

**IBM DB2 Connect
Enterprise Edition
Quick Beginnings
Version 5**

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IBM DB2 Connect
Enterprise Edition



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Before using this information and the product it supports, be sure to read the general information under Appendix F, "Notices" on page 511.

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Welcome to DB2 Connect

This book provides you with an *easy start* to installing and using the basic functions of DB2 Connect.

Part 1 gives an overview of DB2 and DB2 Connect products.

Part 2 provides information on planning for and installing DB2 Connect on any supported operating system.

Part 3 provides information on using the Client Configuration Assistant to configure communications between DB2 Connect and host systems and between DB2 Connect and its clients.

Part 4 describes how to configure SNA software manually.

Part 5 describes how to install and configure DB2 Clients.

Part 6 describes how to use DB2 Universal Database.

Part 7 describes the unattended installation of DB2 Connect. It also describes alternative methods of installing DB2 Connect Enterprise Edition on UNIX systems, and techniques for administrators to set up clients to connect to DB2 Connect servers or DB2 Servers.

Part 8 describes configuring DRDA hosts to accept connections from DB2 Connect.

Part 9 contains reference information and describes viewing, printing, and ordering the manuals that are provided in online format.



Conventions

This book uses these highlighting conventions:

- **Boldface type** indicates commands or graphical user interface (GUI) controls such as names of fields, folders, icons, or menu choices.
- Monospace type indicates examples of text you enter exactly as shown.

- *Italics* indicates variables that you should replace with a value. It is used also to indicate book titles, and to emphasize words.



This is a fast path icon. It tells you if you can skip sections to get to the "how to" information. It is shown to indicate where you should go next.



This icon marks a Tip – additional information that can help you complete a task.

Road Map to DB2 Connect Information

Use the following table to quickly find the information you need.

If you want to...	Refer to...	Required Reading?
Understand the different options for deploying DB2 Connect in your network,	Chapter 1, "About DB2 Connect" on page 3.	Optional.
Confirm that your system meets the DB2 Connect software and hardware prerequisites,	"Software Requirements" on page 26 and "Disk Requirements" on page 23.	Recommended.
Install DB2 Connect,	<p>the installation chapter for your environment and your workstation's operating system:</p> <ul style="list-style-type: none"> • For OS/2: <ul style="list-style-type: none"> – Chapter 5, "Installing DB2 Connect on OS/2 Systems" on page 39 – Chapter 41, "Unattended DB2 Installation on OS/2 Workstations" on page 379 • For Windows NT: <ul style="list-style-type: none"> – Chapter 6, "Installing DB2 Connect on Windows NT Systems" on page 45 – Chapter 42, "Unattended DB2 Installation on Windows 95 or Windows NT Workstations" on page 389 • For UNIX systems: <ul style="list-style-type: none"> – Chapter 7, "Installing DB2 Connect on UNIX Systems" on page 51 	Required.

If you want to...	Refer to...	Required Reading?
Create SNA connections to DRDA databases,	<p>the chapter that applies to your workstation's operating system and SNA communications subsystem:</p> <ul style="list-style-type: none"> • For OS/2: <ul style="list-style-type: none"> – Chapter 9, “Configuring DRDA Host Connections on OS/2 or Windows NT Workstations” on page 73 – Chapter 12, “Configuring Communications Server for OS/2 for DB2 Connect for OS/2” on page 83 • For Windows NT: <ul style="list-style-type: none"> – Chapter 9, “Configuring DRDA Host Connections on OS/2 or Windows NT Workstations” on page 73 – Chapter 13, “Configuring Wall Data Rumba Manually on Windows Workstations” on page 99 – Chapter 14, “Configuring IBM Communications Server for Windows NT” on page 105 – Chapter 15, “Configuring IBM Communications Server for Windows NT SNA Client” on page 117 – Chapter 16, “Configuring Microsoft SNA Server for DB2 Connect for Windows NT” on page 125 – Chapter 17, “Configuring Microsoft SNA Client” on page 141 • For UNIX systems: <ul style="list-style-type: none"> – Chapter 18, “Configuring SNA Server for DB2 Connect for AIX” on page 147 – Chapter 19, “Configuring Bull SNA for DB2 Connect for AIX” on page 161 – Chapter 20, “Configuring SNAPPlus for DB2 Connect for HP-UX” on page 165 – Chapter 21, “Configuring SunLink SNA for DB2 Connect for Solaris” on page 179 	Required.
Modify how DB2 Connect Enterprise Edition communicates with DB2 clients,	Chapter 24, “Configuring DB2 Connect Server Communications Using the Control Center” on page 219 or Chapter 25, “Using the Command Line Processor to Configure the DB2 Connect Server to Accept Clients” on page 221.	Required.
Install and configure DB2 clients,	Chapter 26, “Installing DB2 Clients” on page 243.	Required.
Use the DB2 components,	Chapter 35, “Getting Started with the DB2 Universal Database” on page 313.	Recommended.

If you want to...	Refer to...	Required Reading?
Control access, authentication, passwords, and user ID management,	"Changing Default Privileges for Users" on page 315.	Recommended.
Use clients,	Chapter 37, "Running Your Own Applications" on page 333.	Recommended.
Bind applications and utilities to DB2 for MVS/OS390, DB2 for AS/400, or DB2 for VM & VSE to give applications access to host data,	"Binding Database Utilities" on page 333.	Required by you or your database administrator.
Set up a DB2 Call Level Interface or ODBC environment to enable ODBC applications such as Lotus Approach to access DB2 data,	"Running CLI/ODBC Programs" on page 335.	Recommended if you will use this function.
Use the DB2 Command Center or the DB2 command line processor to enter SQL statements or DB2 commands interactively,	Chapter 38, "Entering DB2 Commands and SQL Statements" on page 351.	Recommended.
Prepare DRDA hosts to accept connections from DB2 Connect,	Chapter 47, "Configuring DRDA Hosts for DB2 Connect" on page 451.	Recommended for your DRDA and network administrators.
Configure TCP/IP connections to DB2 for OS/390 databases,	"Configuring TCP/IP for DB2 for OS/390" on page 460	
Print or view online documentation,	"Printing the PostScript Books" on page 479 or "Viewing Online Books" on page 480.	Recommended.
Learn about last-minute changes to the product,	The Installation Notes that are on the CD-ROM or the Release Notes that are installed with the products.	Recommended.

Part 1. Introduction to DB2 Connect

Chapter 1. About DB2 Connect

IBM's DB2 for OS/390, DB2 for AS/400, 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 the data managed by these systems with applications running on PCs, UNIX workstations, and Apple Macintosh workstations.

The DB2 Connect Enterprise Edition product (formerly known as DDCS Multi-User Gateway), provides a managed gateway for remote client applications to access databases stored on the following systems:

- DRDA server: DB2 for MVS/ESA, DB2 for AS/400, DB2 for OS/390, DB2 for VSE & VM systems
- DB2 Universal Database servers running on OS/2, Windows NT, and several UNIX systems.

DB2 Connect provides access to those databases in a cost-effective way by implementing a standard architecture for managing distributed data, 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. DB2 Connect products implement a DRDA Application Requester that can access DRDA Application Servers running on MVS, AS/400, OS/390, VM, and VSE systems.

DB2 Connect products provide a run-time environment for database applications written in C, C++, Java, COBOL, FORTRAN, SmallTalk, REXX, and other programming languages. Programmers can use the latest tools, such as IBM VisualAge, Microsoft Visual Studio, Borland Delphi, and many others, to develop database applications using the following Application Programming Interfaces (APIs):

- Microsoft ODBC
- DB2 Embedded SQL (both static and dynamic)
- DB2 Call Level Interface
- Java Database Connectivity

This allows you to use a wide range of off-the-shelf or custom-developed database applications, and provides application programmers with a broad selection of tools and functions. 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 the cost and complexity of data extract and import procedures.
- *Decision support tools*, such as Business Objects, Intersolv Q+E Database Editor, and Crystal Reports, to provide real-time information.
- *Database products*, such as Lotus Approach and Microsoft Access.

- *Development tools*, such as IBM VisualAge, PowerSoft PowerBuilder, Microsoft VisualBasic, and Borland Delphi, to create client/server solutions.

In addition, you get the DB2 Client Pack CD-ROM, which contains all the latest DB2 Client Application Enablers. With DB2 Client Application Enabler, clients from a variety of platforms can connect to host databases through the DB2 Connect Enterprise Edition workstation.

DB2 Connect Enterprise Edition is a member of the DB2 family of products, which includes relational database systems, middleware, and application development tools. The following is a list of other DB2 family products that are available separately:

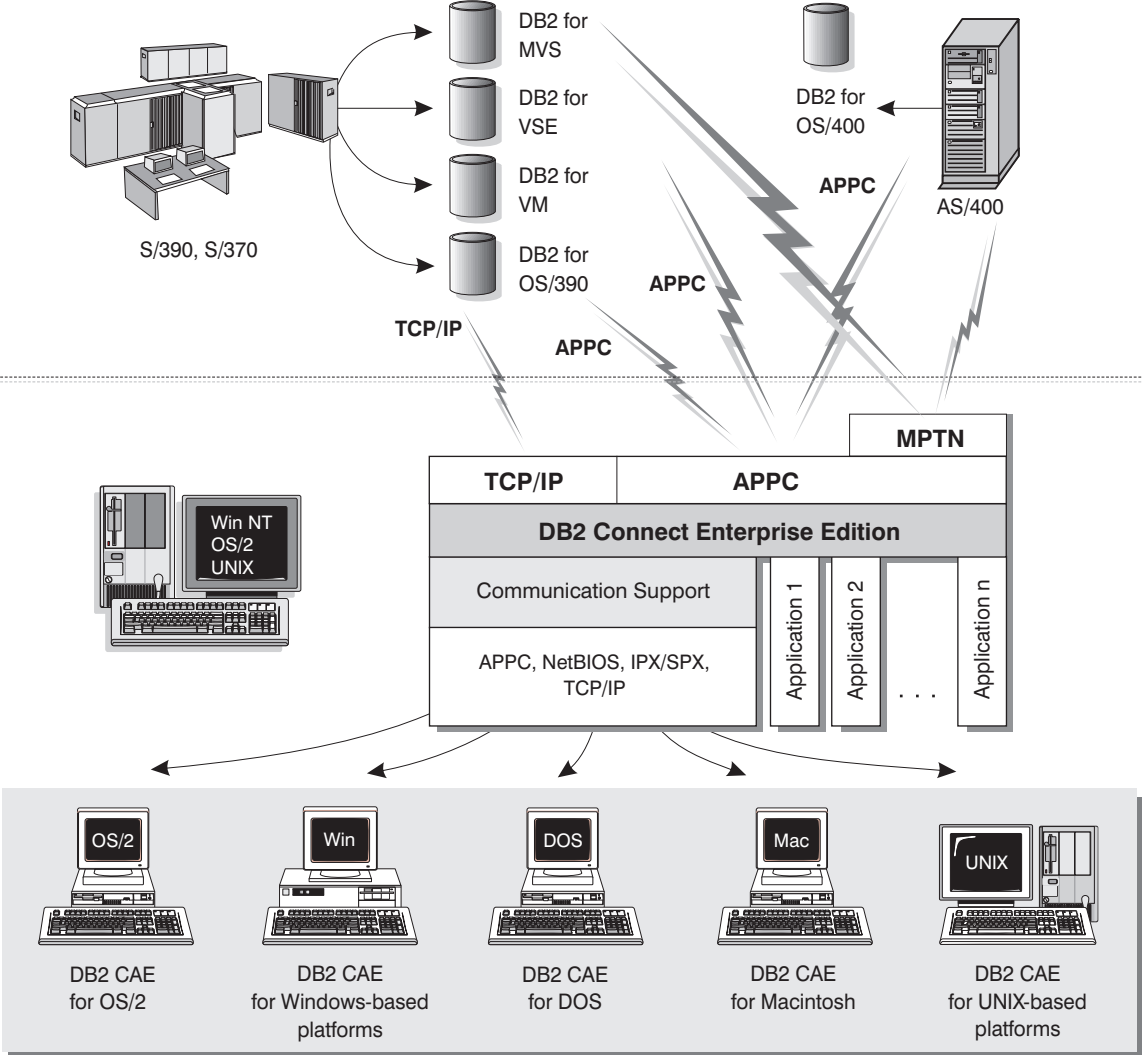
- *DB2 Universal Database Workgroup Edition* is a relational database management system that enables local and remote clients and applications to create, update, control, and manage relational databases using Structured Query Language (SQL), ODBC, or CLI.

In addition, you get the DB2 Client Pack CD-ROM, which contains all the latest DB2 Client Application Enablers. With DB2 Client Application Enabler, clients from a variety of platforms can connect to DB2 databases.

- *DB2 Universal Database Enterprise Edition* includes all the functions of the DB2 Universal Database Workgroup Edition plus includes the DB2 Connect support that allows access to databases on host systems.
- *DB2 Application Developer's Kit (AD Kit)* contains a collection of DB2 Universal Database products, clients, DB2 Connect products, DB2 Software Developer's Kits, and application development tools for all supported platforms. The AD Kit gives you all the tools you need to create multimedia database applications that can run on a variety of platforms and can connect to any DB2 server, including mainframe and AS/400 databases.
- *DB2 Universal Database Personal Edition* allows you to create and use local databases and to access remote databases if they are available. This product is available for the OS/2, Windows NT, and Windows 95 operating systems.
- *DB2 Connect Personal Edition* (formerly known as DDCS Single-User) provides access from a single workstation to DB2 databases residing on host systems such as MVS/ESA, OS/390, OS/400, VM, and VSE, as well as access to DB2 Universal Databases. This product is available for the OS/2, Windows 3.1x, Windows NT, and Windows 95 operating systems.
- *DB2 Universal Database Extended Enterprise Edition* (formerly known as DB2 Parallel Edition) provides the ability for a database to be partitioned across multiple independent computers of a common platform. To the end-user and application developer, it still appears as a single database on a single computer. This fully scalable database system enables an application to use a database that is simply too large for a single computer to handle efficiently. SQL operations and utilities can operate in parallel on the individual database partitions, thereby speeding up the execution time of a single query or utility.

Note: DB2 Workgroup Edition, DB2 Enterprise Edition, DB2 Personal Edition, and DB2 Extended Enterprise Edition are commonly referred to as DB2 server throughout this book.

DB2 Connect Enterprise Edition



NOTE: CAE is Client Application Enabler. Not all protocols are supported for all the clients.

Figure 1. DB2 Connect Enterprise Edition

Managing Connections to Databases Using the Client Configuration Assistant

The Client Configuration Assistant helps you manage your database connections to remote database servers. The Client Configuration Assistant is available on OS/2, Windows 95, and Windows NT systems. Use the command line processor to set up DB2 clients on UNIX platforms. With the Client Configuration Assistant, you can:

- Define connections to databases (catalogs) so that the databases can be used by applications. Three methods are available:
 - Search the network for available databases and select 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.
 - Manually configure a connection to a database by entering a few required connection parameters.
- Remove cataloged databases, or modify the properties of a cataloged database.
- Test connections to local or remote databases identified on your system to ensure that you can make a connection to the server that you need.
- 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 hints are provided on the interface as parameters are selected.

Developing Applications Using the DB2 Software Developer's Kit

The DB2 Software Developer's Kit (DB2 SDK) 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.

You can install DB2 SDK on the server with DB2 Connect, or on a remote workstation.

There is a platform-specific version of the DB2 SDK available for each of the supported operating systems. The *DB2 Application Developer's Kit (DB2 AD Kit)* product provides the DB2 Software Developer's Kits for all supported platforms, the DB2 Extender development toolset, and VisualAge for Basic. Applications developed with the DB2 SDK will run on any platform where the equivalent DB2 Client Application Enabler component is installed. Through the DB2 Client Application Enabler, these applications

can access all DB2 servers and, by using DB2 Connect, they can also access other database servers that support DRDA.

The DB2 SDK 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).
- Application programming interfaces to access database utilities.

DB2 SDK supports several programming languages (including COBOL, C, and C++) for application development, and provides precompilers for the supported languages. Refer to the *Building Applications for UNIX Environments* or the *Building Applications for Windows and OS/2 Environments* manuals for complete information on using the DB2 SDK, and for a list of the supported compilers.

Accessing DB2 Data from the Web

The popularity of the Internet and the World Wide Web has created a demand for Web access to enterprise data. Java Database Connectivity (JDBC) and Net.Data are provided with DB2 to allow you to create applications that access data in DB2 databases.

Use *Java Database Connectivity* to create applications or applets that access data in DB2 databases. JDBC applets can be run inside HTML web pages on any system with a Java-enabled browser, regardless of the platform of your client. No additional software is required on your client system beyond this browser. The processing of JDBC applets is shared between the client and the server.

The JDBC server and the DB2 Client Application Enabler must reside on the same machine as the Web server. The JDBC server calls into the DB2 Client Application Enabler to connect to local or remote databases, or into MVS/ESA to connect to host databases. When a connection to a DB2 database is requested by the applet, the JDBC client opens a TCP/IP socket to the JDBC server on the machine where the Web server is running. See Figure 2 on page 8 for an example of Java-enabled browsers accessing data from DB2 databases remotely.

Accessing DB2 Data Using JDBC

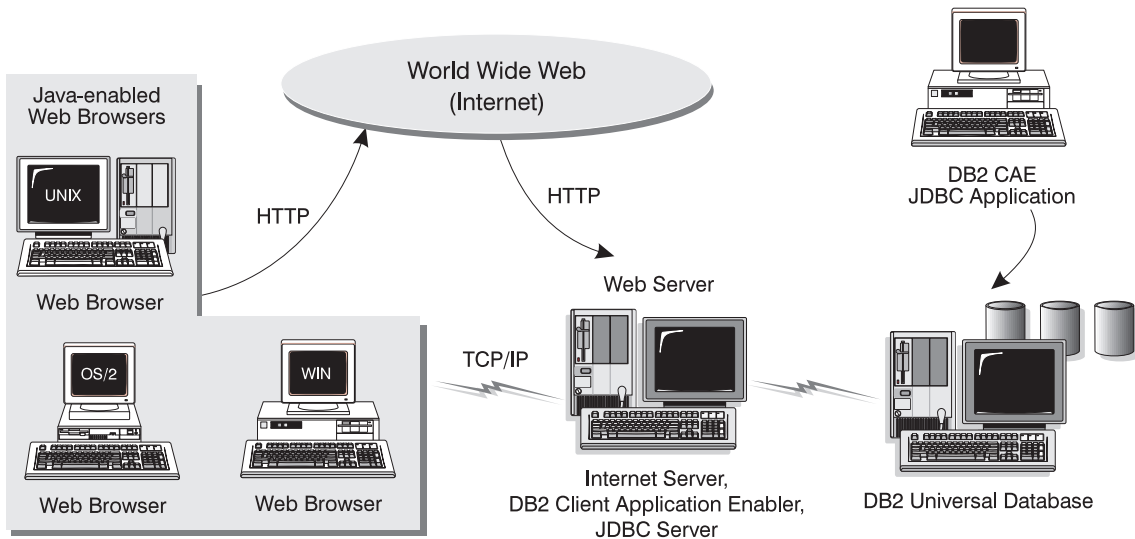


Figure 2. Accessing Internet Data Stored on DB2 Using JDBC

JDBC applications can be run from any system that has the DB2 Client Application Enabler software installed: a Web browser and a Web server are not required.

For more information on Java enablement, see the IBM Software Page under the Data Management link (<http://www.software.ibm.com/data/db2/java>). For more information on the JDBC API, see <http://splash.javasoft.com>.

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 the HTML (hypertext markup language) document and, when selected, they trigger existing SQL queries and return the results from the DB2 database. These links can be triggered repeatedly to access current DB2 data. Customized queries require user input. Users define the search criteria on the Web page by selecting options from a list or by typing values in the entry 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 database.

A demonstration of *Net.Data* applications is available from the IBM Software Page (<http://www.software.ibm.com>) under the Data Management link.

Net.Data can be installed with the server, DB2 Universal Database, to allow local access to databases. Net.Data can be installed with DB2 Client Application Enabler software to allow remote access to databases. In both cases, Net.Data and a Web Server must be installed on the same system. See Figure 3 on page 9 for an example of Net.Data accessing data from DB2 databases remotely.

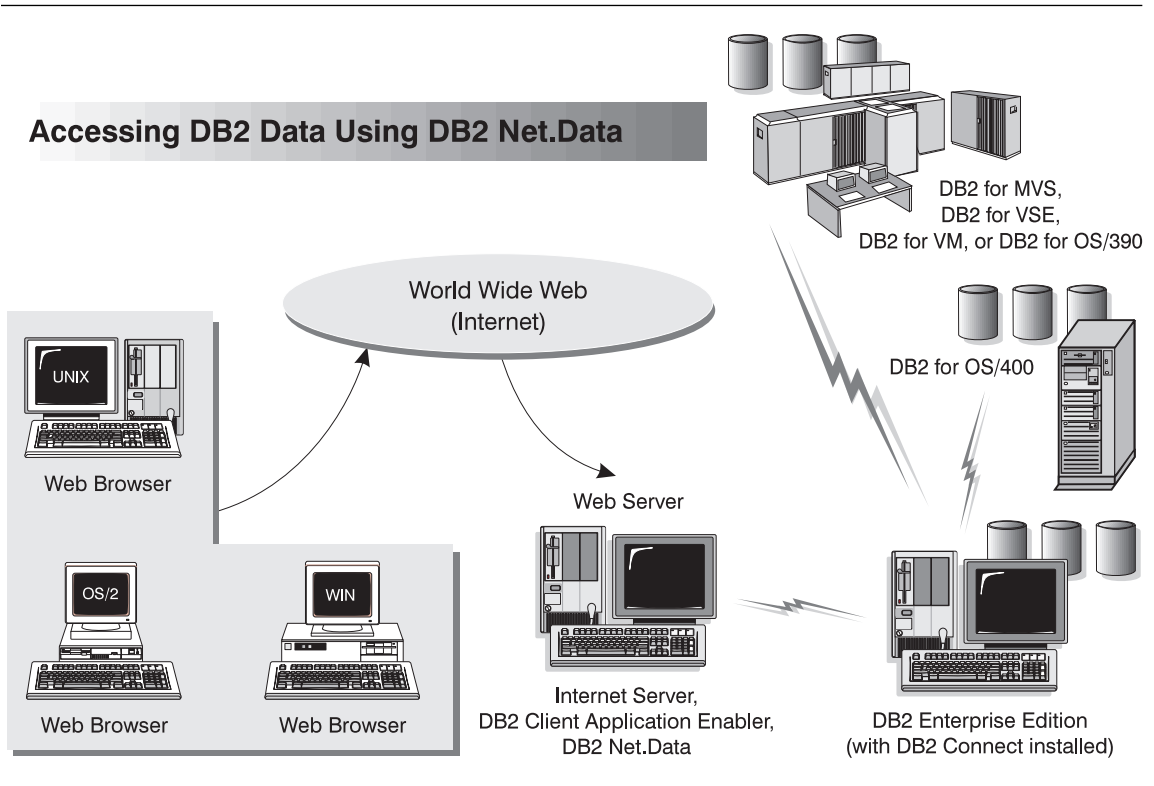


Figure 3. Accessing Internet Data Stored on DB2 Using Net.Data

Chapter 2. What's New in DB2 Connect Version 5?

