic tools in consultation with DB2 Customer Service.	S10J-8169	db2p0

Name	Description	Form Number File Name for Online Book	HTML Directory
What's New	Describes the new features, functions, and enhancements in DB2 Universal Database, Version 6.0, including information about Java-based tools.	SC09-2851 db2q0x60	db2q0
	Platform-Specific Books		
Administering Satellites Guide and Reference	Provides planning, configuration, administration, and usage information for satellites.	GC09-2821 db2dsx60	db2ds
DB2 Personal Edition Quick Beginnings	Provides planning, installation, migration, and configuration information for DB2 Universal Database Personal Edition on the OS/2, Windows 95, and Windows NT operating systems.	GC09-2831 db2i1x60	db2i1
DB2 for OS/2 Quick Beginnings	Provides planning, installation, migration, and configuration information for DB2 Universal Database on the OS/2 operating system. Also contains installing and setup information for many supported clients.	GC09-2834 db2i2x60	db2i2
DB2 for UNIX Quick Beginnings	Provides planning, installation, migration, and configuration information for DB2 Universal Database on UNIX-based platforms. Also contains installing and setup information for many supported clients.	GC09-2836 db2ixx60	db2ix
DB2 for Windows NT Quick Beginnings	Provides planning, installation, migration, and configuration information for DB2 Universal Database on the Windows NT operating system. Also contains installing and setup information for many supported clients.	GC09-2835 db2i6x60	db2i6
DB2 Enterprise - Extended Edition for UNIX Quick Beginnings	Provides planning, installation, and configuration information for DB2 Enterprise - Extended Edition for UNIX. Also contains installing and setup information for many supported clients.	GC09-2832 db2v3x60	db2v3

Name	Description	Form Number File Name for Online Book	HTML Directory
DB2 Enterprise - Extended Edition for Windows NT Quick Beginnings	Provides planning, installation, and configuration information for DB2 Enterprise - Extended Edition for Windows NT. Also contains installing and setup information for many supported clients.	GC09-2833 db2v6x60	db2v6
DB2 Connect Enterprise Edition for OS/2 and Windows NT Quick Beginnings	Provides planning, migration, installation, and configuration information for DB2 Connect Enterprise Edition on the OS/2 and Windows NT operating systems. Also contains installation and setup information for many supported clients. This book was formerly part of the *DB2 Connect Enterprise Edition Quick Beginnings*.	GC09-2828 db2c6x60	db2c6
DB2 Connect Enterprise Edition for UNIX Quick Beginnings	Provides planning, migration, installation, configuration, and usage information for DB2 Connect Enterprise Edition in UNIX-based platforms. Also contains installation and setup information for many supported clients. This book was formerly part of the *DB2 Connect Enterprise Edition Quick Beginnings*.	GC09-2829 db2cyx60	db2cy
DB2 Data Links Manager for AIX Quick Beginnings	Provides planning, installation, configuration, and task information for DB2 Data Links Manager for AIX.	GC09-2837 db2z0x60	db2z0
DB2 Data Links Manager for Windows NT Quick Beginnings	Provides planning, installation, configuration, and task information for DB2 Data Links Manager for Windows NT.	GC09-2827 db2z6x60	db2z6
DB2 Query Patroller Administration Guide	Provides administration information on DB2 Query Patrol.	SC09-2859 db2dwx60	db2dw
DB2 Query Patroller Installation Guide	Provides installation information on DB2 Query Patrol.	GC09-2860 db2iwx60	db2iw
DB2 Query Patroller User's Guide	Describes how to use the tools and functions of the DB2 Query Patrol.	SC09-2861 db2wwx60	db2ww