- New easier to purchase packaging:
 - A single DB2 Connect Personal Edition package that contains OS/2, Windows 3.1, Windows 95, and Windows NT versions of the product. This package contains everything that is needed to get started, including a complimentary copy of Lotus Approach.
 - A single DB2 Connect Enterprise Edition package that contains OS/2, Windows NT, and all UNIX versions.
- Capability:
 - New Level 3 ODBC driver with many improvements
 - Updated JDBC driver for better Java support
 - Support for stored procedures that return multi-row result sets and multiple result sets (requires DB2 for OS/390 Version 5.1)
 - Built-in replication support
 - Generic bind option: you can specify any bind option supported by the host database.
 - SYSPLEX exploitation (DB2 Connect Personal Edition only; requires DB2 for OS/390 Version 5.1)
- Usability:
 - New installation method
 - TCP/IP database connections are much easier to configure (requires DB2 for OS/390 Version 5.1)
 - Integrated SNA support with point-and click configuration (DB2 Connect Personal Edition only)
 - New point and click configuration utility for configuring host connections.
 - Much easier process for connecting desktop client systems to DB2 Connect Enterprise Edition servers. Clients can discover DB2 Connect servers and all of the databases that are defined on each server
 - Improved ODBC traces with detailed information for performance analysis
 - Control Center and other GUI tools that simplify several DBA tasks
- Security:
 - DCE security (requires DB2 for OS/390 Version 5.1)

- Ability to run ODBC applications without having to authorize each user to base tables. Users can now bind their ODBC driver in such a way as to allow applications to run under the authority of the person that bound the ODBC driver.
- Performance:
 - Faster access to the DB2 catalog for ODBC applications
 - Reduced network traffic:
 - Early close for cursors
 - Deferred prepare
 - Reduced byte count on Compound SQL
 - Several other network flow enhancements
 - Support for ASCII storage on the host (requires DB2 for OS/390 Version 5.1)
- Connectivity:
 - Support for DRDA over TCP/IP connections to other IBM DRDA Application Servers, as they introduce support for TCP/IP. (Native TCP/IP support currently requires DB2 for OS/390 Version 5.1)
 - SNA over TCP/IP via integrated MPTN support (requires AnyNet on the host).
 - Support for additional SNA connectivity options:
 - IBM Communication Server for Windows NT
 - IBM Personal Communications
- Other:
 - Ability to initiate 2-phase commit transactions over TCP/IP (requires DB2 for OS/390 Version 5.1)
 - Ability for desktop applications to participate in a 2-phase commit transactions without the need for a gateway (TCP/IP only, requires DB2 for OS/390 V5.1)
 - Ability to use DB2 for OS/390 for added reliability of transaction coordination (requires DB2 for OS/390 Version 5.1 and TCP/IP)
 - Numerous other enhancements and fixes affecting all aspects of system performance, reliability, and usability.

Chapter 3. How to Use DB2 Connect in Your Network



Go directly to Chapter 5, "Installing DB2 Connect on OS/2 Systems" on page 39, Chapter 6, "Installing DB2 Connect on Windows NT Systems" on page 45, or Chapter 7, "Installing DB2 Connect on UNIX Systems" on page 51 if you want to start installing the product immediately.

Your network is a complex combination of hardware and software components, set up to best fit the needs of your organization. DB2 Connect products provide several ways of connecting to S/370, S/390, and AS/400 database servers to enable you to choose the best way to connect your workstations to your host databases. This chapter describes the following network configurations:

- Direct SNA connection from DB2 Connect to a DRDA host, such as DB2 for MVS/ESA, using DB2 Connect Personal Edition.
- Indirect connection from DB2 Connect to a DRDA host via a communications gateway, such as IBM Communications Server or Microsoft SNA Server.
- Server-based connection from DB2 clients to DRDA hosts via a DB2 Connect Enterprise Edition gateway.

In addition to access to mainframe and AS/400 databases, DB2 Connect products can also be used to provide access to DB2 Universal Database servers. This chapter provides a brief description of such a configuration.

Note: It is important that you decide which of the network configurations applies to your environment. This is required for you to set up connectivity to your database servers.

Direct Connection to a DRDA Host

Direct connection without intermediate gateways and servers is a very convenient and desirable configuration. This is especially true for situations where the host database supports TCP/IP connectivity (for example, DB2 for OS/390 V5.1 or later). In such a configuration, each DB2 Connect workstation establishes a direct TCP/IP connection to DB2 for OS/390 or, using the Integrated SNA Support, connects via APPC to DB2 for MVS and other host and AS/400 databases.

TCP/IP connectivity requires that the host database support TCP/IP. At this point, DB2 for OS/390 V5.1 provides support for native TCP/IP connections. An alternative to

native TCP/IP is MPTN connectivity. MPTN connections require that IBM AnyNet products be installed on the target database system, but does not require the host database to provide native TCP/IP support.

Figure 4 shows workstations directly connected to a DRDA host. Each workstation has DB2 Connect Personal Edition installed.

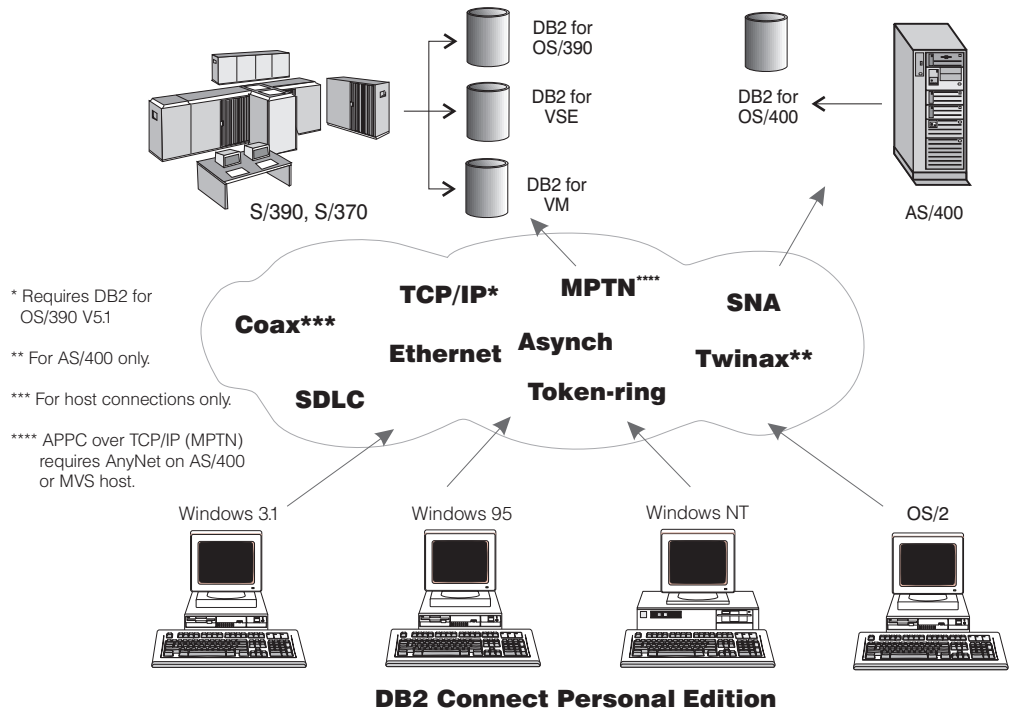
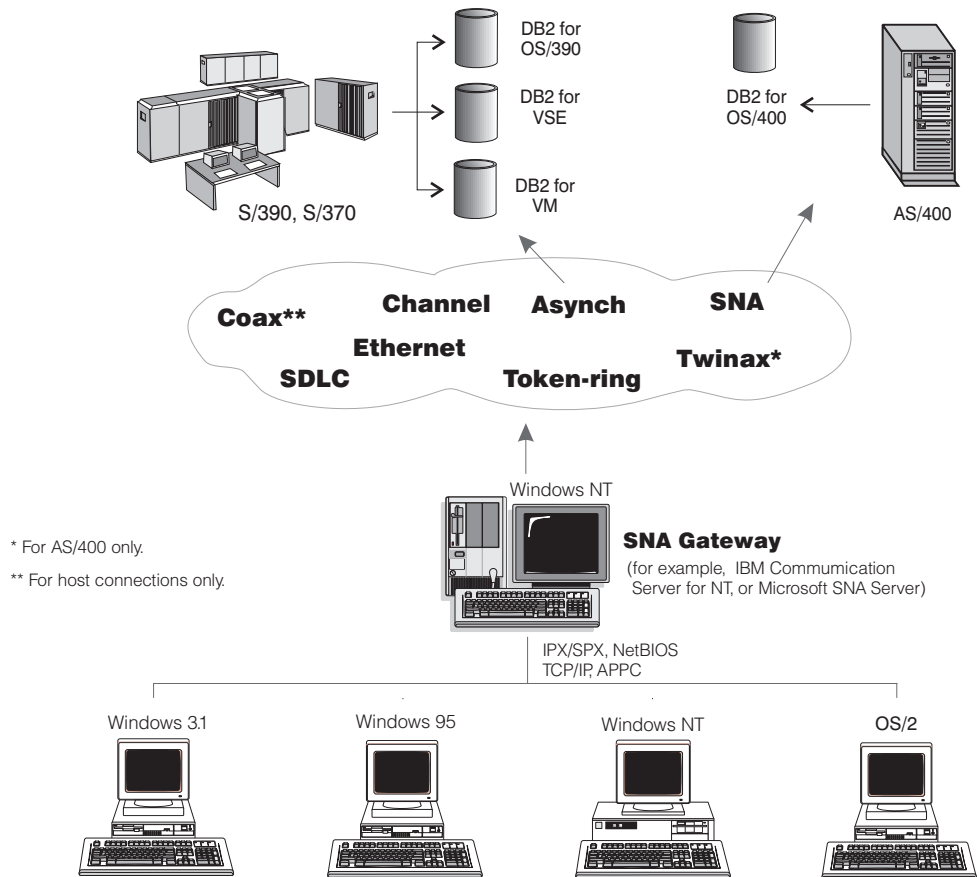


Figure 4. Direct Connection Between DB2 Connect and a DRDA Host

In this environment, if you are using a Windows 3.x, Windows 95, or Windows NT workstation, you can use the DB2 Connect Personal Edition Integrated SNA Support to connect directly to the host servers. DB2 Connect Integrated SNA Support permits connections over a variety of local and wide area networks, such as Token-Ring, Ethernet, SDLC, Twinax, Coax and Asynchronous dial-up. The DB2 Connect Integrated SNA Support implements both APPC and MPTN connections over networks using hosts and AS/400 systems that have IBM AnyNet products installed. Users of OS/2 workstations can use IBM Personal Communications for OS/2. IBM Communications Manager V1.11, or IBM Communications Server for OS/2 to achieve direct APPC and MPTN connectivity.

Connections via Communications Gateway

Some organizations prefer to concentrate access to SNA networks through dedicated **SNA Gateways**, such as IBM Communications Server, Microsoft SNA Server, or Novell Netware for SAA. DB2 Connect products support connections through gateways, so this can be a good choice if you need terminal emulation and other SNA services not provided by DB2 Connect. Figure 5 on page 15 illustrates such a situation.



DB2 Connect Personal Edition with SNA Gateway Client Software

Figure 5. Indirect Connection to DRDA Host via SNA Communications Gateway

Although you can use DB2 Connect Personal Edition with SNA gateways, you may find DB2 Connect Enterprise Edition a better choice if you want to use many DB2 Clients. DB2 Connect Enterprise Edition can be installed on the same machine as IBM

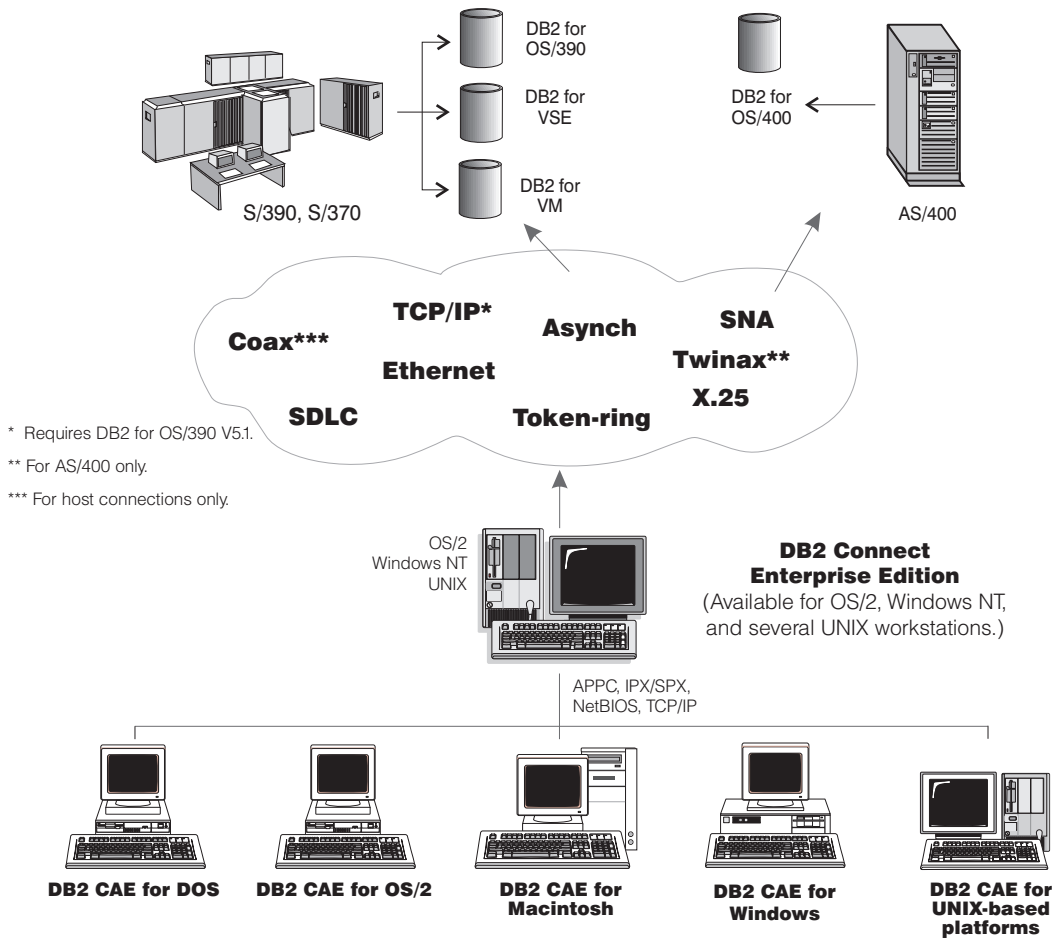
Communications Server or Microsoft SNA Server, and in many cases it can provide a less expensive and better-performing solution. Figure 6 on page 17 provides an overview of the DB2 Connect Enterprise Edition gateway scenario.

Connections via a DB2 Connect Enterprise Edition Server

Figure 6 on page 17 illustrates IBM's solution for environments in which you want to use a DB2 Client Application Enabler making an indirect connection to a DRDA host through DB2 Connect Enterprise Edition server.

All DB2 and DB2 Connect products include a Client Application Enabler component. In addition, the DB2 Client Application Enabler is available as a separate product for AIX, DOS, HP-UX, Macintosh, OS/2, SCO OpenServer, Silicon Graphics, SINIX, Solaris, Windows NT, Windows 3.1, Windows for Workgroups 3.11, and Windows 95.

This type of connectivity is most appropriate for environments where large numbers of workstations need well-managed, secure access to host and AS/400 databases. It allows database administrators to concentrate all access to host data through one or more DB2 Connect servers.



Actual connectivity options depend on the platform chosen.

Figure 6. Indirect Connection to DRDA Host via DB2 Connect Enterprise Edition

Connections to DB2 Universal Database Servers

Figure 7 illustrates a direct connection between a DB2 Universal Database server and the DB2 Client Application Enabler software that is included in DB2 Connect Personal Edition. You can use these connections concurrently with connections to DRDA hosts.

DB2 Universal Database servers are available for AIX, HP-UX, OS/2, Solaris, and Windows NT.

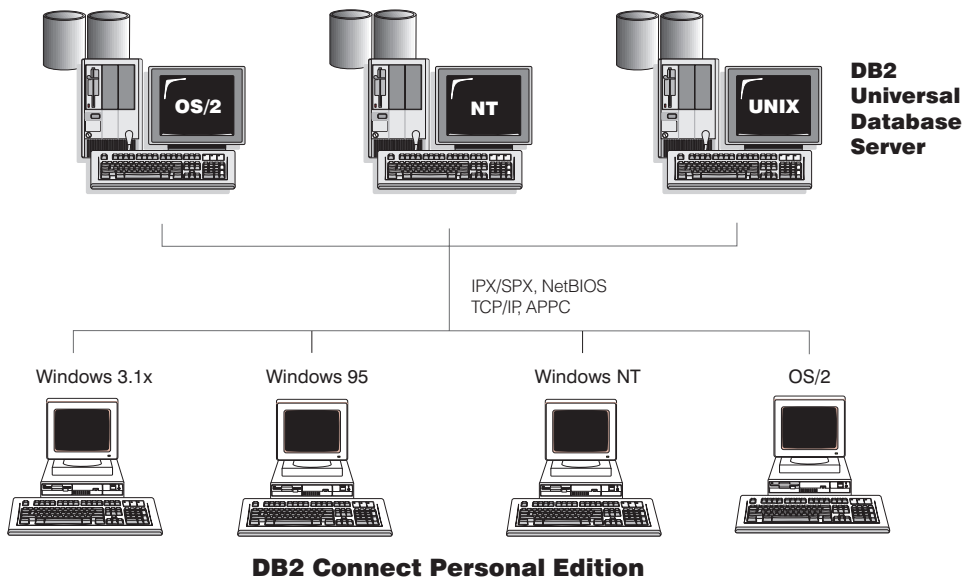


Figure 7. Connection between DB2 Connect Personal Edition and a DB2 Server

Part 2. DB2 Connect: Planning and Installation

Chapter 4. Planning for Installation



If you know that your system meets DB2 Connect's hardware and software requirements, and you want to start installing DB2 Connect right away, go directly to either Chapter 5, "Installing DB2 Connect on OS/2 Systems" on page 39, Chapter 6, "Installing DB2 Connect on Windows NT Systems" on page 45, or Chapter 7, "Installing DB2 Connect on UNIX Systems" on page 51.

DB2 Connect provides many components that you might want to use in your environment. Use the product and planning information in this section to confirm that your system has the prerequisites, and to decide which components you want to install.

Memory Requirements

If you want to access databases on host systems such as OS/390, MVS, OS/400, VM, or VSE, use the configuration shown in Figure 8. You will need to install DB2 Connect Enterprise Edition.

Connect clients to DB2 Connect Enterprise Edition for OS/2 or Windows NT using one of the supported protocols: APPC, IPX/SPX, Named Pipes (Windows NT only), NetBIOS, or TCP/IP. Connect clients to DB2 Connect Enterprise Edition for AIX, HP-UX, or Solaris using one of the supported protocols: APPC, IPX/SPX, or TCP/IP. DB2 Connect then connects to the appropriate host database management system using DRDA and either APPC or TCP/IP. (TCP/IP is supported on DB2 for OS/390 Version 5.1 or later.)

DB2 Connect Enterprise Edition - Memory Requirements

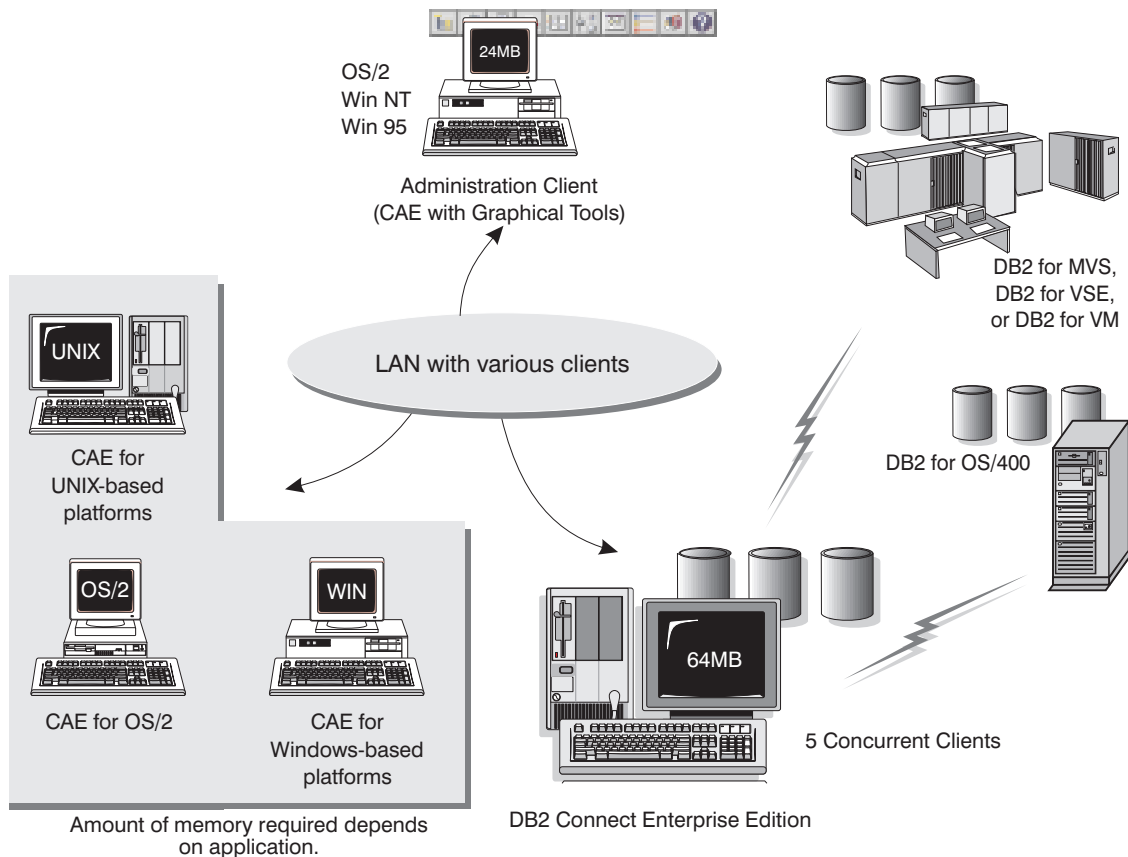


Figure 8. Configuration for Accessing Host Data

The amount of memory you need on your system depends on the number of concurrent clients you intend to connect. For the OS/2 or Windows NT DB2 Connect server, it is recommended that a minimum of 32 MB of memory be installed to accommodate five concurrent clients. We suggest that you have a minimum of 48 MB of memory to accommodate 25 concurrent clients and 64 MB of memory for 50 concurrent clients.

For the UNIX DB2 Connect server, it is recommended that a minimum of 64 MB of memory be installed to accommodate five concurrent clients. The diagram shows a scenario with five concurrent clients connected to a UNIX DB2 Connect server. We suggest that you have a minimum of 96 MB of memory to accommodate 25 concurrent clients and 128 MB of memory for 50 concurrent clients. Use these guidelines to determine the amount of memory necessary in your environment.

An administration client is shown in the diagram. This client can be on an OS/2, Windows 95, or Windows NT workstation and can be used to remotely manage the DB2 servers on your network. A minimum of 24 MB of memory is required to run all the graphical tools you will need for an administration client.

For the DB2 clients in your environment, the amount of memory required depends on the database applications you are running.

Disk Requirements

This section shows the *minimum* amount of disk space that is required by DB2 products. 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. Use this information to plan for systems with a large number of concurrent clients or databases.

Estimating Fixed Disk Requirements

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

Disk Requirements Table

Use Table 1 on page 24 to estimate the amount of disk space you need to install DB2 and associated products on your operating system.

Table 1. Estimating Disk Requirements

DB2 Connect Enterprise Edition for OS/2	
DB2 Connect — this amount includes the following components:	100 MB
• Client Configuration Assistant	5 MB
• Graphical Tools	5 MB
• Control Center	30 MB
• Performance Monitor	10 MB
• Visual Explain	5 MB
• Windows Support	10 MB
• LU 6.2 Syncpoint Manager	15 MB
• East Asian Conversion Support	5 MB
Online documentation in HTML format	30 MB
DB2 Connect Enterprise Edition for Windows NT	
DB2 Connect — this amount includes the following components:	70 MB
• Graphical Tools (Client Configuration Assistant, Control Center, Performance Monitor, and Visual Explain)	35 MB
• East Asian Conversion Support	5 MB
Online documentation in HTML format	30 MB
DB2 Connect Enterprise Edition for AIX	
DB2 Connect	55 MB
• Online documentation in HTML format	40 MB
• Far-East Conversion Support	5 MB
DB2 Connect Enterprise Edition for HP-UX	
DB2 Connect	86 MB
• Online documentation in HTML format	40 MB
• Far-East Conversion Support	5 MB
DB2 Connect Enterprise Edition for Solaris	
DB2 Connect	80 MB
• Online documentation in HTML format	40 MB
• Far-East Conversion Support	5 MB

Note: The disk amounts listed are approximations.

Client Components

Use Table 2 on page 25 to estimate the amount of disk space you need on each of your client workstations.

Table 2. Estimating Disk Requirements for Client Components

	Recommended Minimum Disk (MB)
DB2 Client Application Enabler for AIX	
DB2 Client Application Enabler for AIX — all components	22 MB
DB2 Client Application Enabler for HP-UX — all components	
DB2 Client Application Enabler for HP-UX — all components	18 MB
DB2 Client Application Enabler for Macintosh	
DB2 Client Application Enabler for Macintosh	8 MB
• Documentation	7 MB
DB2 Client Application Enabler for OS/2	
DB2 Client Application Enabler for OS/2 — this amount includes the following components:	55 MB
• Client Configuration Assistant	5 MB
• Graphical Tools	5 MB
• Control Center	30 MB
• Performance Monitor	10 MB
• Visual Explain	5 MB
Online documentation in HTML format	25 MB
DB2 Client Application Enabler for Solaris	
DB2 Client Application Enabler for Solaris — all packages	16 MB
DB2 Client Application Enabler for SCO OpenServer Version 2	
DB2 Client Application Enabler for SCO OpenServer	16 MB
• Online documentation in HTML format	25 MB
DB2 Client Application Enabler for Silicon Graphics IRIX Version 2	
DB2 Client Application Enabler for Silicon Graphics IRIX	14 MB
• Documentation	19 MB
DB2 Client Application Enabler for SINIX Version 2	
DB2 Client Application Enabler for SINIX	16 MB
• Documentation	21 MB
DB2 Client Application Enabler for Windows 3.1x	
DB2 Client Application Enabler for Windows	10 MB
• Online documentation in HTML format	10 MB
DB2 Client Application Enabler for Windows 95 & Windows NT	
DB2 Client Application Enabler for Windows 95 & Windows NT — this amount includes the following components:	54 MB
• Graphical Tools (Client Configuration Assistant, Control Center, Performance Monitor, and Visual Explain)	35 MB
Online documentation in HTML format	25 MB

Software Requirements

The following sections outline the software that is required to run DB2 Connect Enterprise Edition or DB2 Connect Personal Edition on each of the supported operating systems.

DB2 Connect Enterprise Edition products use communication software for establishing host connectivity and connectivity to DB2 Universal Database servers. In addition, DB2 Connect Enterprise Edition requires connectivity software to support connections from remote client workstations.

For the host connectivity, software requirements will depend on:

1. The protocol that you will be using, that is, SNA (APPC), TCP/IP, or MPTN (APPC over TCP/IP)
2. Whether you will be using direct connection (see “Direct Connection to a DRDA Host” on page 13 or “Connections via Communications Gateway” on page 15).

Software Requirements for OS/2 Users

DB2 Connect Enterprise Edition can be used on machines running one of the following levels of the OS/2 operating system:

- 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 SMP.

Because of DB2 Connect's requirement for communications, versions of OS/2 with built-in communications capabilities such as OS/2 Warp Connect, Warp Server, Warp Server Advanced, and OS/2 Warp Version 4 are recommended.

Notes:

1. If you plan to install DB2 Connect using TME 10 SystemView, you must have TME 10 SystemView LAN Client provided by the OS/2 Warp Server.
2. The DB2 SNMP subagent requires DPI 2.0 support provided by the OS/2 Warp Server installed. If you plan to use DB2 SNMP subagent for system management, you will have to use OS/2 Warp Server.

Host Communications

DB2 Connect products running on OS/2 support communications with host and AS/400 databases using SNA (APPC), TCP/IP¹, and MPTN (APPC over TCP/IP)² protocols. DB2 Connect products can support all of these protocols at the same time.

For direct connection to host and AS/400 databases via SNA (APPC), one of the following communication products is required:

- IBM Communication Manager for OS/2 V1.11
- IBM Communication Server Version 4
- IBM Personal Communications for OS/2 V4.1

For direct connections to host databases via TCP/IP, no additional software is required for network-enabled versions of OS/2. Users of OS/2 Warp Version 3 require IBM TCP/IP for OS/2 Version 3.0 or later.

For connections via communications gateway, see “Connections via Communications Gateway” on page 15 and the documentation for your SNA gateway product that describes the enablement of OS/2 clients for APPC (LU6.2) communications.

Notes:

1. If you plan to support two-phase commit capability, that is, if you will be running applications that update multiple databases within the same transaction and you have an SNA (APPC) connection to your host or AS/400 database, you must install Syncpoint Manager (SPM) component. You must also use IBM Communication Server V4.1 or later for OS/2.
2. If you plan to use DCE (Distributed Computing Environment) Security for authenticating users that connect to host databases, you do not have to install DCE products on your DB2 Connect workstation. However, you will have to:
 - Ensure that you are connecting to DB2 for OS/390 V5.1 database that is enabled for DCE support using OS/390 DCE Base Services Version 3.
 - Ensure that client workstations, using DCE security, have appropriate DCE software installed. DCE software must be at OSF DCE level 1.1

Support for Remote Clients

DB2 servers running on OS/2 support communications with remote clients via TCP/IP, NetBIOS, IPX/SPX, and SNA (APPC) protocols. DB2 servers can support all of these protocols at the same time.

¹ Requires DB2 for OS/390 V5.1

² Requires AnyNet to be installed on the host or the AS/400

If you are using a version of OS/2 with built-in communications capabilities such as OS/2 Warp Connect, Warp Server, Warp Server Advanced, or OS/2 Warp Version 4 no additional software is required for supporting remote clients using TCP/IP, NetBIOS, and IPX/SPX protocols.

If you are using a version of OS/2 without built-in communication support or if you need to support clients connecting via APPC one of the following communication products is required:

- NetBIOS
 - IBM LAN Requester
 - IBM NTS/2 V1.0 or later
 - IBM Communication Manager V1.x
- TCP/IP
 - IBM TCP/IP Version 3.0 or later
- IPX/SPX
 - Novell NetWare Requester, Version 2.10 or later
 - IBM Communication Manager for OS/2 V1.11
 - IBM Communication Server Version 4.1 (required for 2-phase commit)
 - IBM Personal Communications for OS/2 V4.1

Software Requirements for Windows NT Users

DB2 Connect can be used on machines running one of the following levels of the Windows NT operating system:

- Windows NT Workstation Version 4.0
- Windows NT Server Version 4.0
- Windows NT Workstation Version 3.51
- Windows NT Server Version 3.51

Host Communications

DB2 Connect products running on Windows NT support communications with host and AS/400 databases using SNA (APPC), TCP/IP¹, and MPTN (APPC over TCP/IP)² protocols. DB2 Connect products can support all of these protocols at the same time.

For direct connection to host and AS/400 databases via SNA (APPC), one of the following communication products is required:

- IBM Communication Server for Windows NT V5 or later
- IBM Personal Communications for Windows NT V4.1 or later
- Microsoft SNA Server V2.11 or later

For direct connections to host databases via TCP/IP, no additional software is required.

For connections via SNA gateway, see “Connections via Communications Gateway” on page 15 and the documentation for your SNA gateway product that describes the enablement of Windows NT clients for APPC (LU6.2) communications.

Note: If you plan to use DCE (Distributed Computing Environment) Security for authenticating users that connect to host databases, you do not have to install DCE products on your DB2 Connect workstation. However, you will need to:

- Ensure that you are connecting to DB2 for OS/390 V5.1 database that is enabled for DCE support using OS/390 DCE Base Services Version 3.
- Ensure that client workstations, using DCE security, have appropriate DCE software installed. DCE software must be at OSF DCE level 1.1

Support for Remote Clients

DB2 servers running on Windows NT support communications with remote clients via TCP/IP, NetBIOS, IPX/SPX, Named Pipes, and SNA (APPC) protocols. DB2 servers can support all of these protocols at the same time.

Windows NT supplies all the communication support required to establish TCP/IP, NetBIOS, IPX/SPX, and Named Pipes connections. Therefore, no additional software is required for supporting remote clients or connecting to DB2 Universal Database servers.

Software Requirements for AIX Users

DB2 Connect can be used on IBM RISC System/6000 and Bull workstations running AIX Version 4.1 or later.

Host Communications

DB2 Connect products running on AIX support communications with host and AS/400 databases using SNA (APPC), TCP/IP¹, and MPTN (APPC over TCP/IP)² protocols. DB2 Connect products can support all of these protocols at the same time.

For direct connection to host and AS/400 databases via SNA (APPC), one of the following communication products is required:

- IBM SNA Server for AIX Version 3 or later
- IBM Communication Server for AIX Version 4 or later
- Bull DPX/20 SNA/20

For direct connections to host databases via TCP/IP, no additional software is required.

Note: If you plan to use DCE (Distributed Computing Environment) Security for authenticating users that connect to host databases, you do not have to install DCE products on your DB2 Connect workstation. However, you will need to:

- Ensure that you are connecting to DB2 for OS/390 V5.1 database that is enabled for DCE support using OS/390 DCE Base Services Version 3.
- Ensure that client workstations, using DCE security, have appropriate DCE software installed. DCE software must be at OSF DCE level 1.1

Support for Remote Clients

DB2 servers running on AIX support communications with remote clients via TCP/IP, NetBIOS, IPX/SPX, and SNA (APPC) protocols. DB2 servers can support all of these protocols at the same time.

AIX supplies all the communication support required to establish TCP/IP connections. Therefore, no additional software is required for supporting remote clients or connecting to DB2 Universal Database servers.

If you need to support clients connecting via NetBIOS, IPX/SPX, or APPC, one of the following communication products is required:

- NetBIOS
 - IBM NetBIOS and IPX/SPX for AIX Version 2.1
- IPX/SPX
 - IBM NetBIOS and IPX/SPX for AIX Version 2.1
 - IBM NetWare for AIX, Version 3.11B
- APPC
 - IBM Communication Server for AIX Version 4
 - IBM SNA Server for AIX Version 3

Software Requirements for HP-UX Users

DB2 Connect can be used on HP 9000 series 700 and 800 workstations running HP-UX Version 10.10 or later.

Host Communications

DB2 Connect products running on HP-UX support communications with host and AS/400 databases using SNA (APPC), and TCP/IP¹ protocols. DB2 Connect products can support all of these protocols at the same time.

For direct connection to host and AS/400 databases via SNA (APPC), both of the following communication products is required:

- HP SNAplusLink Release 4 Version A.10.00 (patch levels: PHNE_6037, PHNE_6064) and
- HP SNAplusAPI Release 4 Version A.10.00 (patch levels: PHNE_6056)

For direct connections to host databases via TCP/IP, no additional software is required.

Notes:

1. If you plan to use DCE (Distributed Computing Environment) Security for authenticating users that connect to host databases, you do not have to install DCE products on your DB2 Connect workstation. However, you will need to:
 - Ensure that you are connecting to DB2 for OS/390 V5.1 database that is enabled for DCE support using OS/390 DCE Base Services Version 3.
 - Ensure that client workstations, be using DCE security, have appropriate DCE software installed. DCE software must be at OSF DCE level 1.1

Support for Remote Clients

DB2 servers running on HP-UX support communications with remote clients via TCP/IP, and IPX/SPX protocols. DB2 servers can support all of these protocols at the same time.

HP-UX supplies all the communication support required to establish TCP/IP connections. Therefore, no additional software is required for supporting remote clients or connecting to DB2 Universal Database servers.

If you need to support clients connecting via IPX/SPX, you must have NetWare Version 3.12 for HP 9000 installed and configured.

Software Requirements for Solaris Users

DB2 Connect can be used on SUN workstations running Solaris Version 2.5.1 or later.

Host Communications

DB2 Connect products running on Solaris support communications with host and AS/400 databases using SNA (APPC), and TCP/IP¹ protocols. DB2 Connect products can support all of these protocols at the same time.

For direct connection to host and AS/400 databases via SNA (APPC), you must purchase SunLink SNA 9.0 and install and configure the following components of this product:

- SunLink P2P LU6.2 9.0
- SunLink PU2.1 9.0
- SunLink P2P CPI-C 9.0

For direct connections to host databases via TCP/IP, no additional software is required.

Note: If you plan to use DCE (Distributed Computing Environment) Security for authenticating users that connect to host databases, you do not have to install DCE products on your DB2 Connect workstation. However, you will need to:

- Ensure that you are connecting to DB2 for OS/390 V5.1 database that is enabled for DCE support using OS/390 DCE Base Services Version 3.
- Ensure that client workstations that will be using DCE security have appropriate DCE software installed. DCE software must be at OSF DCE level 1.1

Support for Remote Clients

DB2 servers running on Solaris support communications with remote clients via TCP/IP, and IPX/SPX protocols. DB2 servers can support all of these protocols at the same time.

Solaris supplies all the communication support required to establish TCP/IP connections. Therefore, no additional software is required for supporting remote clients or connecting to DB2 Universal Database servers.

If you need to support clients connecting via IPX/SPX, you must install and configure SolarNet PC Protocol Services 1.1 with IPX/SPX for the Solaris 2.x Operating Environment.

Client Product Requirements

Table 3 lists the software requirements needed for the DB2 client products.

Table 3 (Page 1 of 4). Software Requirements for Clients

Component	Operating System	Communications
<ul style="list-style-type: none"> • DB2 Client Application Enabler for AIX 	Risc System/6000 and the following: <ul style="list-style-type: none"> • AIX Version 4.1.4 or later 	APPC or TCP/IP <ul style="list-style-type: none"> • For APPC connectivity, you require IBM Communications Server for Version 4.1.4 or later for AIX • The AIX base operating system provides TCP/IP connectivity, if selected during install. <p>Notes:</p> <ol style="list-style-type: none"> 1. If you want to use DCE (Distributed Computing Environment), you require a DCE product that is provided by the AIX Version 4.1.4 operating system with its latest DCE PTF. 2. DB2 for AIX also has an IPX listener.

Table 3 (Page 2 of 4). Software Requirements for Clients

Component	Operating System	Communications
<ul style="list-style-type: none"> DB2 Client Application Enabler for HP-UX 	<p>HP 9000 Series 700 or 800 system and the following:</p> <ul style="list-style-type: none"> HP-UX Version 10.10 or later <p>The following patches are required:</p> <ul style="list-style-type: none"> For HP-UX Version 10.20 <ul style="list-style-type: none"> PHSS_10556 PHSS_10436 For HP-UX Version 10.10 <ul style="list-style-type: none"> PHSS_10437 For systems with the ANSI C or C++ compilers: <ul style="list-style-type: none"> PHSS_10261 PHSS_7505 PHSS_9096 for C++ 	<p>APPC or TCP/IP</p> <ul style="list-style-type: none"> For APPC connectivity, you require either of the following: <ul style="list-style-type: none"> HP-UX Version 10.10 for SNAPplusLink Version A.10.10 HP-UX Version 10.10 for SNAPplusAPI Version A.10.10 The HP-UX base operating system provides TCP/IP connectivity. <p>Notes:</p> <ol style="list-style-type: none"> To support database clients using IPX/SPX, the following IPX/SPX software must be installed: <ul style="list-style-type: none"> Netware Version 3.12 for the HP 9000 If you want to use DCE (Distributed Computing Environment), you require a DCE product that is provided by the HP-UX Version 10 or later base operating system.
<ul style="list-style-type: none"> DB2 Client Application Enabler for Macintosh 	<ul style="list-style-type: none"> System 7.5 or later 	<p>TCP/IP</p> <ul style="list-style-type: none"> For TCP/IP connectivity, you require MacTCP Version 2.0.6. <p>Note: If you are running in a 68K environment, you need to install Apple Shared Library Manager (ASLM) Version 2.0 or later.</p>
<ul style="list-style-type: none"> DB2 Client Application Enabler for OS/2 	<ul style="list-style-type: none"> OS/2 Warp Version 3 or Version 4 OS/2 Warp Connect Version 3 OS/2 Warp Server Version 4 OS/2 Warp Server Advanced V4 OS/2 Warp Server SMP 	<p>APPC, IPX/SPX, Named Pipes (Local), NetBIOS, or TCP/IP</p> <ul style="list-style-type: none"> For APPC connectivity, you require IBM Communications Manager Version 1.x or later. For NetBIOS connectivity, you require IBM NTS/2 Version 1.0, IBM Communications Manager Version 1.1, or IBM OS/2 LAN Requester. For IPX/SPX connectivity, you require Novell NetWare Requester, Version 2.10 or later. 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. <p>Notes:</p> <ol style="list-style-type: none"> OS/2 Warp Server provides the SystemView LAN client that SystemView LAN needs for installing clients and servers. Net.Data requires OS/2 Warp Version 3 or later and a Web server such as IBM's Internet Connection Server. For DCE Cell Directory Services Support (CDS) for DB2 Client Application Enabler for OS/2, you must install IBM Distributed Computing Environment Cell Directory Service client, Version 2.10, on each client workstation.
<ul style="list-style-type: none"> DB2 Client Application Enabler for SCO OpenServer 	<p>Intel-based personal computer supported by SCO OpenServer and the following:</p> <ul style="list-style-type: none"> SCO OpenServer Version 5.0.2 or later 	<p>APPC, IPX/SPX, or TCP/IP</p> <ul style="list-style-type: none"> For APPC connectivity, you require Interface Systems CLEO SNA Version 4.1.1.1. The SCO OpenServer base operating system provides IPX/SPX and TCP/IP connectivity.

Table 3 (Page 3 of 4). Software Requirements for Clients

Component	Operating System	Communications
<ul style="list-style-type: none"> DB2 Client Application Enabler for Silicon Graphics IRIX 	<ul style="list-style-type: none"> Silicon Graphics IRIX, Version 5.3 or later. 	<p>TCP/IP</p> <p>Note: The Silicon Graphics IRIX base operating system provides TCP/IP connectivity.</p>
<ul style="list-style-type: none"> DB2 Client Application Enabler for SINIX 	<p>Siemens Nixdorf RM200 or RM400 or RM600 system and the following:</p> <ul style="list-style-type: none"> SINIX-N or SINIX-Y Version 5.42 or later Reliant UNIX 	<p>APPC or TCP/IP</p> <ul style="list-style-type: none"> For APPC connectivity, you require the following: <ul style="list-style-type: none"> SINIX TRANSIT-SERVER V3.3, SNA Communication Server SINIX TRANSIT-CLIENT V3.3 SNA Communication Server / Local Function SINIX TRANSIT-CPIC V3.3 SNA LU6.2 Communication and CPI-C. The SINIX base operating system provides TCP/IP connectivity.
<ul style="list-style-type: none"> DB2 Client Application Enabler for Solaris 	<p>Solaris SPARCstation and the following:</p> <ul style="list-style-type: none"> Solaris Version 2.5.1 or later <p>The following patches are required:</p> <ul style="list-style-type: none"> 103600-13 103640-08 	<p>APPC or TCP/IP</p> <ul style="list-style-type: none"> For APPC connectivity, you require SunLink SNA 9.0 and the following: <ul style="list-style-type: none"> SunLink P2P LU6.2 9.0 SunLink PU2.1 9.0 SunLink P2P CPI-C 9.0 The Solaris base operating system provides TCP/IP connectivity. <p>Notes:</p> <ol style="list-style-type: none"> For database clients using IPX/SPX, the following IPX/SPX software be installed: <ul style="list-style-type: none"> SolarNet PC Protocol Services 1.1 with IPX/SPX If you want 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.
<ul style="list-style-type: none"> DB2 Client Application Enabler for Windows, (Windows 3.1 and Windows for Workgroups) 	<ul style="list-style-type: none"> Microsoft Windows 3.1 Windows for Workgroups 3.11 	<p>IPX/SPX, NetBIOS, or TCP/IP</p> <ul style="list-style-type: none"> For IPX/SPX connectivity, you require Novell NetWare client for Windows, which comes with Novell Netware Server Version 3.x or Version 4.x; or Novell NetWare Workstation for Windows Version 1.0 or later with the latest update kit installed. For NetBIOS connectivity, you require the LAN Adapter and Protocol Support in any of these products: <ul style="list-style-type: none"> IBM LAN Support Program Version 1.2.1 or later DOS LAN Services (LAN Server 4.0) Banyan Vines NetBIOS Version 5.52 NetBEUI (available with Microsoft Windows for Workgroups 3.11) For TCP/IP connectivity, you require one of the following: <ul style="list-style-type: none"> IBM TCP/IP for DOS Version 2.1.1 or later PC/TCP Network Software for DOS Version 2.3 or later from FTP Software Inc. TCP/IP compliant with the Windows Sockets Version 1.1 specification
<ul style="list-style-type: none"> DB2 Client Application Enabler for Windows (WIN-OS/2) 	<ul style="list-style-type: none"> OS/2 Warp Version 3 or Version 4 OS/2 Warp Connect Version 3 OS/2 Warp Server Version 4 OS/2 Warp Server Advanced V4 OS/2 Warp Server SMP 	<p>NetBIOS, IPX/SPX, TCP/IP, or Named Pipes (Local)</p> <ul style="list-style-type: none"> For NetBIOS connectivity, you require IBM NTS/2 Version 1.0, IBM Communications Manager Version 1.1, or IBM OS/2 LAN Requester. For IPX/SPX connectivity, you require Novell NetWare client for OS/2 Version 2.10 or later with virtual session support. For TCP/IP connectivity, you require IBM TCP/IP for OS/2 with the Windows Access kit.

Table 3 (Page 4 of 4). Software Requirements for Clients

Component	Operating System	Communications
<ul style="list-style-type: none"> DB2 Client Application Enabler for Windows 95 	<ul style="list-style-type: none"> Windows 95 4.00.950 or later 	IPX/SPX, Named Pipes, NetBIOS, or TCP/IP <ul style="list-style-type: none"> The Windows 95 base operating system provides NetBIOS, IPX/SPX, TCP/IP, and Named Pipes connectivity.
<ul style="list-style-type: none"> DB2 Client Application Enabler for Windows NT 	<ul style="list-style-type: none"> Windows NT Version 3.51 Windows NT Version 4.0 or later 	APPC, IPX/SPX, Named Pipes, NetBIOS, or TCP/IP <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> IBM Communications Server for Windows NT Version 5.0. Microsoft SNA Server Version 2.11 or later on the LAN. You do not have to install the SNA Server on the same workstation as the DB2 Client Application Enabler for Windows NT. PCOMM AS/400 and 3270 V4.1 or later Wall Data Rumba <p>Note: If you have the IBM Antivirus program installed on your operating system, it must be Version 3.0 or later.</p>

Possible Client-to-DB2 Connect Gateway Connectivity Scenarios

The following table shows the communication protocols that can be used when connecting a specific DB2 Client to a specific DB2 Connect Gateway.