Name	Description	Form Number File Name for Online Book	HTML Directory
	Cross-Platform Sample Programs in HTML		
Sample programs in HTML	Provides the sample programs in HTML format for the programming languages on all platforms supported by DB2 for informational purposes (not all samples are available in all languages). Only available when the SDK is installed. See *Application Building Guide* for more information on the actual programs. **Note:** Available in HTML format only.	No form number	db2hs/c db2hs/cli db2hs/clp db2hs/cpp db2hs/cobol db2hs/cobol_mf db2hs/fortran db2hs/java db2hs/rexx

Notes:

1. The character in the sixth position of the file name indicates the language of a book. For example, the file name `db2d0e60` indicates that the *Administration Guide* is in English. The following letters are used in the file names to indicate the language of a book:

Language	Identifier
Brazilian Portuguese	b
Bulgarian	u
Czech	x
Danish	d
Dutch	q
English	e
Finnish	y
French	f
German	g
Greek	a
Hungarian	h
Italian	i
Japanese	j
Korean	k
Norwegian	n
Polish	p
Portuguese	v
Russian	r
Simp. Chinese	c
Slovenian	l
Spanish	z

Swedish	s
Trad. Chinese	t
Turkish	m

2. For late breaking information that could not be included in the DB2 books:
   - On UNIX-based platforms, see the `Release.Notes` file. This file is located in the `DB2DIR/Readme/%L` directory, where `%L` is the locale name and DB2DIR is:
     - `/usr/lpp/db2_06_01` on AIX
     - `/opt/IBMdb2/V6.1` on HP-UX, Solaris, SCO UnixWare 7, and Silicon Graphics IRIX
     - `/usr/IBMdb2/V6.1` on Linux.
   - On other platforms, see the `RELEASE.TXT` file. This file is located in the directory where the product is installed.
   - Under Windows `Start` menu

Viewing Online Information

The manuals included with this product are in Hypertext Markup Language (HTML) softcopy format. Softcopy format enables you to search or browse the information, and provides hypertext links to related information. It also makes it easier to share the library across your site.

You can view the online books or sample programs with any browser that conforms to HTML Version 3.2 specifications.

To view online books or sample programs on all platforms other than SCO UnixWare 7:

- If you are running DB2 administration tools, use the Information Center. See "Accessing Information with the Information Center" on page 146 for details.
- Select the `Open Page` menu item of your Web browser. The page you open contains descriptions of and links to DB2 information:
  - On UNIX-based platforms, open the following page:

    `file:/`*`INSTHOME`*`/sqllib/doc/`*`%L`*`/html/index.htm`

    where *%L* is the locale name.
  - On other platforms, open the following page:

    `sqllib\doc\html\index.htm`

    The path is located on the drive where DB2 is installed.

If you have not installed the Information Center, you can open the page by double-clicking on the **DB2 Online Books** icon. Depending on the system you are using, the icon is in the main product folder or the Windows Start menu.

To view online books or sample programs on the SCO UnixWare 7:

- DB2 Universal Database for SCO UnixWare 7 uses the native SCOhelp utility to search the DB2 information. You can access SCOhelp by the following methods:
  - entering the ″scohelp″ command on the command line,
  - selecting the `Help` menu in the Control Panel of the CDE desktop or
  - selecting `Help` in the Root menu of the Panorama desktop

  For more information on SCOhelp, refer to the *Installation and Configuration Supplement*.

Accessing Information with the Information Center

The Information Center provides quick access to DB2 product information. The Information Center is available on all platforms on which the DB2 administration tools are available.

Depending on your system, you can access the Information Center from the:

- Main product folder
- Toolbar in the Control Center
- Windows Start menu
- Help menu of the Control Center

The Information Center provides the following kinds of information. Click the appropriate tab to look at the information:

Tasks	Lists tasks you can perform using DB2.
Reference	Lists DB2 reference information, such as keywords, commands, and APIs.
Books	Lists DB2 books.
Troubleshooting	Lists categories of error messages and their recovery actions.
Sample Programs	Lists sample programs that come with the DB2 Software Developer's Kit. If the Software Developer's Kit is not installed, this tab is not displayed.
Web	Lists DB2 information on the World Wide

Web. To access this information, you must have a connection to the Web from your system.