Table 4 (Page 1 of 2). Possible Client-to-Gateway Connectivity Scenarios

Clients	DB2 Connect Gateways				
	AIX	HP-UX	OS/2	Solaris	Windows NT
AIX	APPC TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
HP-UX	APPC TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
Macintosh	TCP/IP	TCP/IP	TCP/IP	TCP/IP	TCP/IP
OS/2	APPC IPX/SPX ^{1,2} TCP/IP	IPX/SPX ^{1,2} TCP/IP	APPC IPX/SPX ^{1,2} NetBIOS TCP/IP	APPC IPX/SPX ¹ TCP/IP	APPC IPX/SPX ¹ NetBIOS TCP/IP
SCO OpenServer	APPC IPX/SPX ¹ TCP/IP	IPX/SPX ¹ TCP/IP	APPC IPX/SPX ¹ TCP/IP	APPC IPX/SPX ¹ TCP/IP	APPC IPX/SPX ¹ TCP/IP

Table 4 (Page 2 of 2). Possible Client-to-Gateway Connectivity Scenarios

Clients	DB2 Connect Gateways				
	AIX	HP-UX	OS/2	Solaris	Windows NT
Silicon Graphics IRIX	APPC TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
SINIX	APPC TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
Solaris	APPC TCP/IP	TCP/IP	APPC TCP/IP	APPC TCP/IP	APPC TCP/IP
Windows 3.1x	IPX/SPX ^{1,2} TCP/IP	IPX/SPX ^{1,2} TCP/IP	IPX/SPX ^{1,2} NetBIOS TCP/IP Local (Named Pipes)	IPX/SPX ¹ TCP/IP	IPX/SPX ¹ NetBIOS TCP/IP
Windows 95	IPX/SPX ¹ TCP/IP	IPX/SPX ¹ TCP/IP	IPX/SPX ¹ NetBIOS TCP/IP	IPX/SPX ¹ TCP/IP	IPX/SPX ¹ Named Pipes NetBIOS TCP/IP
Windows NT	APPC IPX/SPX ¹ TCP/IP	IPX/SPX ¹ TCP/IP	APPC IPX/SPX ¹ NetBIOS TCP/IP	APPC IPX/SPX ¹ TCP/IP	APPC IPX/SPX ¹ Named Pipes NetBIOS TCP/IP
1	Direct Addressing				
2	File Server Addressing				

Security Requirements

Since you will be accessing data managed by other systems, you will require a user ID and password so that you can be authenticated by the system. To obtain these, contact the administrator responsible for the system where the data resides.

In addition, to access to the system, you will require authorization to access data objects on the target database server; for example, tables, views, and program packages. To obtain the appropriate authorization, contact your database administrator.

An additional DB2 security mechanism called *binding* allows database administrators to limit access to specific applications. This mechanism is used to build program packages or *plans*. The database administrator then grants authority to users to execute these packages.

If you will be running an application developed using embedded SQL, a package will be supplied with your application. You must bind this package to each database that the application will access. Package files are usually supplied with the file type "bnd." ODBC users do not bind individual applications; instead, they must bind the ODBC driver itself to each database that will be accessed.

To bind applications or the ODBC driver, you require the following privileges on each database:

DB2 for OS/390 or DB2 for MVS

BINADD privilege, plus CREATE IN COLLECTION NULLID, SYSCTRL, or SYSADM authority.

DB2 for VSE & VM

DBA authority

DB2/400

*CHANGE authority or higher on the NULLID collection.

If your database administrator will not grant you these privileges, another user (usually the administrator) must perform the required binds.

Chapter 5. Installing DB2 Connect on OS/2 Systems



If you need to install software on many OS/2 systems, see Chapter 41, “Unattended DB2 Installation on OS/2 Workstations” on page 379.

This chapter describes how to install DB2 Connect on an OS/2 workstation.

Before You Begin Installing on OS/2

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

- The protocol to be used for host connectivity:
 - APPC
 - TCP/IP
 - MPTN
- A user ID that has local administrator or administrator authority in User Profile Management (UPM). The Administration Server uses this user ID to log on when it is started.

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; see Chapter 40, “Administering and Using OS/2 User Profile Management on OS/2 Systems” on page 369 for more information.

When prompted for this user ID and password during install, the user ID will be checked to ensure that it exists, can logon, and has administrative authority on the system. If the checks fail, install will not continue until a user ID and password are properly verified. You can minimize the install window if necessary to create the user ID, but it is recommended that this be done prior to starting the install.

If UPM is not installed, DB2 will install it, and the user ID and password entered will be used to create a user ID with the correct authorities so that the Administration Server can be logged on and started when the system is booted.

- The names of the products you want and are licensed to install (see “Selecting Products and Components” on page 40). To see descriptions of each of the products, see Chapter 1, “About DB2 Connect” on page 3.

- If you decide to install the Control Center, you must also decide whether you want the Control Center to autostart. The Control Center is a graphical tool used to perform the following DB2 administration tasks: managing databases, tables and views; configuring systems; performing database backup and recovery; scheduling jobs; and replicating data.

Selecting Products and Components

The following table lists the products and selectable components that you can install with DB2 Connect Enterprise Edition.

Product	Components
DB2 Connect Enterprise Edition	<ul style="list-style-type: none"> • DB2 Connect Enterprise Edition • Graphical Tools • Client Configuration Assistant • Control Center • Performance Monitor • Visual Explain • Windows Support • Documentation • Japanese Conversion Support • Korean Conversion Support • Simplified Chinese Conversion Support • Traditional Chinese Conversion Support
DB2 Client Application Enabler	<ul style="list-style-type: none"> • DB2 Client Application Enabler • Graphical Tools • Client Configuration Assistant • Control Center • Performance Monitor • Visual Explain • Documentation

Performing the Installation on OS/2

To install DB2 from CD-ROM, do the following:

- 1 Insert the CD-ROM in the drive.
- 2 There are two ways to begin the DB2 installation. These are:
 - If you have the OS/2 Warp Server installed, double-click on the **Server Installation** icon located in the **Server** folder on the desktop.

OR

- Open an OS/2 windows and set the drive to x:, where x is the letter that represents your CD-ROM drive.
- Set the current directory to \db2\language\install, where *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.
- Enter the command **install**.



You can invoke the install command with optional parameters to create error and history log files. See “Step 3. Run the CMD File from the Remote Workstation” on page 383 for more information.

- 3** The IBM DB2 for OS/2 Version 5 Installation window opens. Select the product that you want to install on your system. Select the **Install** radio button and then click on the **Continue** push button. Following is a sample of the window:



- 4** In the Update CONFIG.SYS File window, indicate whether or not you want to update the config.sys file as part of the installation.
- If you want the config.sys file updated, click on **OK**. A backup copy of your existing file is kept as config.0xx.
 - If you do not want the config.sys file updated, clear the **Update CONFIG.SYS** check box and click on **OK**. You will need to manually update your config.sys file with the values that are stored in the config.add file that will be created in the root directory of your boot drive.

- 5 The Install - Directories window provides a list of the product's components. You can choose which of the components you want to install on your system.

For the Install - Directories window, complete the entries as follows:

- a Select each of the components you want to install.
- b Click on the **Descriptions** button for a brief description of the selected components.
- c In the **File directory** field, type the directory where you want the product installed. The default value is c:\sqllib.
Note: If a DB2 Version 5 product is already installed on the workstation, you must install on the same drive and directory.
- d Click on the **Disk Space** button to see how much space you have on each of the drives on your machine and to change disks if necessary.
- e Click on the **Install** button to continue.

- 6 The Specify System Name window opens. Enter a name for your system that is unique in your network. This is an arbitrary name that will be used by remote clients to locate databases on your system. Click on **Next** to continue.

- 7 The Customize Communication Protocols window opens. The installation software detects the communications protocols installed on the system and configures the default instance (called DB2) and the Administration Server to use them. Values are generated for the protocol parameters; if your system has APPC, the APPC communications subsystem is updated to support the operation of DB2.

Click on **Next** to accept these values. If you want to override the detected protocols or the generated values, you can do so for either the DB2 instance or the Administration Server, or both. Refer to the online help for this panel for more information.

You can also choose to have the DB2 instance started automatically when your system is started; this is the default. If you do not want the DB2 instance started automatically, clear the **Auto start DB2 instance at boot time** check box.

- 8 The Enter User ID and Password window opens. Use this to enter the user ID and password that will be used to log on and start the Administration Server each time your system is started. If UPM already exists on your system, the user ID and password you provide must exist and have one of the following:

- UPM administrator authority on your system.
- UPM local administrator authority on your system.

If UPM is not on your system, it will be installed as part of the DB2 installation and the user ID and password you supply will be set up with the appropriate authority. Click on **Done** to continue.

- 9 The product and components you have chosen are installed on your system. A progress window appears until the installation is complete.

- 10** A message appears when the installation is complete. Click on **OK** to dismiss the message, shut down and reboot your system.

This completes the installation.



If DB2 fails to start after you reboot your system, see the file db2cnfg.out in the x:\sqlib\misc directory, where x is the drive where you installed DB2. This file contains the results of database manager configuration updates, and other actions necessary for automated startup upon reboot.



To set up connections to DRDA databases, see Chapter 9, "Configuring DRDA Host Connections on OS/2 or Windows NT Workstations" on page 73 or Chapter 12, "Configuring Communications Server for OS/2 for DB2 Connect for OS/2" on page 83.

Chapter 6. Installing DB2 Connect on Windows NT Systems



If you need to install software on many Windows NT systems, see Chapter 42, "Unattended DB2 Installation on Windows 95 or Windows NT Workstations" on page 389.

This chapter describes how to install DB2 Connect on a Windows NT workstation.

Before You Begin Installing on Windows NT

Read and perform the steps in this section before you begin the installation to ensure that you have the required items and information that you will need.

Creating Usernames for DB2 Installation and Operation

This section describes the usernames required to install the DB2 product and its components.

Creating a Username for Installing DB2 Products

You need to have a username that will be used to install DB2. The username must belong to the Administrators group, and also be a valid DB2 username or have the "Act as part of the operating system" advanced user right.

A valid DB2 username is eight characters or less, and complies with DB2's naming rules. For more information on DB2's naming rules, see Appendix D, "Naming Rules" on page 501.

If this username does not comply with DB2's naming rules, but has the "Act as part of the operating system" advanced user right, the setup program will create the username *DB2ADMIN* to perform the installation.



This username will be removed from the system when the installation is complete, unless it will be used by the Administration Server. See “Determining the Username for the Administration Server” on page 46 for more information.

Determining the Username for the Administration Server

During installation, you will be asked to provide a username and password that will be used by the Administration Server to log on to the system and to start itself as a service.

By default, the setup program will fill the **Username**, **Password**, and **Confirm Password** fields with *db2admin*. You can accept these default values, or provide your own. If you provide your own username, you must ensure that it is eight characters or less and complies with DB2’s naming rules. For more information, see Appendix D, “Naming Rules” on page 501.

The setup program will check to see if the username specified for the Administration Server exists, if it does not, it will be created. If it does exist, the setup program will:

- Verify that the username is a member of the Administrators group.
- Verify that the password is valid; provided that the username used to install DB2 has the “Act as part of the operating system” advanced user right.



If you use the default username *db2admin*, and did not change the default password for this username, you should change this password immediately following the installation.

When the setup program creates the *db2admin* username, it also makes it a member of the Administrators group. Since its password is well known, you should do the following:

- 1 Change the password for *db2admin*, using the User Manager function of Administration Tools.
- 2 Change the password for the *DB2-DB2DAS00* service to match the new password that you specified for the *db2admin* username.

Selecting Products and Components

The following table lists the products and selectable components that you can install on DB2 Connect Enterprise Edition. For information on the products and components, see Chapter 1, “About DB2 Connect” on page 3. The check marks in the columns for **Typical Install** and **Compact Install** indicate the components that are installed when these types of install are used. See “Performing the Installation” on page 47 for more information on install types.

Table 6. Products and Components for DB2 Connect Enterprise Edition for Windows NT

Product	Components and Subcomponents	Typical Install	Compact Install
DB2 Connect Enterprise Edition	<input type="checkbox"/> Graphical Tools <input type="checkbox"/> Client Configuration Assistant <input type="checkbox"/> Control Center <input type="checkbox"/> Performance Monitor <input type="checkbox"/> Visual Explain <input type="checkbox"/> DB2 ODBC Driver <input type="checkbox"/> East Asian Conversion Support <input type="checkbox"/> Documentation	✓ ✓ ✓ ✓ ✓ ✓ ✓	 ✓
DB2 Client Application Enabler	<input type="checkbox"/> Graphical Tools <input type="checkbox"/> Client Configuration Assistant <input type="checkbox"/> Control Center <input type="checkbox"/> Performance Monitor <input type="checkbox"/> Visual Explain <input type="checkbox"/> DB2 ODBC Driver <input type="checkbox"/> Documentation	✓ ✓ ✓ ✓	 ✓

Performing the Installation

To install DB2 Connect Enterprise Edition on a Windows NT workstation:

- 1 Log on as a user that meets the requirements for installing DB2. For more information, see “Creating Usernames for DB2 Installation and Operation” on page 45.
- 2 Shut down any other programs so that the setup program can update files as required.
- 3 Insert the 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, see the tip that follows.



To manually invoke the setup program, do the following:

1 Click on the **Start** button and select **Run**

2 Type the following in the **Open** field:

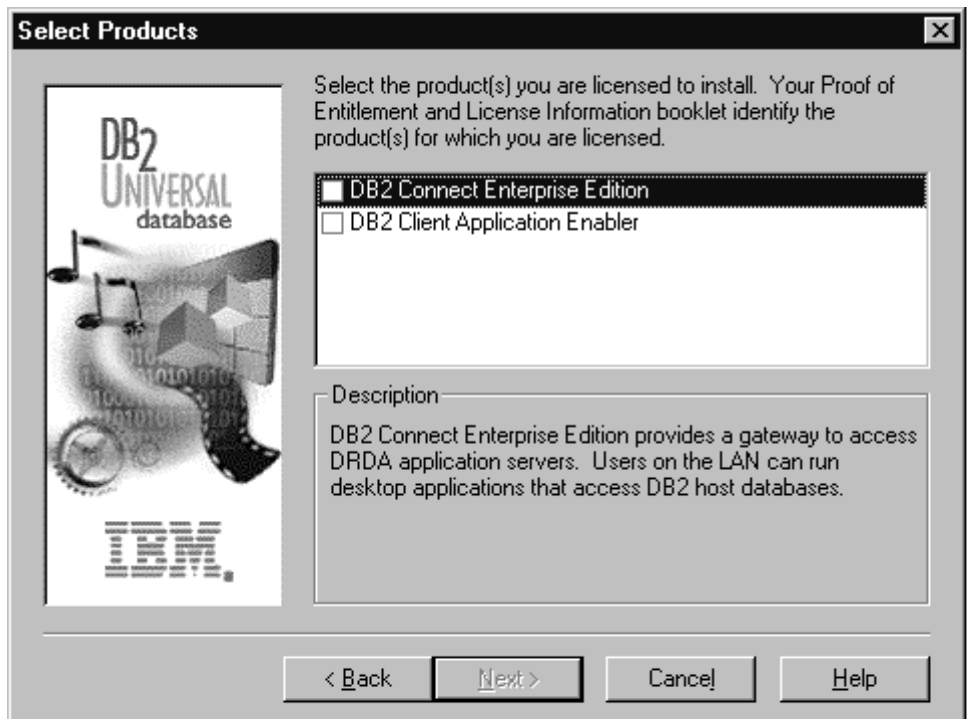
```
x:\setup /i=LANGUAGE
```

where

- x: represents your CD-ROM drive
- LANGUAGE represents the two-character country code for your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.

3 Select **OK**

4 The Welcome window opens. Click on the **Next** push button to open the Select Products window, as shown below. Select the product that you want to install and click on the **Next** push button.



5 You can select the installation type you prefer by clicking on the appropriate graphic push button:



The setup program does not detect or configure an APPC communications subsystem; as a result, the setup program will not automatically configure your DB2 server to support APPC.

If you want to set up your DB2 server to support inbound client requests using APPC, you must perform a Custom Installation. The setup program will allow you to select support for APPC and provide the required DB2 parameters; however, it cannot configure the APPC communications subsystem.

To configure the APPC communications subsystem, see Chapter 11, "Configuring Communications to Host and AS/400 Databases Manually" on page 81.



Typical Install: Installs those DB2 components that are used most often, including all required components, ODBC support, documentation, and commonly used DB2 tools such as the Information Center, the Client Configuration Assistant, and the Control Center. The DB2 instance and the Administration server are created and customized to use the protocols detected on your system.



Compact Install: Installs only required DB2 components and ODBC support. The DB2 instance and the Administration server are created and customized to use the protocols detected on your system.



Custom Install: Installs only those components that you select. The DB2 instance and the Administration server are created and customized to use the protocols detected on your system. The default for a Custom install is to install those components and subcomponents you would get in a Typical install.

Note: You cannot selectively uninstall components after the setup program completes the installation.

- 6 Respond to the setup program's prompts. Online help is available to walk you through the remaining steps. Invoke online help by clicking on the **Help** push button at any time.

Note: If a DB2 Version 5 product is already installed on the workstation, you must install the product on the same drive and in the same directory.

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

- 7 After you install the product, you must reboot your workstation before you can begin to use it. Select a reboot option and click on the **Finish** push button.
- 8 After your workstation has rebooted, check that the network adapter is bound to the DLC communications subsystem:
 - a Click on the **Start** button and select **Settings->Control Panel**.
 - b Double-click on the **Network** icon.
 - c In the Network window, select the **Bindings** tab.

- d** From the **Show bindings for:** drop down box, select **All Adapters**
- e** Double-click on adapter for which you want to see the bounded protocols
- f** Ensure that **DLC** is enabled. If it is not, click on the **Enable** push button to enable the to bind the network adapter to the communications subsystem.

This completes the installation.



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

The installation program has:

- Created DB2 program groups and items (or shortcuts).
- Registered a security service.
- Updated the Windows registry.
- Created a default instance named DB2, added it as a service, and configured it for communications. If you selected to **Automatically start the DB2 instance a boot time**, the service's startup type was set to **Automatic**; otherwise, it was set to **Manual**.
- Created the DB2 Administration Server, added it as a service, and configured it so that DB2 tools can administer the server. The service's start type was set to **Automatic**.



To set up connections to DRDA databases, see one of the following chapters:

- Chapter 9, "Configuring DRDA Host Connections on OS/2 or Windows NT Workstations" on page 73
- Chapter 14, "Configuring IBM Communications Server for Windows NT" on page 105
- Chapter 15, "Configuring IBM Communications Server for Windows NT SNA Client" on page 117
- Chapter 16, "Configuring Microsoft SNA Server for DB2 Connect for Windows NT" on page 125
- Chapter 17, "Configuring Microsoft SNA Client" on page 141.

Chapter 7. Installing DB2 Connect on UNIX Systems

We recommend that you install and configure DB2 Universal Database products using the **DB2 Installer**. Other methods to install DB2 Universal Database products are also supported.

This chapter describes how to use the **DB2 Installer**. For other advanced installation and configuration methods, refer to the following chapters:

- Chapter 43, “Other Methods to Install DB2 Connect for AIX” on page 411
- Chapter 44, “Other Methods to Install DB2 Connect for HP-UX” on page 419
- Chapter 45, “Other Methods to Install DB2 Connect for Solaris” on page 429.

For information on how to install the DB2 clients, refer to Chapter 26, “Installing DB2 Clients” on page 243.

The table that follows lists the selectable components you can install.

Table 7. Products and Selectable Components for DB2 Connect Enterprise Edition

Product / Component Description	Status
DB2 Client Application Enabler	Required
Open Database Connectivity (ODBC) support	Recommended
Java Database Connectivity (JDBC) support	Recommended
Administration Server	Recommended
DB2 Run-time Environment	Required
DB2 Connect Support	Required
Communication Support for TCP/IP	Required
Communication Support for IPX/SPX	Required
Communication Support for SNA	Required
Communication Support for DRDA Application Server	Required
License Support for DB2 Connect Enterprise Edition	Required
DB2 Replication	Optional
DB2 Product Messages (non-English) ¹	Optional
DB2 Product Library (HTML) ¹	Optional
Required	Required components must be installed.
Recommended	Recommended components are installed by default. You can select whether or not to install this component.
Optional	Optional components can be installed, but if you want to install it, you must select it.
Note:	¹ There is a separate component of the DB2 Product Messages and the DB2 Product Library for each supported locale.

Before You Begin

Before you begin installing DB2 products using the DB2 Installer, you need to gather the following information:

Where is the CD-ROM mount point?

You need to mount the CD-ROM before you can install the DB2 product. To mount the CD-ROM, you must know where the mount point is. For example, the CD-ROM mount point can be /cdrom.

Note: On some UNIX operating systems, the CD-ROM is automatically mounted.

How much disk space does my operating system require for all selected products?

See “Estimating Fixed Disk Requirements” on page 23 and “Disk Requirements Table” on page 23 to find out how much disk space is required for selected products and how to estimate disk space requirements.

How do I assign a group name and user name for a DB2 instance?

A separate user name must be used for each DB2 Instance. We recommend that a new group be created which should be used as a primary group for the DB2 instance user.

How do I assign a group name and user name for the Administration Server?

You need a dedicated group name and user name for the Administration Server. For security reasons, we recommend that you do not use the DB2 Instance user name and group name for the Administration Server.

Installation Steps

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

- 1 Identify and record parameter values.
- 2 Update kernel configuration parameters. (This step is not required on AIX.)
- 3 Mount the CD-ROM.
- 4 Install DB2 products.

Step 1. Identifying and Recording Parameter Values

Table 8 on page 54 will help you determine the values required to install DB2 products and for setting up a DB2 Instance and 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 fact, in Table 8 on page 54, 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 8 (Page 1 of 2). 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	None	
DB2 Instance		
• User Name	db2inst1	
• UID	System-generated UID	
• Group Name	db2iadm1	
• GID	System-generated GID	
• Password	ibmdb2	
• TCP/IP Service Name	dbc0db2inst1	
• TCP/IP Port Number	30000	
• 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	db2as	
• UID	System-generated UID	
• Group Name	db2asgrp	
• GID	System-generated GID	
• Password	ibmdb2	
• TCP/IP Port Number	523	523
• IPX/SPX File Server Name	*	
• IPX/SPX Object Name	*	
• IPX/SPX Socket Number	87A2	87A2
• IPX/SPX NetWare User ID	None	
• IPX/SPX NetWare Password	None	

Table 8 (Page 2 of 2). Parameter Values Required for Installation

Information Required for DB2 Installer	Default Value	Your Value
Notes: 1. You can optionally select one or more filesets in this product. There is a separate fileset for each locale. See Appendix C, "Contents of the DB2 Products" on page 495 for the names of filesets for DB2 Product Messages and Documentation.		



To continue the installation on AIX systems, proceed to "Step 3. Mounting the CD-ROM" on page 58.

Step 2. Updating Kernel Configuration Parameters

Depending on your workstation's operating system and its kernel configuration, you may have to update the kernel configuration parameters.



This step is not required on AIX.

Recommended Values for HP-UX

The values in Table 9 on page 56 are recommended for the HP-UX kernel configuration parameters.

Table 9. 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	16384	32768
msgmnb	65535 (1)	65535 (1)	65535 (1)
msgmax	65535 (1)	65535 (1)	65535 (1)
msgtql	128	256	256
msgmap	130	258	258
msgmni	128	256	256
msgssz	16	16	16
semnmi	128	256	512
semmap	130	258	514
semnms	256	512	1024
semnmu	256	512	1024
shmmax	67108864	134217728 (2)	268435456 (2)
shmseg	16	16	16
shmmni	300	300	300

Notes:

1. Parameters *msgmnb* and *msgmax* must be set to 65535.
2. To maintain the interdependency among kernel parameters, change parameters in the same sequence in which they appear in the preceding table.
3. 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 184968806 (176*1024*1024).

To change the values, do the following:

- 1 Use **SAM** and select **Kernel Configuration**.
- 2 Select **Configurable Parameters**.
- 3 Highlight the parameter to be changed.
- 4 Select **Modify Configurable Parameter** from the **Actions** menu and make the appropriate changes.
- 5 Repeat the previous two steps for every kernel parameter which needs to be updated.
- 6 Create a new kernel by selecting **Create a New Kernel** from the **Actions** menu.

7 Reboot the system so that the changes can take effect.



To continue with the installation on HP-UX systems, proceed to “Step 3. Mounting the CD-ROM” on page 58.

Recommended Values for Solaris

The values in Table 10 are recommended for Solaris kernel configuration parameters.

Kernel Parameter	Physical Memory		
	64MB - 128MB	128MB - 256MB	256MB+
<code>msgsys:msginfo_msgmax</code>	65535 (1)	65535 (1)	65535 (1)
<code>msgsys:msginfo_msgmnb</code>	65535 (1)	65535 (1)	65535 (1)
<code>msgsys:msginfo_msgmap</code>	130	258	258
<code>msgsys:msginfo_msgmni</code>	128	256	256
<code>msgsys:msginfo_msgssz</code>	16	16	16
<code>msgsys:msginfo_msgtql</code>	128	256	256
<code>msgsys:msginfo_msgseg</code>	8192	16384	32768
<code>shmsys:shminfo_shmmax</code>	67108864	134217728 (2)	268435456 (2)
<code>shmsys:shminfo_shmseg</code>	16	16	16
<code>shmsys:shminfo_shmmni</code>	300	300	300
<code>semsys:seminfo_semmni</code>	128	256	512
<code>semsys:seminfo_semmap</code>	130	258	514
<code>semsys:seminfo_semmns</code>	256	512	1024
<code>semsys:seminfo_semmnu</code>	256	512	1024

Notes:

- Parameters `msgsys:msginfo_msgmnb` and `msgsys:msginfo_msgmax` must be set to 65535.
- Parameters `shmsys:shminfo_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 the `shmsys:shminfo_shmmax` 184968806 (176*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 parameter `msgsys:msginfo_msgmax`, 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/V5.0/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 more than 256MB 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 `shmsys:shminfo_shmmax` as described in Note 2 above.

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

Step 3. Mounting the CD-ROM

To install DB2 products using the **DB2 Installer**, you must first mount the CD-ROM. Once you have mounted the CD-ROM, you can start installing the DB2 Universal Database products.

Mounting on AIX Systems

Perform the following steps to mount the CD-ROM on AIX operating systems:

- 1 Log in as root.
- 2 Insert the CD-ROM in the drive.
- 3 Create a root directory by typing the following command:

```
mkdir -p /cdrom
```



The directory name `/cdrom` is used here as an example only. You may use a different name for your root directory.

- 4 Allocate a CD-ROM file system by typing the following command:

```
smit storage
```
- 5 Select **FileSystems**.
- 6 Select **Add/Change/Show/Delete FileSystems**.
- 7 Select **CD-ROM FileSystems**.
- 8 Select **Add CDRom FileSystems**.

9 Select the **DEVICE Name**.



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

10 Respond to the prompt, mount point, by typing the following:

```
/cdrom
```

11 Mount the CD-ROM file system by typing the following command:

```
smit mountfs
```

12 Select the **FileSystem** name. For example, the name can be `/dev/cd0`.

13 Select the **Directory** name, `/cdrom`.

14 Select the **Type of filesystem**, `cdrfs`.

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

16 Log out.



After mounting the CD-ROM, proceed to "Step 4. Installing the DB2 Products" on page 60.

Mounting on HP-UX Systems

Perform the following steps to mount the CD-ROM on HP-UX operating systems:

1 Log in as root.

2 Insert the CD-ROM in the drive and mount it as in the following example:

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

where `/cdrom` is the CD-ROM mount directory.

3 Log out.



After mounting the CD-ROM, proceed to "Step 4. Installing the DB2 Products" on page 60.

Mounting on Solaris Systems

Perform the following steps to mount the CD-ROM on Solaris operating systems:

- 1 Log in as root.
- 2 Insert the CD-ROM in the drive.

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

```
/cdrom/unnamed_cdrom
```

where /cdrom/unnamed_cdrom is the CD-ROM mount directory.

If the Volume Manager is not installed on your system, mount the CD-ROM by entering commands as shown in the following example:

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

- 3 Log out.

Step 4. Installing the DB2 Products

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



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

- 1 Log in as root.
- 2 Insert the DB2 CD-ROM in the drive.
- 3 If required, mount the CD-ROM. Refer to “Step 3. Mounting the CD-ROM” on page 58 if required.
- 4 Change to the directory where the CD-ROM is mounted by typing the following command:
 - a On AIX or HP-UX:

```
cd /cdrom
```
 - b On Solaris:

```
cd /cdrom/unnamed_cdrom
```


To display the required and optional components for the product you want to install, select **Customize**. The optional components that are most typically used are pre-selected for you. Make your selections and select **OK**.

When you have finished choosing product components, select **OK** to go to the Create DB2 Services screen. To undo any selections you made, select **Cancel**.



Go to step 9 on page 63 if you do not want to create a DB2 Instance at this time.

- At the Create DB2 Services screen, select **Create a DB2 Instance** to display the DB2 Instance screen.

```

+ ----- Create DB2 Services ----- +
|
| + --- DB2 Instance ----- +
| |
| | Authentication:
| |   Enter User ID, Group ID and Password that will be used for
| |   the DB2 Instance.
| |   User Name      [ db2inst1 ]
| |   User ID       :           :   [ * ] Use default UID
| |   Group Name    [db2iadm1]
| |   Group ID     :           :   [ * ] Use default GID
| |   Password     [***** ]
| |   Verify Password [***** ]           [ Default ]
| |
| | Protocol:
| |   Select Customize to change the default   [ Customize. . . ]
| |   communication protocol.
| |
| | [ * ] Auto start DB2 Instance at system boot.
| | [   ] Create a sample database for DB2 Instance.
| |
| | [ OK ]           [ Cancel ]           [ Help ]
| |
+ ----- +
  
```

You can use the default values displayed at the DB2 Instance screen or change them:

- To change the default **User ID** for the instance, deselect **Use Default UID** and enter a new value for the **User ID**.
- To change the default communication protocol, select **Customize**. Only the protocols you selected from the product component lists will display on the DB2 Instance Protocol screen. For example, if you selected TCP/IP and wanted to change the protocol properties, select **Properties**. At the TCP/IP

screen, enter a new Service Name and Port Number. To restore all system-generated values, select **Default**.

- 8 When you have finished entering the values for the DB2 Instance, select **OK**.



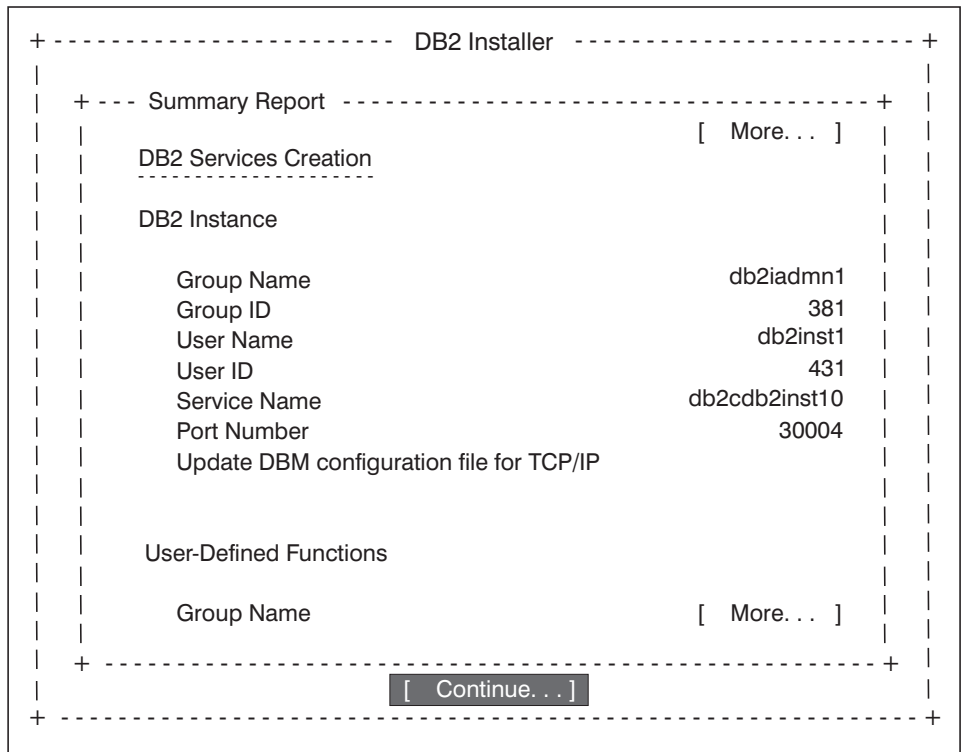
Go to step 11 if you do not want to create an Administration Server at this time.

- 9 At the Create DB2 Services screen, select **Create an Administration Server** to display the Administration Server screen.

You can use the default values on the Administration Server screen or change them:

- To change the default **User ID** for the server, deselect **Use default UID** and enter a new value for **User ID**.
- To change the default communication protocol, select **Customize**. Only the protocols you selected from the product component lists will display on the Administration Server Protocol screen. For example, if you selected TCP/IP and wanted to change the protocol properties, select **Properties**. At the TCP/IP screen, enter a new Service Name and Port Number. To restore all system-generated values, select **Default**.

- 10 When you have finished entering the values for the Administration Server, select **OK**.
- 11 After entering the values for the DB2 Instance and the Administration Server, select **OK** to display the Summary Report. The report lists the installable items as well as the location of the installation log file.



- 12** Use the Up or Down arrow keys to review the Summary Report. If the selections are not correct, press the **F3** key to return to the previous screen. Otherwise, select **Continue** to start the installation.
- 13** When the installation is complete, use the Up or Down arrow keys to review the Status Report. Select **ViewLog** to view the installation log file. Select **OK** to close the Status Report screen.
- 14** Select **Close** from the DB2 Installer screen to terminate the DB2 Installer.

After the installation is complete, the software is installed in the DB2DIR directory,

where DB2DIR = /usr/lpp/db2_05_00 on AIX
 = /opt/IBMd2/V5.0 on HP-UX or Solaris



You can use the DB2 Installer to create additional DB2 instances after you have installed the DB2 product on your system. To start the DB2 Installer from the DB2 product directory, type the following command:

On AIX

```
/usr/lpp/db2_05_00/install/db2setup
```

On HP-UX or Solaris

```
/usr/IBMd2/V5.0/install/db2setup
```



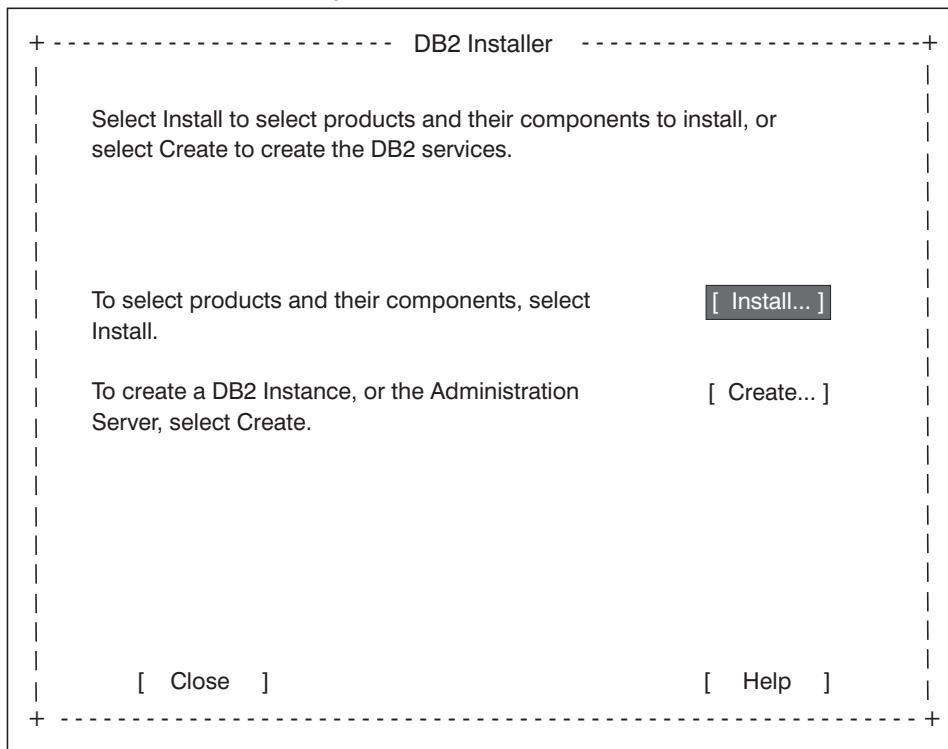
Go to "Installing Additional Products and Creating Additional Instances" on page 65 for information on optional installation activities or proceed directly to Chapter 8, "Migrating from Previous Versions on UNIX Systems" on page 67.

Installing Additional Products and Creating Additional Instances

The installation activities in this section are optional following the installation of DB2 Version 5 on your system. It describes what you need to do if you plan to:

- Install additional products.
- Create additional DB2 Instances.
- Create an Administration Server (if required and not created previously).

The next time you start the DB2 Installer, after having installed DB2 Version 5, the main menu will look like the following screen.



To select additional products and their components for installation, select **Install** from the DB2 Installer screen. See step 6 on page 61 for instructions.

To create a DB2 Instance or the Administration Server on your system, select **Create** from the DB2 Installer screen. See step 7 on page 62 and step 9 on page 63 for instructions.

To terminate the DB2 Installer, select **Close**.

Chapter 8. Migrating from Previous Versions on UNIX Systems

This chapter describes how to migrate instances, which is required if you have upgraded to DB2 Connect Enterprise Edition from an earlier version of DDCS Multi-User Gateway on a UNIX system.

Note: At this point, you must have Version 5 of DB2 Connect installed on your system.

Migrating Instances

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

Before you can migrate an instance to use the latest version of DB2, you must install DB2 Version 5 on your system.



If there are several DB2 instances using previous versions of DB2 products, 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 products.

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

- Prepare the DB2 instance for migration.
- Verify that databases can be migrated. This step is optional. However, we recommend that you perform this step before migrating an instance.
- Migrate the DB2 instance.

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

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 or terminated. To prepare a DB2 instance for migration, you need to perform the following steps:

- 1 Log in as the DB2 instance.
- 2 Ensure that there are no applications using any databases owned by this DB2 instance.
 - You can get the list of all applications using databases owned by the instance using the following command:


```
db2 list applications
```
 - You can force termination of all applications using the following command:


```
db2 force applications all
```

Note: It is not recommended to force termination of applications. Some applications may have unexpected behavior when terminated using this command.

For usage and details of this command, refer to your current release *Command Reference*.

 - Get a list of applications again to ensure that all applications have terminated, using the following command:


```
db2 list applications
```
- 3 Stop all database server processes owned by the DB2 instance by issuing the **db2stop** command.
- 4 Stop the DB2 license daemon by issuing the **db2licd end** command.
- 5 Stop all command line processor sessions by issuing a **db2 terminate** command in each session that was running the command line processor.

The DB2 instance is now ready for migration.
- 6 Log out as the DB2 instance.

Migration Considerations for the User Exit Program



Follow these instructions if you are using the user exit program, **db2uexit**, with previous versions of DB2.

DB2 Version 5 has changed the interface it uses to invoke the user exit program to archive and retrieve log files. These new interfaces are documented in the *Administration Guide*. The name for the user exit program has changed to **db2uext2** in Version 5; in previous versions, it was called **db2uexit**.

The following should be considered before migrating instances:

- If the pre-version 5 **db2uexit** is installed in the INSTHOME/sqllib/adm directory before migration, it will remain in this directory after migration. The Version 5 **db2uext2** program will be also installed in this directory. Its function is to invoke **db2uexit** using the pre-version 5 interface. This allows the old user exit program to be used on Version 5.
- 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, following migration, you must copy **db2uexit** to INSTHOME/sqllib/adm directory. Then, you can do one of the following:

- If you are migrating from DB2 Version 2 or DB2/6000 Version 1, copy **db2uext2.v2** from DB2DIR/misc directory to INSTHOME/sqllib/adm directory and rename it to **db2uext2**. You can use the following command to copy the file:

```
cp DB2DIR/misc/db2uext.v2 INSTHOME/sqllib/adm/db2uext2
```

where DB2DIR = /usr/lpp/db2_05_00 on AIX
 = /opt/IBMDB2/V5.0 on HP-UX or Solaris

- If you are migrating from DB2 PE Version 1, copy **db2uext2.pe** from DB2DIR/misc to INSTHOME/sqllib/adm and rename it to **db2uext2**. You can use the following command to copy the file:

```
cp DB2DIR/misc/db2uext.pe INSTHOME/sqllib/adm/db2uext2
```

where DB2DIR = /usr/lpp/db2_05_00 on AIX
 = /opt/IBMDB2/V5.0 on HP-UX or Solaris

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

At a convenient time, you should modify your user exit program to use the new Version 5 interfaces. The new user exit program should replace **db2uext2** in the INSTHOME/sqllib/bin orsqllib\bin directory, used to support the pre-version 5 user exit program, **db2uexit**, which should be removed.

Migrate the DB2 Instance

After an instance is ready for migration, use the **db2imigr** command to migrate the instance. You need to perform the following steps:

- 1 Log in as root.
- 2 Run the **db2imigr** command as follows:

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

where DB2DIR = /usr/lpp/db2_05_00 on AIX
 = /opt/IBMDB2/V5.0 on HP-UX or Solaris

and where:

-d Sets the debug mode that you can use for problem determination

-a *AuthType* Is an optional parameter that specifies the authentication 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 server product is installed. Otherwise, the *AuthType* is set to CLIENT.

Notes:

- a. The authentication type of the instance applies to all databases owned by the instance.
- b. Authentication type, DCE, is valid. However, it is not valid to choose DCE as an *AuthType* for this command. To enable DCE authentication for a DB2 instance, refer to the *Administration Guide*.

-u *fencedID* Is the user under which the fenced user-defined functions (UDFs) and Stored Procedures will execute.

InstName Is the login name of the instance owner.

Part 3. Configuring Access to Host and AS/400 Databases

Chapter 9. Configuring DRDA Host Connections on OS/2 or Windows NT Workstations

If you have installed the Client Configuration Assistant on your workstation, you can use this tool to configure your DB2 Connect workstation to access host or OS/400 databases. Although the Client Configuration Assistant provides three methods to configure connection to DB2 Universal Database databases, you must use the "Manual" method to define a connection to a DRDA database. Perform the following steps:

- 1 If the Client Configuration Assistant is not already running, start it: Click on **Start** and select **Programs->DB2 for Windows 95 or Windows NT->Client Configuration Assistant**. You are presented with a Welcome panel.
Note: The Welcome panel appears whenever you use the Client Configuration Assistant and have no databases cataloged.
- 2 Click on the **Add Database** push button to configure connections using the Add Database SmartGuide.
- 3 Select the **Manually configure a connection to a DB2 database** radio button, then click on the **Next** push button.
- 4 Choose the protocol you want to use, either APPC or TCP/IP:
 - If you want to use APPC:
 - a Select APPC as the protocol for the connection, then select the **Target Operating System** for the host to which you want to connect. Click on the **Next** push button.
 - b You need to enter a **Symbolic destination** name:
 - If you have already defined a symbolic destination (also known as the CPI-C side information), for the database to which you will be connecting, type in the **Symbolic destination** name, then click on the **Configure** push button.
 - If the **Configure** push button is greyed and cannot be selected, it means that the CCA cannot guide you through the process of defining a symbolic destination name for your database, and you will need to configure this manually. If your SNA product is one of those described in this manual, go to those configuration instructions now. (Refer to Chapter 11, "Configuring Communications to Host and AS/400 Databases Manually" on page 81 for a list of the SNA products that are described.) Otherwise, you need to use the documentation supplied with your SNA product to configure the CPI-C name (symbolic destination).



Now that you have configured host connections, go to Chapter 26, "Installing DB2 Clients" on page 243 to install DB2 clients.

Chapter 10. Changing Your MVS Password

You can use the Data Sources Setup tool (on Windows 3.1 or Windows for Workgroups 3.11) or the Client Configuration Assistant (on Windows 95, Windows NT, or OS/2) to change your password on MVS hosts without logging on to the host system, provided the MVS systems are running either:

- MVS/ESA SP Version 4.2 or higher
- CICS/ESA Version 3.3 or higher

and have IBM Resource Access Control Facility (RACF) 1.9.2 installed.

You need to:

- 1** Configure the host's transaction program to receive your requests for password expiration maintenance.
- 2** Configure your DB2 Connect workstation for communications with the host transaction program.

Configuring the Host for Password Expiration Management

Setting up Password Expiration Management facilities on MVS hosts is the responsibility of MVS system programmers and is beyond the scope of this book. The following publications provide detailed documentation:

- *MVS/ESA SP V5.x Planning: APPC Management*, GC28-1503
- *MVS/ESA SP V5.x APPC/MVS Handbook for the OS/2 Administrator*, GC28-1504
- *MVS/ESA SP V4.3 Planning: APPC Management*, GC28-1110
- *MVS/ESA SP V4.2 APPC/MVS Handbook for the OS/2 Administrator*, GC28-1133
- *CICS/ESA: RACF Security Guide (CICS 4.1)*, SC33-1185
- *CICS/ESA: CICS-APPC Password Expiration Management Guide (CICS 3.3)*, SC33-0921
- *APPC Security MVS/ESA CICS/ESA OS/2*, GG24-3960.

Configuring the DB2 Connect Workstation for Password Expiration Management

How you configure your workstation for password expiration management depends on the communications subsystem you are using:

- If you are using the Wall Data Rumba, or Communications Server for OS/2 or Communications Manager/2 on OS/2, the only information you need to provide is the LU of the Password Expiration Management program on the host, which your VTAM administrator can provide. Enter this as follows:

On the CCA:

- 1** Select a database that resides on the host and that you access through APPC.

The **Password** button appears.

- 2** Click the **Password** button.

- 3** Fill in the dialog box that appears, then click on **OK**.

- 4** Exit from the CCA.