When you select an item in one of the lists, the Information Center launches a viewer to display the information. The viewer might be the system help viewer, an editor, or a Web browser, depending on the kind of information you select.

The Information Center provides some search capabilities, so you can look for specific topics, and filter capabilities to limit the scope of your searches.

For a full text search, click the Search button of the Information Center follow the *Search DB2 Books* link in each HTML file.

The HTML search server is usually started automatically. If a search in the HTML information does not work, you may have to start the search server by double-clicking its icon on the Windows or OS/2 desktop.

Refer to the release notes if you experience any other problems when searching the HTML information.

Note: Search function is not available in the Linux and Silicon Graphics environments.

Setting Up a Document Server

By default, the DB2 information is installed on your local system. This means that each person who needs access to the DB2 information must install the same files. To have the DB2 information stored in a single location, use the following instructions:

1. Copy all files and subdirectories from \sqllib\doc\html on your local system to a Web server. Each book has its own subdirectory containing all the necessary HTML and GIF files that make up the book. Ensure that the directory structure remains the same.
2. Configure the Web server to look for the files in the new location. For information, see the NetQuestion Appendix in *Installation and Configuration Supplement*.
3. If you are using the Java version of the Information Center, you can specify a base URL for all HTML files. You should use the URL for the list of books.
4. Once you are able to view the book files, you should bookmark commonly viewed topics. Among those, you will probably want to bookmark the following pages:

- List of books
- Tables of contents of frequently used books
- Frequently referenced articles, such as the *ALTER TABLE* topic
- The Search form

For information about setting up a search, see the NetQuestion Appendix in *Installation and Configuration Supplement* book.

Searching Online Information

To search for information in the HTML books, you can do the following:

- Click on **Search the DB2 Books** at the bottom of any page in the HTML books. Use the search form to find a specific topic. This function is not available in the Linux or Silicon Graphics IRIX environments.
- Click on **Index** at the bottom of any page in an HTML book. Use the index to find a specific topic in the book.
- Display the table of contents or index of the HTML book, and then use the find function of the Web browser to find a specific topic in the book.
- Use the bookmark function of the Web browser to quickly return to a specific topic.
- Use the search function of the Information Center to find specific topics. See "Accessing Information with the Information Center" on page 146 for details.

Printing the PostScript Books

If you prefer to have printed copies of the manuals, you can decompress and print PostScript versions. For the file name of each book in the library, see the table in "DB2 Information – Hardcopy and Online" on page 138. Specify the full path name for the file you intend to print.

On OS/2 and Windows platforms:

1. Copy the compressed PostScript files to a hard drive on your system. The files have a file extension of `.exe` and are located in the `x:\doc\`*`language`*`\books\ps` directory, where x: is the letter representing the CD-ROM drive and *language* is the two-character country code that represents your language (for example, EN for English).
2. Decompress the file that corresponds to the book that you want. Each compressed book is a self-extracting executable file. To decompress the

book, simply run it as you would run any other executable program. The result from this step is a printable PostScript file with a file extension of .ps.

3. Ensure that your default printer is a PostScript printer capable of printing Level 1 (or equivalent) files.
4. Enter the following command from a command line:

   ```
   print filename.ps
   ```

On UNIX-based platforms:

1. Mount the CD-ROM. Refer to your *Quick Beginnings* manual for the procedures to mount the CD-ROM.
2. Change to /cdrom/doc/%L/ps directory on the CD-ROM, where */cdrom* is the mount point of the CD-ROM and *%L* is the name of the desired locale. The manuals will be installed in the previously-mentioned directory with file names ending with .ps.Z.
3. Decompress and print the manual you require using the following command:
   - For AIX:

     ```
     zcat filename | qprt -P PSPrinter_queue
     ```

   - For HP-UX, Solaris, or SCO UnixWare 7:

     ```
     zcat filename | lp -d PSPrinter_queue
     ```

   - For Linux:

     ```
     zcat filename | lpr -P PSPrinter_queue
     ```

   - For Silicon Graphics IRIX:

     ```
     zcat < filename | lp -d PSPrinter_queue
     ```

   where *filename* is the full path name and extension of the compressed PostScript file and *PSprinter_queue* is the name of the PostScript printer queue.