- If you are not using the Wall Data Rumba, Communications Server for OS/2 or Communications Manager/2, you need to define a CPI-C symbolic destination name. Follow the instructions provided with your communications product documentation. You will need to provide the following information (get the values from your VTAM administrator). Enter the following:

- Network name
- LU name

You must use the following values as given:

- TP name: X'06'301. Some products, such as the CCA, require that you enter this name in its hexadecimal representation: x'06F3F0F1'
- Security: NONE

After you have defined the CPI-C symbolic destination name for Password Expiration Management, enter it in the Client Configuration Assistant.

Part 4. Configuring Other Connectivity Options

Chapter 11. Configuring Communications to Host and AS/400 Databases Manually

This section describes how to configure manually the DB2 Connect workstation to use the following SNA communications subsystems:

- IBM Communications Server for OS/2 or Communications Manager for OS/2 (see Chapter 12, “Configuring Communications Server for OS/2 for DB2 Connect for OS/2” on page 83).
- IBM Communications Server for NT (see Chapter 14, “Configuring IBM Communications Server for Windows NT” on page 105).
- IBM Communications Server for NT SNA Client (see Chapter 15, “Configuring IBM Communications Server for Windows NT SNA Client” on page 117).
- Microsoft SNA Server (see Chapter 16, “Configuring Microsoft SNA Server for DB2 Connect for Windows NT” on page 125).
- Microsoft SNA Client (see Chapter 17, “Configuring Microsoft SNA Client” on page 141).
- SNA Server on AIX (see Chapter 18, “Configuring SNA Server for DB2 Connect for AIX” on page 147).
- Bull SNA on AIX (see Chapter 19, “Configuring Bull SNA for DB2 Connect for AIX” on page 161).
- SNAPLus on HP-UX (see Chapter 20, “Configuring SNAPLus for DB2 Connect for HP-UX” on page 165).
- Solaris users should see Chapter 21, “Configuring SunLink SNA for DB2 Connect for Solaris” on page 179.
- To configure two-phase commit over SNA, see Chapter 22, “Setting Up Two-phase Commit Using SNA” on page 191.
- To configure host connections using TCP/IP, see:
 - “Configuring TCP/IP for DB2 for OS/390” on page 460
 - Chapter 23, “Setting up Two-phase Commit using TCP/IP” on page 215.

You can find more information in the following publications:

- For more information about SNA Server for AIX, refer to the *IBM SNA Server for AIX User's Guide*.
- For information on how to configure DRDA hosts for DB2 Connect, refer to:
 - Chapter 47, “Configuring DRDA Hosts for DB2 Connect” on page 451 in this manual

- The online *DB2 Connectivity Supplement* (which is installed with the DB2 Connect software)
- The *Distributed Relational Database Architecture Connectivity Guide*, SC26-4783.
- The *DB2 for OS/390 V5 Installation Guide*, GC26-8970.

Chapter 12. Configuring Communications Server for OS/2 for DB2 Connect for OS/2



Most users will find it easiest to use the DB2 Client Configuration Assistant tool to configure Communications Server for OS/2 or Communications Manager for OS/2, as described in Chapter 9, "Configuring DRDA Host Connections on OS/2 or Windows NT Workstations" on page 73. However, if you need to perform a manual configuration, read this chapter.

This chapter tells you how to manually configure APPC communications between your DB2 Connect for OS/2 workstation and DRDA servers. Before you begin, ensure that your workstation has IBM Communications Server or Communications Manager for OS/2 installed. (The steps in this section describe how to use Communications Server Version 4. If you have Communications Manager for OS/2 V.1.x, the steps you perform are similar, but the interface and menu names are different.) Note that in the examples in this chapter, a Token Ring network is used as the communications medium.

Fill in the Worksheet

Before you configure the DB2 Connect workstation, have your host-side administrator and LAN administrator fill in copies of the worksheets that follow for each host to which you want to connect:

- For OS/390, MVS, VM, and VSE hosts, use Table 11 on page 84
- For AS/400, use Table 12 on page 86

To help you fill in the worksheets, Figure 9 illustrates a sample network that has DB2 Connect running on an OS/2 system and uses APPC to connect to DB2 for OS/390. The values shown in this diagram correspond to the *Sample Value* entries in the worksheet.

After you fill in the *Your Value* entries, you can use the worksheet to configure IBM Communications Server. As you configure Communications Server, replace the sample values that appear in the configuration instructions with your values from the worksheet. Use the boxed numbers **1** to relate the configuration instructions to the worksheet values.

In the configuration instructions, the ***** symbol denotes entries that need to be changed but do not have a representation on the worksheet.

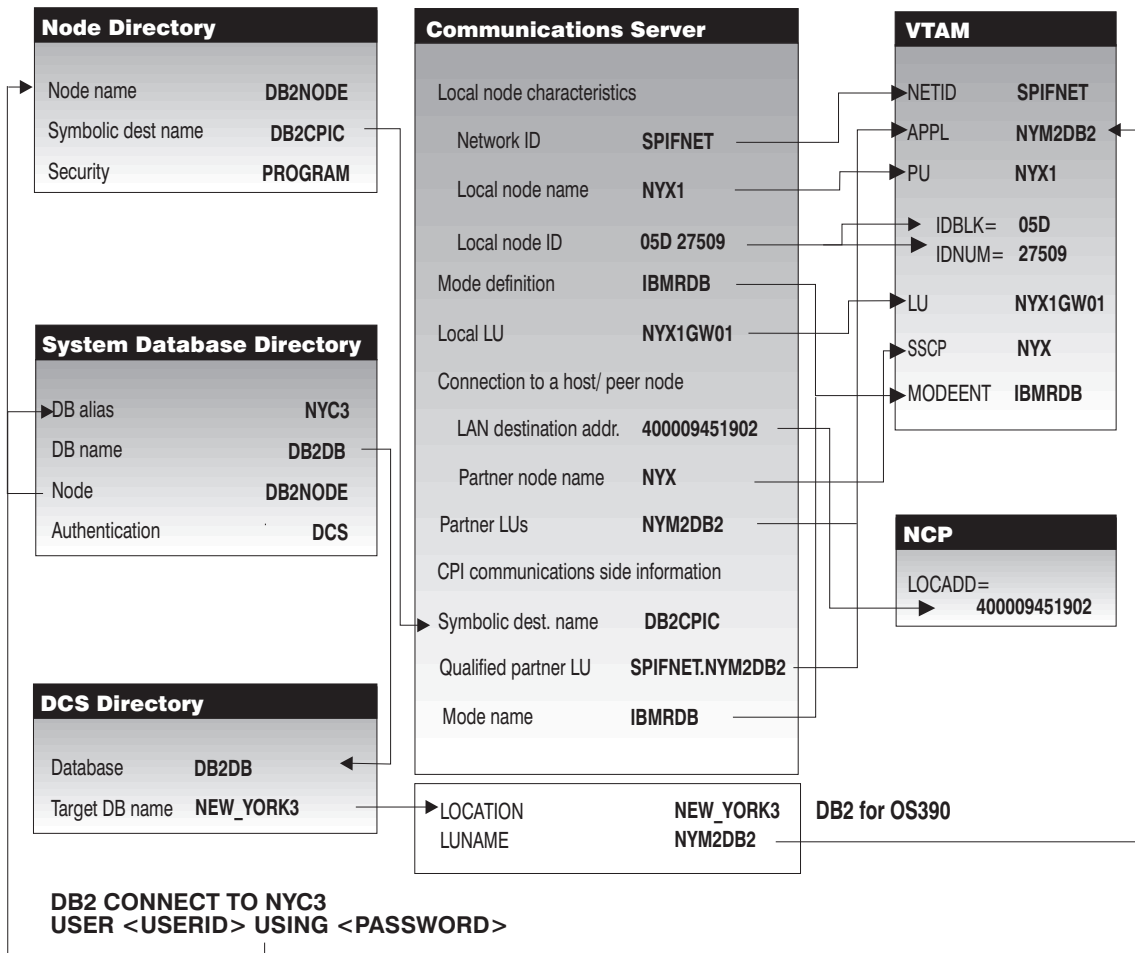


Figure 9. Configuration on the DRDA Server and DB2 Connect Workstation

Table 11 (Page 1 of 2). Worksheet for Planning OS/390, MVS, VM, or VSE Host Connections

Ref.	CS/2 Name	VTAM Name	Sample Value	Your Value
Network Elements at the Host				
1	Host Name	Network name	SPIFNET	
2	Partner LU Name	Application Name	NYM2DB2	
3	Network ID		SPIFNET	
4	Partner Node Name	SSCP Name	NYX	

Table 11 (Page 2 of 2). Worksheet for Planning OS/390, MVS, VM, or VSE Host Connections

Ref.	CS/2 Name	VTAM Name	Sample Value	Your Value
5	Database name	OS/390 or MVS: Location Name VM/VSE: RDB_Name	NEW_YORK3	
6	Mode Name		IBMRDB	
Network Connection Information				
7	Connection name (Link name)		LINKHOST	
8	LAN destination address		400009451902	
Network Elements at the DB2 Connect Workstation				
9	Network ID or C&SM LAN ID		SPIFNET	
10	Local Node name or Local PU Name		NYX1	
11	(Local) LU name		NYX1GW01	
12	(Local LU) alias		NYX1GW01	
13	Local Node or Node ID	ID BLK	05D	
14		ID NUM	27509	
15	Mode name		IBMRDB	
16	Symbolic Destination name		DB2CPIC	
17	(Remote) Transaction program (TP) name		X'07F6C4C2' (or RDB_NAME for DB2 for VSE & VM) (or DB2DRDA for DB2 for MVS or OS/390)	
DB2 Directory Entries (at the DB2 Connect workstation)				
18	Node name		db2node	
19	Security		program	
20	Database name		db2db	
21	Database alias		nyc3	

Notes:

1. The Local LU NYX1GW01 should be the LU for the SPM. If you use the SPM with this LU, you cannot use this LU to be the Control Point LU.
2. For a connection to an OS/390, MVS, VSE, or VM system, you must know the local node name of your machine. You can find this by reviewing the Local Node Characteristics specification in your existing Communications Server configuration.

Table 12. Worksheet for Planning OS/400 Connections

Ref.	CS/2 Name	Network Name	Sample Value	Your Value
Network Elements at the Host				
1	Host name	Local Network ID	SPIFNET	
2	Partner LU Name	Application Name	NYM2DB2	
3	Network ID		SPIFNET	
4	Partner Node name	Local CP Name	SYD2101A	
5	Database name	Relational Database Name	NEW_YORK3	
6	Link Name or Mode Name		IBMRDB	
Network Connection Information				
7	Connection name (Link name)		LINKHOST	
8	Remote Network address	Local Adapter Address	400009451902	
Network Elements at the DB2 Connect Workstation				
9	Network ID or C&SM LAN ID		SPIFNET	
10	Local Node Name or Local PU Name		NYX1	
11	(Local) LU name		NYX1GW01	
12	(Local LU) alias		NYX1GW01	
13	Local Node or Node ID	ID BLK	05D	
14		ID NUM	27509	
15	Mode name		IBMRDB	
16	Symbolic Destination name		DB2CPIC	
17	(Remote) Transaction program (TP) name		X'07F6C4C2'	
DB2 Directory Entries (at the DB2 Connect workstation)				
19	Node name		db2node	
19	Security		program	
20	Database name		db2db	
21	Database alias		nyc3	

Note: You can determine some of the above values by running commands at the DB2 for AS/400 system:

- To find the values for **1**, (known at the OS/400 as the local network ID), and for **4**, (the local control point name), enter: DSPNETA
- To find the value for **8**, (known at the OS/400 as the local adapter address), enter: WRKLIND *TRLAN

Next, enter option 5 (**Display**) at the _ when prompted:

Opt	Line	Type	Text
-	TRNLINE	*TRLAN	

In the screen that appears one of the lines will be similar to this:

Local adapter address: 400009451902

- To generate a list of mode names for **15**, enter: WRKMODD
- To find the value for **5**, (known at the OS/400 as the relational database name), enter: DSPRDBDIRE

Use the RDB name associated with the entry containing *LOCAL in the Remote Location column. If no *LOCAL entry exists, either have one created or use the Current System Name displayed when you run the DSPNETA command. If the user profile under which the initial connect is made has authority to run the ADDRBDIRE command, the *LOCAL entry will be created automatically using that user profile's name on the connect attempt.

Configuring APPC Using Communications Server



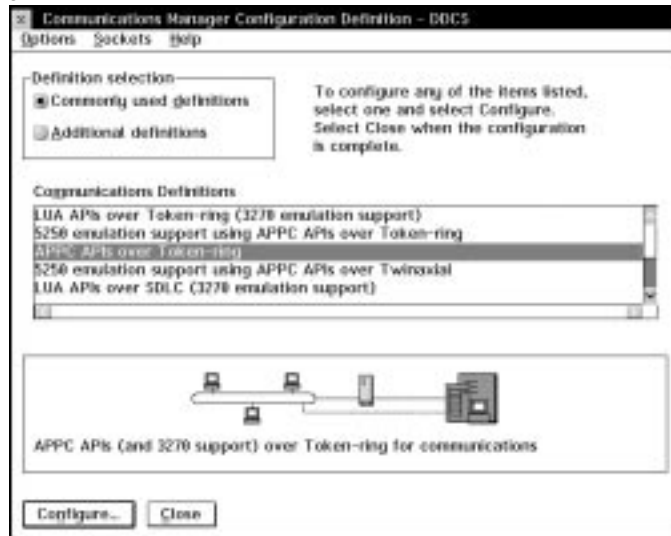
Most users will find it easiest to use the DB2 Client Configuration Assistant tool to configure Communications Server for OS/2 or Communications Manager for OS/2, as described in Chapter 9, "Configuring DRDA Host Connections on OS/2 or Windows NT Workstations" on page 73.

These instructions describe how to create new profiles within a new configuration. If you are modifying an existing configuration, you may need to delete some profiles before you can verify the configuration.

Begin to configure your DB2 Connect system with the following steps:

- 1** Double-click on the **Communications Server** icon.
- 2** Double-click on the **Communications Manager Setup** icon.
- 3** On the Communications Server Setup panel, click on the **Setup** push button.
- 4** On the Open Configuration panel:
 - a** Specify the name of an existing configuration file if you have one, or provide a name for a new file to be created.
 - b** Click on the **OK** push button to proceed to the Communications Server Configuration Definition panel.

1 The Configuration Definition panel opens.



- a Select the **Commonly used definitions** radio button.
- b In the Communications Definitions window, select the protocol that you want to use. These examples use APPC APIs over Token-Ring.
- c Click on the **Configure** push button to proceed.

If this is a new configuration file, the next panel displayed will be the APPC APIs over Token-Ring panel. Otherwise the next panel displayed will be the Communications Server Profile List panel.

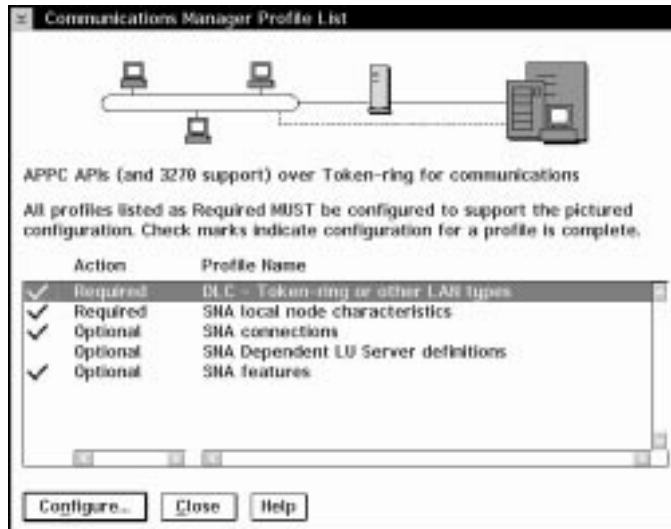
2 The APPC APIs over Token-Ring panel opens.

- a Enter your values for:
 - Network ID **9**
 - Local node name **10**
- b Click on the **End node** push button that your network administrator advises you to use.



You can select either the **End node - to a network node server** radio button or the **End node - no network node server** radio button. A network node server is used when many users are routed through the same connection. The example here presumes no network node server is used.

- c Click on the **Advanced** push button. The Communication Manager Profile List window opens.



Subsequent steps begin from this panel. You will return to this panel when each step is complete.

Preparing the LAN DLC Profile

From the Communications Server Profile List panel, prepare a LAN DLC profile as follows:

- 1 Select **DLC - Token ring or other LAN types**->**Configure**.
- 2 Enter your value for **Network ID** or **C&SM LAN ID**. **9**
- 3 Check that the other values are appropriate for your environment. The values in the example are default values.
- 4 Click on **OK** to return to the Communications Server Profile List panel.

Updating the SNA Local Node Characteristics

Update SNA Local Node Characteristics as follows:

- 1 On the Communications Server Profile List panel, select **SNA local node characteristics**->**Configure**. The Local Node Characteristic panel opens.

- 2 Enter your value for **Network ID** **9** .
- 3 The **Local node name** was probably set when Communications Server was installed. If you are not sure, consult your local network administrator.
- 4 Enter your value for **Local node ID (hex)** **13** and **14** .



The first part should be filled in for you already when you display the profile. You only need to complete the second part.

- 5 Click on the **Options** push button. The Local Node Options panel opens.

- a Verify that the **Activate Attach Manager at startup** check box is selected.
 - b Click on **OK** to return to the Local Node Characteristics panel.
- 6 Click on **OK** to return to the Communications Server Profile List panel.

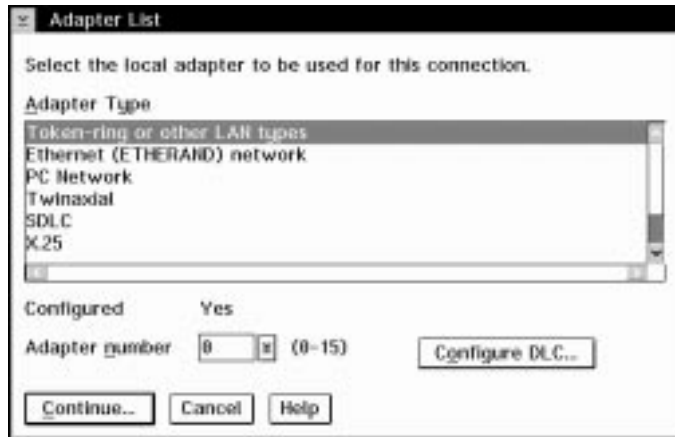
Preparing the SNA Connection Profiles

Prepare the SNA connection profiles as follows:

- 1 From the Communications Server Profile List panel, select **SNA Connections->Configure**.
- 2 On the Connections List panel for **Partner Type**, select either the **To peer node** radio button (normally used for OS/400 connections), or the **To host** radio button

(normally used for OS/390, MVS, VSE, and VM connections), and click on the **Create** push button.

- 3 The Adapter List window opens.



- 4 Select the **Token-ring, or other LAN types** adapter type, and specify the same **adapter number** that you specified in the DLC profile.
- 5 Click on the **Continue** push button to proceed to the Connection to a Peer Node panel or the Connection to a Host panel.

Connection to a Peer or Host Node

The Connection to a Peer Node or Connection to a Host Node windows opens.





At the Connection to a Peer Node panel or the Connection to Host panel:

- 1 Specify the **Link name** value that you wrote in item **7** of the worksheet.
- 2 On the Connection to Host panel, select **Additional parameters** push button and change the **Local PU name** field to your value for **10**.
- 3 Change the node ID field to your values for **13** and **14**.
- 4 Change **LAN destination address** field to your value for **8** **16**.
- 5 Change **Partner network ID** field to your value for **1**.
- 6 Change **Partner node name** field to your value for **4**.
- 7 Select **Define Partner LUs** push button on either the Connection to a Peer Node panel or the Connection to Host panel to proceed.

Partner LUs

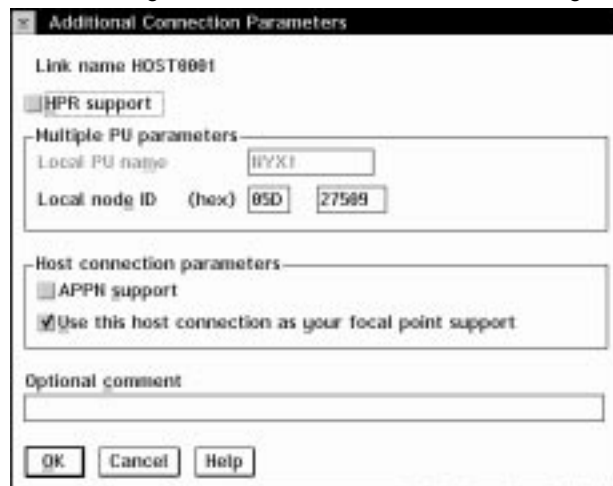
Create a Partner LUs Profile as follows:

- 1 Enter your value for **Network ID** **3**.
- 2 Enter your value for **LU name** and **Alias** (use **2** for both).
- 3 Click on the **Add** push button to add the partner LU profile to the connection profile.
- 4 Click on **OK** to return to the previous panel.
- 5 On the Connection to Host panel, click on the **Additional Parameters** push button. The Partner LU window opens



Additional Connection Parameters

If you have selected to configure connections to a host, the following window appears.



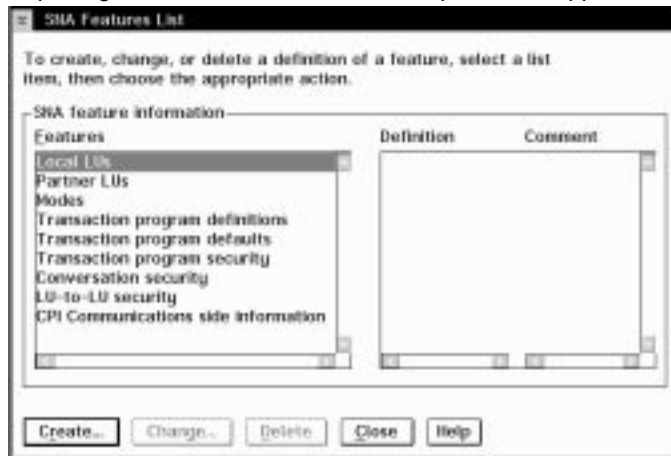
- 1 Verify that the **Multiple PU Parameters** fields are filled in. This value is the Local Node ID in hex, items **13** and **14** in the worksheet.

Local node ID 05D 27509

- 2 Click on **OK** to return to the Connection to a Host panel.
- 3 Click on **OK** to return to the Connections List panel.
- 4 Click on the **Close** push button to return to the Communications Server Profile List panel.

Setting the SNA Features

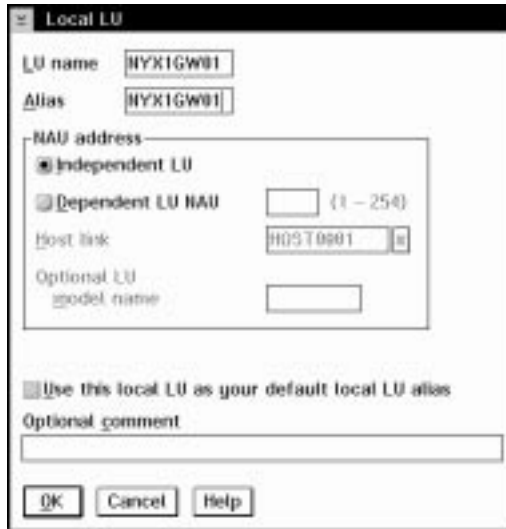
On the Communications Server Profile List panel, select **SNA features->Configure**. Subsequent steps begin from the SNA Features List panel that appears, as follows:



Preparing a Local LU Profile

If the DB2 Connect workstation is defined as an independent LU, prepare a Local LU Profile as follows. In most cases, a VTAM administrator on OS/390, MVS, VSE, or VM would define an independent LU for DB2 Connect. For OS/400, the control point would normally be used instead of an independent LU.

- 1 On the SNA Features List panel, click on **Local LUs->Create**.
- 2 Enter your value for **LU name** **11**.
- 3 Enter your value for **alias** **12**.
- 4 For the **NAU address** box, select the **Independent LU** radio button.
- 5 Click on **OK** to return to the SNA Features List panel.
- 6 In order to use this local LU when the DB2 Connect workstation starts the APPC connection, select the **Use this local LU as your default local LU alias** check box. By default, all APPC connections that are started from this DB2 Connect workstation will use this local LU.



Verifying the Partner LU Profile

The partner LU profile was configured in a previous step. To verify, select the **Partner LU Profile** option from the SNA Features List panel to see if a partner LU is defined.



Preparing a Mode Definition

From the SNA Features List panel, prepare a Mode Definition as follows:

- 1 Select **Modes->Create**.
- 2 Define your mode profile as follows:
 - a Enter your value for **mode name** **15** . It must also match item **6** .

- b On the other lines, you can either specify values that match the mode profile defined on your DRDA server systems, or tune the parameters.
- 3 Click on **OK** to finish the creation of the mode and to return to the SNA Features List panel.

Creating the CPIC Side Information

On the SNA Features List panel, select **CPI Communications Side Information->Create**. The CPI Communications Side Information opens.

Complete the CPI Communications Side Information panel as follows:

- 1 Enter your value for **Symbolic destination name** **16** .
- 2 Select the **Alias** radio button. Click on the **Alias** drop down box to view a list of all defined aliases and choose the alias that corresponds to item **12** .
- 3 In the **Partner TP** box, specify the remote Transaction Program (TP) name **17** .
Select the **None** radio button as the **Security type**.



This does not mean that you will have no security, you will specify the security type later when you update the DB2 directories.

- 4 Enter your value for the **Mode name** field **6** .
- 5 Click on **OK** to save the CPI side information profile and return to the SNA Features List panel.
- 6 Click on **Close** to return to the Communications Server Profile List panel.

Save Your Configuration

You are now ready to save your Communications Server configuration file:

- 1 Click on **Close** to return to the Communications Server Configuration Definition panel.
- 2 Click on **Close** to automatically verify and save the new configuration file, and leave the configuration panels.
- 3 Stop and start Communications Server. Click on **Stop Communications Normally->Start Communications**.

Update the DB2 Directories

To configure the DB2 directories, enter the following commands in the DB2 Connect command line processor:

- 1 Catalog the DRDA server as an APPC node. The syntax of the command is:

```
catalog appc node node_name remote sym_dest_name security program
```

For example:

```
catalog appc node DB2NODE remote DB2CPIC security program
```

- 2 Catalog the remote database as a Data Connection Services (DCS) database.

The syntax of the command is:

```
catalog dcs Database local_dbname as real_host_dbname
```

For example:

```
catalog dcs Database NYC3 as NEW_YORK3
```

- 3 Catalog a database alias for the remote database. The syntax of the command is:

```
catalog db local_dbname as db_alias at node node_name authentication dcs
```

For example:

```
catalog db DB2DB as NYC3 at node DB2NODE authentication dcs
```

In the DB2 commands above:

- *node_name* can be any valid eight-character name
- *sym_dest_name* is the name of your Side Information Profile (**16**).
- *local_dbname* can be any valid eight-character name

- *db_alias* can be any valid eight-character name
- *real_host_dbname* is the name of the database you want to connect to at the DRDA server (**5**).

Test the Connection

Issue the following command from the command line processor window at the DB2 Connect server, remembering to substitute your *db_alias* value from the previous step:

```
connect to db_alias user userid using password
```

For example:

```
connect to nyc3 user userid using password
```

The user ID and password values required are those defined at the host or AS/400, and must be provided to you by your DB2 Administrator.

Complete the Configuration

The steps you have just completed set up the DB2 Connect workstation to communicate with the host. You must now bind the utilities and applications to the DRDA server.

To bind the utilities and applications to the DRDA server, connect to the DRDA server and use commands similar to the following:

```
connect to dbalias user userid using password  
bind path@ddcsmvs.lst blocking all sqlerror continue  
    messages mvs.msg grant public  
connect reset
```

These commands are described in detail in the *DB2 Connect User's Guide*.



To install remote clients, see Chapter 26, "Installing DB2 Clients" on page 243.

Chapter 13. Configuring Wall Data Rumba Manually on Windows Workstations

Read this chapter if you have a Windows NT workstation and you have installed Wall Data Rumba as the SNA system.

Although you should use the Client Configuration Assistant wherever possible in order to configure communications with a host or AS/400 server, there are situations where these tools will perform only a portion of the required configuration (for example, to configure an SDLC or twinax connection). This chapter describes how you manually configure an SNA connection between a DB2 Connect Personal Edition using Wall Data Rumba and a remote DRDA server in such situations.

The example values used in this chapter are based on the scenario in Figure 9 on page 84, except that Wall Data Rumba replaces Microsoft SNA Server as the SNA subsystem at the DB2 Connect workstation.

Step 1. Start the APPC Configuration Utility

- 1 To start the APPC configuration utility:
 - For 32-bit Windows, run the **config** program. For example, if DB2 Connect Personal Edition is installed in c:\sqllib, run:
`c:\sqllib\sna\system\config.exe`
 - For 16-bit Windows, From the Program Manager select **File->Run**. In the command window, enter:

`c:\sqllib\win\sna\system\config.exe`

The APPC Configuration Utility panel appears.

- 2 Enter the **Network Name** for the DB2 Connect Workstation.
- 3 Enter the **Control Point Name** for the DB2 Connect Workstation.

Step 2. Add a Connection

- 1 From the Action Bar, select **Add**.
- 2 Select **Connections**.
- 3 From the Select a Connection pop-up menu, select the type of connection (for example, Token Ring).
- 4 At the Token Ring Connection pop-up:
 - a Enter a **Link Name**.
 - b Assign values to the **Options** parameters:
 - 1 Enter **Block ID**.
 - 2 Enter **Node ID** (if provided by your VTAM or AS/400 administrator).
 - 3 Enter **Destination Address**.
 - 4 Both the **Local** and the **Remote SAP Addresses** can default to 4. You may need to change this at a later stage, for example if you are using another SNA application and you get a message indicating that the Service Access Point (SAP) address is not available, either to DB2 Connect or to the other application.
 - c Select a choice from the **Link Options**.
 - d Click on the **Advanced** button.
 - e Confirm that the **Adapter Selection** is correct (usually the primary).
 - f Leave the **Link Parameters** at the default value.
- 5 Click on **OK**.

Step 3. Add a Mode

- 1 From the Action Bar, select **Add**.
- 2 Select the **Mode** button.
- 3 At the Configure Modes pop-up, set the values as shown in the example:
 - On the Basic window, set the Mode name to be used (same as at the host of AS/400 server).
 - On the Limits window, set:

Session limit 30

Automatic Activation Limit 0

Minimum Contention Winners 15

- On the Send window, set:

RU Length 4096

Pacing Count 0

- On the Receive window, set:

RU Length 4096

Pacing Count 0

Notes:

- a. The RU Lengths given above assume a Token Ring LAN. For Ethernet, the values must be no larger than 1517.
- b. Check with your VTAM or AS/400 Administrator that the values you set are compatible with those set at the host.

- 4 Click on **OK**.

Step 4. Add a Remote LU

- 1 From the Action Bar, select **Add**.
- 2 Select **Remote LU**.
- 3 At the Configure Remote LU's pop-up, enter:
 - The **LU Alias**
 - The **LU Name**
 - The name of the **Connection** to be used.
 - The **Network Name**.
- 4 Click on **OK**.

Step 5. Add a Local LU

- 1 From the Action Bar, select **Add**.
- 2 Select **Local LU**.
- 3 At the Configure Local LU's pop-up, enter:
 - The **LU Alias**
 - The **LU Name**
- 4 Click on **Advanced**.
- 5 Ensure the **LU Address** is 00 (for an independent LU).
- 6 Click on **OK**.

Step 6. Define Side Information

- 1 Access the **Side Info** panel:
 - On a Windows 3.1 or Windows for Workgroups 3.11 system:
 - a From the Action Bar, select **SideInfo**.
 - b Select **New**.
 - c Click on **Edit**.
 - On a Windows NT or Windows 95 system:
 - a From the Action Bar, select **Add**.
 - b Select **Side Info**.
- 2 Type in the **SymDestName**.
- 3 For **Partner LU**, select the Alias radio button, and the name you defined for the Remote LU Alias.
- 4 For **Local LU**, select the name you defined for the Local LU name.
- 5 For **Mode Name**, select the name you defined.
- 6 For **Security**, select None.
- 7 For **Partner TP Name**, use:
 - X'07F6C4C2' for DB2 for MVS/ESA or DB2 for AS/400. (You can also use DB2DRDA for DB2 for OS/390 or DB2 for MVS.)
 - The remote database name for DB2/VM or DB2/VSE (the default is RDB_NAME. Ask your database administrator for the value you should use).

- 8 If the Partner TP Name is specified in Hex, select **Hex TP Name**.
- 9 If you want to review the options on the Advanced CPI-C Side Information panel:
 - a Click on the **Advanced** push button.
 - b Click on the **Cancel** push button.
- 10 Click on **OK** to save the Side Information profile.

Step 7. Save the Configuration

At the main Configuration Utility panel,

- 1 From the Action Bar, select **File**.
- 2 Select **Save As**.
- 3 Provide a name you will recognize later: for example, a name of the form 111111xx, where 111111 is the CP Name, and xx is an alphabetic or numeric sequence, such as "AA" for the first, "BB" for the next, and so on.
- 4 Click on **OK**.

Step 8. Update the DB2 Directories

To configure the DB2 directories, enter the following commands in the DB2 Connect command line processor:

- 1 Catalog the DRDA server as an APPC node. The syntax of the command is:
`catalog appc node node_name remote sym_dest_name security program`

For example:

```
catalog appc node DB2NODE remote DB2CPIC security program
```

Note: The case of the *sym_dest_name* (DB2CPIC in this example) must match the case of the SymDestName in the Side Information definition.

- 2 Catalog the remote database as a Data Connection Services (DCS) database. The syntax of the command is:

```
catalog dcs Database local_dbname as real_host_dbname
```

For example:

```
catalog dcs Database NYC3 as NEW_YORK3
```

3 Catalog a Database alias for the remote database. The syntax of the command is:

```
catalog db local_dbname as Db_alias at node node_name authentication dcs
```

For example:

```
catalog db DB2DB as NYC3 at node DB2NODE authentication dcs
```

In the DB2 commands above:

- *node_name* can be any valid eight-character name
- *sym_dest_name* is the name of your Side Information Profile.
- *local_dbname* can be any valid eight-character name
- *Db_alias* can be any valid eight-character name
- *real_host_dbname* is the name of the database you want to connect to at the DRDA server.

Step 9. Test the Connection

Issue the following command from the command line processor window, remembering to substitute your *Db_alias* value from the previous step:

```
connect to Db_alias user userid using password
```

For example:

```
connect to nyc3 user userid using password
```

The user ID and password values required are those defined at the host or AS/400, and must be provided to you by your DB2 Administrator.

Chapter 14. Configuring IBM Communications Server for Windows NT

Read this chapter if you have a Windows NT workstation that has IBM Communications Server for Windows NT installed.

Before you begin, ensure that the IBM Communications Server for Windows NT you installed:

- Is Version 5.0 or higher
- Has the IBM Communications Server IEEE 802.2 LAN interface (this is an installation option for Communications Server)
- Has the LLC2 driver installed from the IBM Communications Server installation directory. To confirm this:
 - 1 Click on the **Start** button, then select **Settings->Control Panel**.
 - 2 Double-click on the **Network** icon.
 - 3 On the Network window, click on the **Protocols** tab. **IBM LLC2 Protocol** must be one of the protocols listed. If it is not, you need to install this protocol from your IBM Communications Server for Windows NT software. Refer to its documentation for instructions.

Step 1. Fill In the Worksheet

Before you configure the DB2 Connect workstation, have your host-side administrator and LAN administrator fill in copies of the following worksheet for each host to which you want to connect (see Table 13 on page 107).

To help you fill in the worksheets, Figure 10 illustrates a sample network that has DB2 Connect using APPC to connect to DB2 for OS/390. The values shown in this diagram correspond to the *Sample Value* entries in the worksheet.

After you fill in the *Your Value* entries, you can use the worksheet to configure IBM Communications Server for Windows NT. As you perform the configuration, replace the sample values that appear in the configuration instructions with your values from the worksheet. Use the boxed numbers **1** to relate the configuration instructions to the worksheet values.

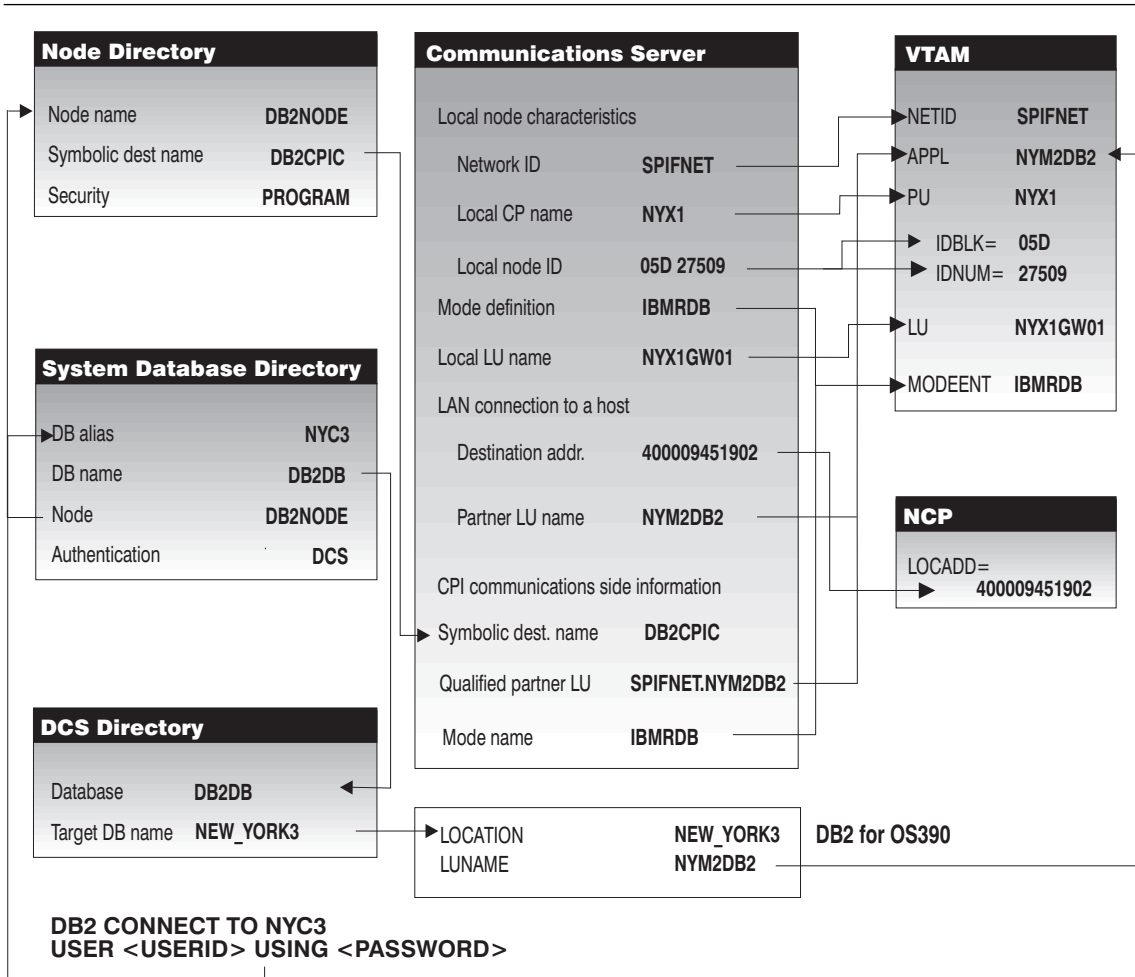


Figure 10. Configuration on the DRDA Server and DB2 Connect Workstation

Figure 10 illustrates the correspondences between information specified on the DRDA server system, information specified in Communications Server, and information specified in DB2 directories. The values shown in the diagram are the example values used in the instructions in this chapter.

Table 13. Worksheet for Planning OS/390, MVS, VM, VSE, or OS/400 Connections

Ref.	SNA Server Admin Name	VTAM Name	Sample Value	Your Value
Network Elements at the Host				
1	Host Name	Network name	SPIFNET	
2	Partner LU Name	Application Name	NYM2DB2	
3	Network ID		SPIFNET	
4	Control Point Name	OS/390, MVS, VM, VSE: SSCP Name OS/400: Local Control Point Name	NYX	
5	Database name	OS/390 or MVS: Location Name VM/VSE: RDB_Name	NEW_YORK3	
6	Mode Name		IBMRDB	
7	Link Station Name		LINKHOST	
Network Connection Information				
8	Destination address		400009451902	
Network Elements at the DB2 Connect Workstation				
9	Network Name		SPIFNET	
10	Local Control Point Name		NYX1	
11	Local LU name		NYX1GW01	
12	Local LU alias		NYX1GW01	
13	Local Node ID	Block ID	05D	
14		Physical Unit ID	27509	
15	Mode name		IBMRDB	
16	Symbolic Destination name		DB2CPIC	
17	(Remote) Transaction program (TP) name		X'07F6C4C2' (or RDB_NAME for DB2 for VSE & VM) (or DB2DRDA for DB2 for OS/390 or DB2 for MVS)	
DB2 Directory Entries (at the DB2 Connect workstation)				
18	Node name		db2node	
19	Security		Program	
20	Database name		db2db	
21	Database alias		nyc3	

Step 2. Configure the SNA Node

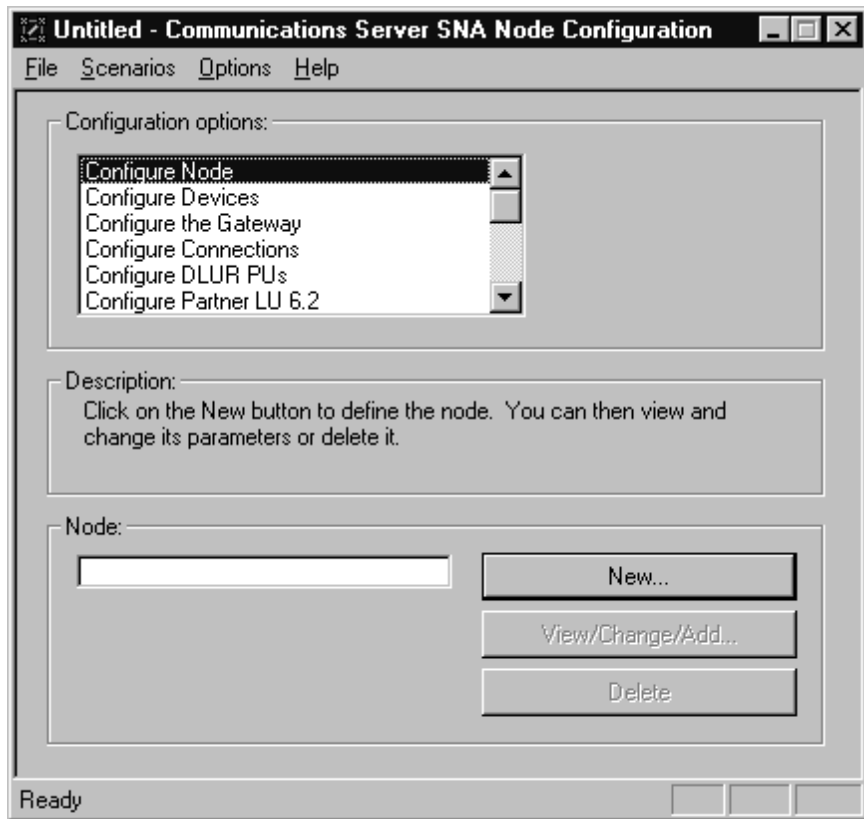
To start IBM Communications Server for NT, click on the **Start** button, then select **Programs->IBM Communications Server->SNA Node Configuration**. The IBM Communications Server SNA Node Configuration screen appears.

From the **File** button on the menu bar, select **New->Advanced**. The **Configuration options** field appears.

To configure the DB2 Connect workstation, you need to configure the following **Configuration options**:

- “Configure Node” on page 109
- “Configure Devices” on page 110
- “Configure the Gateway” on page 110 (used with Communications Server for Windows NT SNA Client only)
- “Configure Connections” on page 110
- “Configure Partner LU 6.2” on page 111
- “Configure Modes” on page 111
- “Configure Local LU 6.2” on page 112
- “Configure CPI-C Side Information” on page 112
- “Configure Transaction Programs” on page 113. (Used when clients will connect using APPC. For example, a Communications Server for Windows NT SNA Client connecting to a Communications Server, DB2 Client Application Enablers connecting to a DB2 Connect Enterprise Edition workstation, or DRDA clients connecting to a DRDA AS DB2 Universal Database server.)

After each step, you return to the window that has the **Configuration options** field.



Configure Node

To configure the node:

- 1 In the **Configuration options** field, select **Configure Node**, then click on the **New** button. The Define the Node window appears.
- 2 In the **Fully qualified CP name** fields, type in the network name **9** and the local control point name **10** (SPIFNET.NYX1).
- 3 Optionally, in the **CP alias** field, type in a CP alias. If you leave this blank the local control point name **10** will be used (NYX1).
- 4 In the **Local Node ID** fields, type in the block ID **13** and the physical unit ID **14** (05D.27509).
- 5 Ensure that the **End Node** radio button is selected (this is the default).
- 6 Click on **OK**.

Configure Devices

To configure the device:

- 1 In the **Configuration options** field, select **Configure devices**.
- 2 Ensure that in the **DLCs** field, the appropriate DLC is highlighted. For example, **LAN**.
- 3 Click on the **New** button. The appropriate window appears with default values displayed. For example, the Define a LAN device window.
- 4 Click on **OK** to accept the default values.

Configure the Gateway

You need to perform this step only if you are setting up Communications Server to accept requests from Communications Server for Windows NT SNA Client, as described in Chapter 15, “Configuring IBM Communications Server for Windows NT SNA Client” on page 117. To configure the gateway:

- 1 In the **Configuration options** field, select **Configure the Gateway**, then click on the **New** button. The Define Gateway window appears.
- 2 Click on the **Select SNA Clients** tab.
- 3 Ensure that there is a check mark in the **Enable SNA API Client Services** check box.
- 4 Click on **OK** to accept the default values.

Configure Connections

To configure the connections:

- 1 In the **Configuration options** field, select **Configure connections**.
- 2 Ensure that in the **DLCs** field, **LAN** is highlighted.
- 3 Click on the **New** button. The Define a LAN connection window appears.
- 4 On the Basic tab panel:
 - a In the **Link station name** field, type in the name **7** from the worksheet (LINKHOST).
 - b In the **Destination address** field, type in the address **8** from the worksheet (400009451902).
- 5 On the Security tab panel:

- a In the **Adjacent CP name** fields, type in the network ID **3** and the Control Point name **4** (SPIFNET.NYX).
- b In the **Adjacent CP type** field, select **Back-level LEN**.
- c Ensure that **TG number** is set to 0 (the default).
- d Click on **OK**.