   For example, to print the English version of *DB2 for UNIX Quick Beginnings* on AIX, you can use the following command:

   ```
   zcat /cdrom/doc/en/ps/db2ixe60.ps.Z || qprt -P ps1
   ```

Ordering the Printed Books

You can order the printed DB2 manuals either as a set or individually. There are three sets of books available. The form number for the entire set of DB2 books is SBOF-8926-00. The form number for the books listed under the heading ″Cross-Platform Books″ is SBOF-8924-00.

Note: These form numbers only apply if you are ordering books that are printed in the English language in North America.

You can also order books individually by the form number listed in “DB2 Information – Hardcopy and Online” on page 138. To order printed versions, contact your IBM authorized dealer or marketing representative, or phone 1-800-879-2755 in the United States or 1-800-IBM-4YOU in Canada.

Appendix H. Notices

Any reference to an IBM licensed program in this publication is not intended to state or imply that only IBM's licensed program may be used. Any functionally equivalent product, program or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

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DataHub
DataJoiner
DataPropagator
DataRefresher
DB2
DB2 Connect
DB2 Universal Database
Distributed Relational Database Architecture
DRDA
Extended Services
FFST
First Failure Support Technology
IBM
IMS
LAN Distance
MVS/ESA
MVS/XA
OS/400
OS/390
OS/2
PowerPC
QMF
RACF
RISC System/6000
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Contacting IBM

This section lists ways you can get more information from IBM.

If you have a technical problem, please take the time to review and carry out the actions suggested by the *Troubleshooting Guide* before contacting DB2 Customer Support. Depending on the nature of your problem or concern, this guide will suggest information you can gather to help us to serve you better.

For information or to order any of the DB2 Universal Database products contact an IBM representative at a local branch office or contact any authorized IBM software remarketer.

Telephone

If you live in the U.S.A., call one of the following numbers:

- 1-800-237-5511 to learn about available service options.
- 1-800-IBM-CALL (1-800-426-2255) or 1-800-3IBM-OS2 (1-800-342-6672) to order products or get general information.
- 1-800-879-2755 to order publications.

For information on how to contact IBM outside of the United States, see Appendix A of the IBM Software Support Handbook. You can access this document by accessing the following page:

`http://www.ibm.com/support/`

then performing a search using the keyword “handbook”.

Note that in some countries, IBM-authorized dealers should contact their dealer support structure instead of the IBM Support Center.

World Wide Web

http://www.software.ibm.com/data/
http://www.software.ibm.com/data/db2/library/

The DB2 World Wide Web pages provide current DB2 information about news, product descriptions, education schedules, and more. The DB2 Product and Service Technical Library provides access to frequently asked questions, fixes, books, and up-to-date DB2 technical information. (Note that this information may be in English only.)

Anonymous FTP Sites

ftp.software.ibm.com

Log on as anonymous. In the directory /ps/products/db2, you can find demos, fixes, information, and tools concerning DB2 and many related products.

Internet Newsgroups

comp.databases.ibm-db2, bit.listserv.db2-l

These newsgroups are available for users to discuss their experiences with DB2 products.

CompuServe

GO IBMDB2 to access the IBM DB2 Family forums

All DB2 products are supported through these forums.

To find out about the IBM Professional Certification Program for DB2 Universal Database, go to http://www.software.ibm.com/data/db2/db2tech/db2cert.html

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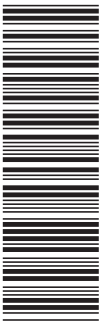

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