Configure Partner LU 6.2

To configure the partner LU:

- 1 In the **Configuration options** field, select **Configure partner LU**, then click on the **New** button. The Define a partner LU 6.2 window appears.
- 2 In the **Partner LU name** fields, type in the network ID **3** and the partner LU name **2** (SPIFNET.NYM2DB2).
- 3 In the **Partner LU alias** field, type in the partner LU name **2** from the worksheet (NYM2DB2).
- 4 If you are configuring Communications Server for SNA Clients, in the **Fully-qualified CP name** fields, type in the network ID **3** and the adjacent control point SSCP name **4** (SPIFNET.NYX).
Leave the other fields blank.
- 5 Click on **OK**.

Configure Modes

To configure the mode:

- 1 In the **Configuration options** field, select **Configure modes**, then click on the **New** button. The Define a mode window appears.
- 2 In the **Mode name** field **6**, type in the mode name (IBMRDB).
- 3 Click on the **Advanced** tab and ensure that the **Class of Service Name** is set to **#CONNECT**.
Accept the defaults for the other fields.
- 4 Click on **OK**.

Configure Local LU 6.2

To configure the local LU 6.2:

- 1 In the **Configuration options** field, select **Configure local LU 6.2**, then click on the **New** button. The Define a local LU 6.2 window appears.
- 2 In the **Local LU name** field, type in the name **11** from the worksheet (NYX1GW01).
- 3 Type in a value for the **LU session limit** field. The default, 0, specifies the maximum allowed value.
Accept the defaults for the other fields.
- 4 Click on **OK**.

Configure CPI-C Side Information

To configure the CPI-C side information:

- 1 In the **Configuration options** field, select **Configure CPI-C side information**, then click on the **New** button. The Define CPI-C side information window appears.
- 2 In the **Symbolic destination name** field, type in the name **16** from the worksheet (DB2CPIC).
- 3 In the **Mode name** field, type in the name **15** from the worksheet (IBMRDB).
- 4 Click on the radio button beside **Use Partner LU alias** and select a Partner LU alias.
- 5 Specify the TP name. In the **TP name** field:
 - To specify a non-service TP, in the **TP name** field, type in the name of the non-service TP, for example DB2DRDA, and ensure that there is **no** check mark in the **Service TP** check box.
 - To specify a service TP, in the **TP name** field, type in the name of the service TP, for example 076DB, and ensure that there **is** a check mark in the **Service TP** check box.Accept the defaults for the other fields.
- 6 Click on **OK**.

Configure Transaction Programs

You need to configure Transaction Programs if you want Communications Server to accept APPC clients. For DB2 users, examples of this include:

- Configuring Communications Server to accept SNA Client requests as described in Chapter 15, "Configuring IBM Communications Server for Windows NT SNA Client" on page 117.
- Configuring a DB2 Universal Database server to act as a DRDA AS, which accepts requests from DRDA hosts. (This does not apply to DB2 Connect users).
- Configuring a DB2 Universal Database server to accept APPC clients.

You should create a service TP and a non-service TP.

To create a service Transaction Program:

- 1** In the **Configuration options** field, select **Configure Transaction Programs**, then click on the **New** button. The Define a Transaction Program window appears.
- 2** On the **Basic** tab window:
 - To specify a non-service TP, in the **TP name** field, type in the name of the non-service TP, for example DB2DRDA, and ensure that there is **no** check mark in the **Service TP** check box.
 - To specify a service TP, in the **TP name** field, type in the name of the service TP, for example 076DB, and ensure that there **is** a check mark in the **Service TP** check box.
- 3** If you are configuring Communications Server for use with Communication Server SNA Client, on the **Advanced** tab window, ensure that there is a check mark in the **For SNA API Client use** check box.
Accept the defaults for the other fields.
- 4** Click on **OK**.

To create a non-service Transaction Program:

- 1** In the **Configuration options** field, select **Configure Transaction Programs**, then click on the **New** button. The Define a Transaction Program window appears.
- 2** On the **Basic** tab window:
 - In the **TP name** field, type in the name **17** from the worksheet (DB2DRDA).
 - Ensure that there is **no** check mark in the **Service TP** check box.
- 3** If you are configuring Communications Server for use with Communication Server SNA Client, on the **Advanced** tab window, ensure that there is a check mark in the **For SNA API Client use** check box.
Accept the defaults for the other fields.

- 4 Click on **OK**.

Save the Configuration

To save the configuration:

- 1 From the **File** button on the menu bar, select **Save As**. The Save As window appears.
- 2 Type in a file name, for example `ny3.acg`, then click on **OK**.
- 3 In the dialog box that appears, you are asked if you want this configuration to be the default. Click on the **Yes** button.



You now need to update the DB2 directories, test the connection, and bind utilities and applications to the server. The easiest way to do this is to use the CCA as described in Chapter 9, "Configuring DRDA Host Connections on OS/2 or Windows NT Workstations" on page 73. However, you can also perform these steps manually as described in the sections that follow.

Step 3. Update the DB2 Directories

To configure the DB2 directories, do the following at the DB2 Connect workstation:

- 1 Catalog the DRDA server as an APPC node. The syntax of the command is:

```
catalog appc node node_name remote sym_dest_name security program
```

For example:

```
catalog appc node DB2NODE remote DB2CPIC security program
```

Note: The case of the *sym_dest_name* (DB2CPIC in this example) must match the case of the Symbolic Destination Name in the CPI-C Symbolic Destination Name Properties definition.

- 2 Catalog a database alias for the remote database. The syntax of the command is:

```
catalog db local_dbname as db_alias at node node_name authentication dcs
```

For example:

```
catalog db NYC3 as DB2DB at node DB2NODE authentication dcs
```

- 3 Catalog the remote database as a Data Connection Services (DCS) database. The syntax of the command is:

```
catalog dcs db local_dbname as real_host_dbname
```


For example:

```
catalog dcs db NYC3 as NEW_YORK3
```

In the DB2 commands above:

- *node_name* can be any valid eight-character name
- *sym_dest_name* is the name of your Side Information Profile (**16**)
- *local_dbname* can be any valid eight-character name
- *db_alias* can be any valid eight-character name
- *real_host_dbname* is the name of the database you want to connect to at the DRDA server (**5**).

Step 4. Test the Connection

Issue the following command from the command line processor window at the DB2 Connect server, remembering to substitute your *db_alias* value from the previous step:

```
connect to db_alias user userid using password
```

For example:

```
connect to nyc3 user userid using password
```

The user ID and password values required are those defined at the host or AS/400, and must be provided to you by your DB2 Administrator.

Step 5. Bind the Utilities and Applications

The steps you have just completed set up the DB2 Connect workstation to communicate with the host. You must now bind the utilities and applications to the DRDA server.

To bind the utilities and applications to the DRDA server, connect to the DRDA server and use commands similar to the following:

```
connect to dbalias user userid using password  
bind path@ddcsmvs.lst blocking all sqlerror continue  
messages mvs.msg grant public  
connect reset
```

These commands are described in detail in the *DB2 Connect User's Guide*.



To install remote clients, see Chapter 26, "Installing DB2 Clients" on page 243.

Chapter 15. Configuring IBM Communications Server for Windows NT SNA Client

Read this chapter if you have a Windows NT workstation that has IBM Communications Server for Windows NT SNA Client Version 5.0 or higher installed and you want to connect to an IBM Communications Server for Windows NT server.

The Communications Server for Windows NT server and its SNA Client act as a split client. This configuration requires that you have an APPC-enabled application (such as DB2 Connect) running on the SNA Client workstation.

Note: The instructions in this chapter describe how to configure the SNA Client portion of the split client. See Chapter 14, "Configuring IBM Communications Server for Windows NT" on page 105 to configure the server portion of the split client.

The instructions in this chapter use a Windows NT client. The instructions for other supported operating systems are similar; refer to your Communications Server for Windows NT documentation for more information.

Step 1. Fill In the Worksheet

Before you configure the DB2 Connect workstation, have your host-side administrator and LAN administrator fill in copies of the following worksheet for each host to which you want to connect (see Table 14 on page 118).

After you fill in the *Your Value* entries, you can use the worksheet to configure IBM Communications Server for Windows NT SNA Client. As you perform the configuration, replace the sample values that appear in the configuration instructions with your values from the worksheet. Use the boxed numbers **1** to relate the configuration instructions to the worksheet values.

Table 14. Worksheet for Planning SNA Client Connections to Communications Server/NT

Ref.	SNA Client Name	Sample Value	Your Value
Network Elements at the Host			
1	Host Name	SPIFNET	
2	Partner LU Name	NYM2DB2	
3	Network ID	SPIFNET	
4	Control Point Name	NYX	
5	Database name	NEW_YORK3	
6	Mode Name	IBMRDB	
7	Link Station Name	LINKHOST	
Network Connection Information			
8	Destination address	400009451902	
Network Elements at the DB2 Connect Workstation			
9	Network Name	SPIFNET	
10	Local Control Point Name	NYX1	
11	Local LU name	NYX1GW01	
12	Local LU alias	NYX1GW01	
13	Block ID	05D	
14	Physical Unit ID	27509	
15	Mode name	IBMRDB	
16	Symbolic Destination name	DB2CPIC	
17	(Remote) Transaction program (TP) name	X'07F6C4C2' (or RDB_NAME for DB2 for VSE & VM) (or DB2DRDA for DB2 for OS/390 or DB2 for MVS)	
DB2 Directory Entries (at the DB2 Connect workstation)			
18	Node name	db2node	
19	Security	Program	
20	Database name	db2db	
21	Database alias	nyc3	
Elements at the Communications Server			
22	User name	CSNTUS1	
23	Password	*****	
24	IP address	123.123.123.123	

Step 2. Create a User Name on the Communications Server for Windows NT Server

On the Communications Server for Windows NT server, you need to create a user name that permits the SNA client to access the server. To create a user name:

- 1 Click on the **Start** button, then select **Programs->Administrative Tools (Common)->User Manager**. The User Manager window appears.
- 2 On the User Manager's menu bar, select **Users->New User**. The New User window appears.
- 3 Type in values for the following fields:

User Name	CSNTUS1
Full Name	CS/NT Client 1
Description	optional
Password	*****
Confirm Password	*****
- 4 Click on the **Groups** button. The Group Memberships window appears. By default, the user name you are defining is a member of only the **Users** group.
- 5 Make your new user name a member of each of the following groups by selecting the group name, then clicking on the **Add** button:
 - The **Administrators** group
 - The **IBMCSADMIN** group
 - The **IBMCSAPI** group.
- 6 Click on **OK**.

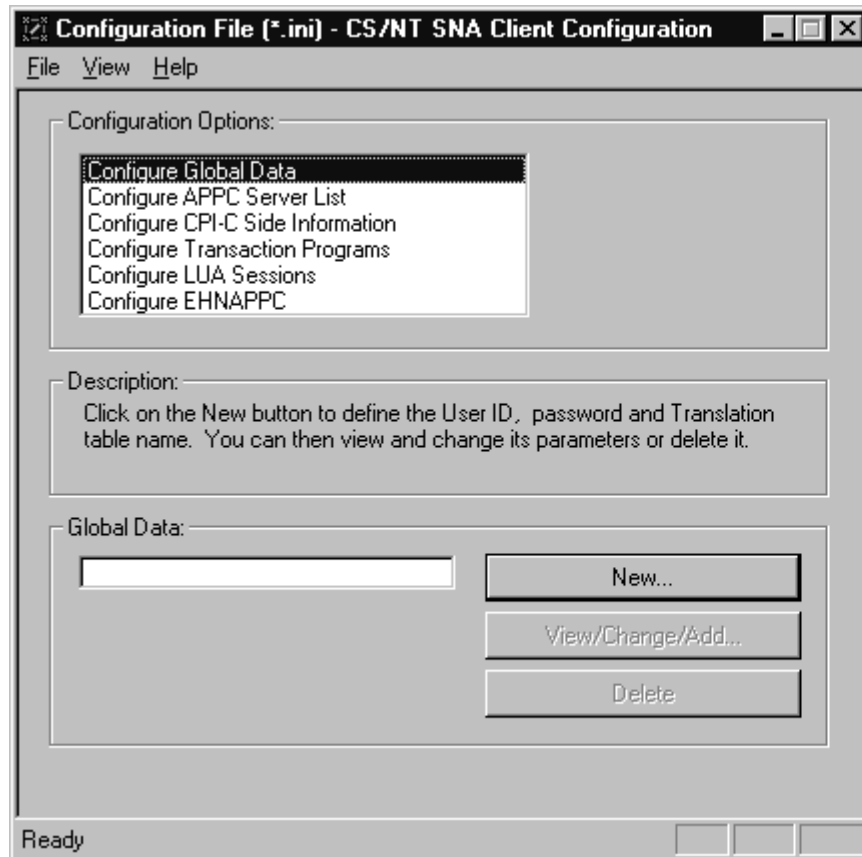
Step 3. Configure the SNA Client

To configure the IBM Communications Server for Windows NT SNA Client, at the client workstation click on the **Start** button, then select **Programs->IBM Communications Server SNA Client->Configuration**. The Configuration File (*.ini) – CS/NT SNA Client Configuration window appears.

To configure the client workstation, you need to configure the following options:

- “Configure Global Data” on page 120
- “Configure APPC Server List” on page 121
- “Configure CPI-C Side Information” on page 121
- “Configure Transaction Programs” on page 121

After each step, you return to the CS/NT SNA Client Configuration window.



Configure Global Data

To configure the global data:

- 1 In the **Configuration options** field, select **Configure Global Data**, then click on the **New** button. The Define Global Data window appears.
- 2 In the **User name** field, type in the name **22** from the worksheet (CSNTUS1). This is the user name that was defined in “Step 2. Create a User Name on the Communications Server for Windows NT Server” on page 119.

- 3 In the **Password** and **Confirm Password** fields, type in the password **23** that was defined in “Step 2. Create a User Name on the Communications Server for Windows NT Server” on page 119.
- 4 Click on **OK**.

Configure APPC Server List

To configure the APPC Server list:

- 1 In the **Configuration options** field, select **Configure APPC Server List**, then click on the **New** button. The Define APPC Server list window appears.
- 2 Type in the IP address **24** of the server (123.123.123.123).
- 3 Click on **OK**.

Configure CPI-C Side Information

To configure the CPI-C side information:

- 1 In the **Configuration options** field, select **Configure CPI-C side information**, then click on the **New** button. The Define CPI-C side information window appears.
- 2 In the **Symbolic destination name** field, type in the name **16** from the worksheet (DB2CPIC).
- 3 In the **Local LU alias** field, type in the name **12** from the worksheet (NYX1GW01).
Note: Ensure that this Transaction Program has a check mark in the **For SNA API Client use** check box.
- 4 In the **Mode name** field, type in the name **15** from the worksheet (IBMRDB).
- 5 In the **TP name** field, type in the name **17** from the worksheet (DB2DRDA).
- 6 In the **Partner LU name** field, type in the network ID **3** and the partner LU name **2** from the worksheet (SPIFNET.NYM2DB2), or type in the **Partner LU alias**.
- 7 Click on **OK**.

Configure Transaction Programs

To configure a transaction program:

- 1 In the **Configuration options** field, select **Configure Transaction Programs**, then click on the **New** button. The Define a Transaction Program window appears.

- 2 In the **Transaction Program** field, type in the name **17** from the worksheet (DB2DRDA).
- 3 In the **Local LU alias** field, type in **12** from the worksheet (NYX1GW01).
- 4 If the Transaction Program you specified is a service TP, ensure that there is a check mark in the **Service TP** check box. The example TP DB2DRDA is not a service TP.
- 5 Ensure that there is **no** check mark in the **Attach Manager started** check box.
- 6 Click on **OK**.

Save the Configuration

To save the configuration:

- 1 From the **File** button on the menu bar, select **Save As**. The Save As window appears.
- 2 Type in a file name, then click on **Save**.

Step 4. Update the DB2 Directories

To configure the DB2 directories, do the following at the SNA client workstation:

- 1 Catalog the DRDA server as an APPC node. The syntax of the command is:

```
catalog appc node node_name remote sym_dest_name security program
```

For example:

```
catalog appc node DB2NODE remote DB2CPIC security program
```

Note: The case of the *sym_dest_name* (DB2CPIC in this example) must match the case of the Symbolic Destination Name in the CPI-C Symbolic Destination Name Properties definition.

- 2 Catalog a database alias for the remote database. The syntax of the command is:

```
catalog db local_dbname as db_alias at node node_name authentication dcs
```

For example:

```
catalog db NYC3 as DB2DB at node DB2NODE authentication dcs
```

- 3 Catalog the remote database as a Data Connection Services (DCS) database. The syntax of the command is:

```
catalog dcs db local_dbname as real_host_dbname
```


For example:

```
catalog dcs db NYC3 as NEW_YORK3
```

In the DB2 commands above:

- *node_name* can be any valid eight-character name
- *sym_dest_name* is the name of your Side Information Profile (**16**).
- *local_dbname* can be any valid eight-character name
- *db_alias* can be any valid eight-character name
- *real_host_dbname* is the name of the database you want to connect to at the DRDA server (**5**).



You now need to update the DB2 directories, test the connection, and bind utilities and applications to the server. The easiest way to do this is to use the CCA as described in Chapter 9, "Configuring DRDA Host Connections on OS/2 or Windows NT Workstations" on page 73. However, you can also perform these steps manually as described in the sections that follow.

Step 5. Test the Connection

Issue the following command from the command line processor window at the SNA Client, remembering to substitute your *db_alias* value from the previous step:

```
connect to db_alias user userid using password
```

For example:

```
connect to nyc3 user CSNTUS1 using password
```

The user ID and password values required are those defined at the host or AS/400, and must be provided to you by your DB2 Administrator.

Step 6. Bind the Utilities and Applications

The steps you have just completed set up the DB2 Connect workstation to communicate with the host. You must now bind the utilities and applications to the DRDA server.

To bind the utilities and applications to the DRDA server, connect to the DRDA server and use commands similar to the following:

```
connect to dbalias user userid using password  
bind path@ddcsmvs.lst blocking all sqlerror continue  
      messages mvs.msg grant public  
connect reset
```

These commands are described in detail in the *DB2 Connect User's Guide*.



To install remote clients, see Chapter 26, "Installing DB2 Clients" on page 243.

Chapter 16. Configuring Microsoft SNA Server for DB2 Connect for Windows NT

Read this chapter if you have a Windows NT workstation that has Microsoft SNA Server installed. Before you begin, ensure that your Microsoft SNA Server is Version 2.11 or higher.

Step 1. Fill In the Worksheet

Before you configure the DB2 Connect workstation, have your host-side administrator and LAN administrator fill in copies of the following worksheet for each host to which you want to connect (see Table 15 on page 126).

To help you fill in the worksheets, Figure 9 illustrates a sample network that has DB2 Connect running on an OS/2 system and uses APPC to connect to DB2 for OS/390. The values shown in this diagram correspond to the *Sample Value* entries in the worksheet.

After you fill in the *Your Value* entries, you can use the worksheet to configure IBM Communications Server. As you configure Communications Server, replace the sample values that appear in the configuration instructions with your values from the worksheet. Use the boxed numbers **1** to relate the configuration instructions to the worksheet values.

In the configuration instructions, the ***** symbol denotes entries that need to be changed but do not have a representation on the worksheet.

Table 15. Worksheet for Planning OS/390, MVS, VM, VSE, or OS/400 Connections

Ref.	SNA Server Admin Name	VTAM Name	Sample Value	Your Value
Network Elements at the Host				
1	Host Name	Network name	SPIFNET	
2	Remote LU Name	Application Name	NYM2DB2	
3	Network ID		SPIFNET	
4	Control Point Name	OS/390, MVS, VM, VSE: SSCP Name OS/400: Local Control Point Name	NYX	
5	Database name	OS/390 or MVS: Location Name VM/VSE: RDB_Name	NEW_YORK3	
6	Mode Name		IBMRDB	
7	Connection Name		LINKHOST	
Network Connection Information				
8	Remote Network address		400009451902	
Network Elements at the DB2 Connect Workstation				
9	Network Name		SPIFNET	
10	Local Control Point Name		NYX1	
11	(Local) LU name		NYX1GW01	
12	(Local) LU alias		NYX1GW01	
13	Local Node ID	ID BLK	05D	
14		ID NUM	27509	
15	Mode name		IBMRDB	
16	Symbolic Destination name		DB2CPIC	
17	(Remote) Transaction program (TP) name		X'07F6C4C2' (or RDB_NAME for DB2 for VSE & VM) (or DB2DRDA for DB2 for OS/390 or DB2 for MVS)	
DB2 Directory Entries (at the DB2 Connect workstation)				
18	Node name		db2node	
19	Security		Program	
20	Database name		db2db	
21	Database alias		nyc3	

For an OS/390, MVS, VSE, or VM connection, you need the control point name of your DB2 Connect workstation. Your network administrator can provide you with this information.

Figure 9 on page 84 illustrates the correspondences between information specified on the DRDA server system, information specified in SNA Server Administration, and information specified in DB2 directories. The values shown in the diagram are the example values used in the instructions in this chapter.

Step 2. Define SNA Properties

The DB2 Connect workstation needs the following SNA information:

- Server properties
- APPC local LU properties
- APPC mode properties

To begin, perform the following steps:

- 1** Click on the **Start** push button, and select **Program->SNA**
- 2** Double-click on the **SNA Server Admin** icon. The SNA Server Admin window opens.

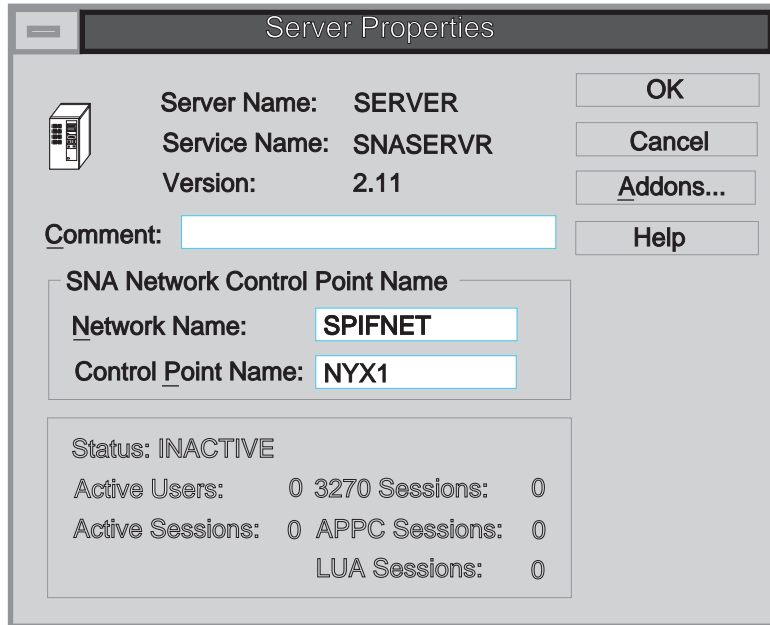


By default, the Servers and Connections window opens. If it does not, double-click on the **Servers and Connections** icon.

Setting Server Properties

To specify parameters for an SNA Server that will be used for LU 6.2 (APPC), do the following:

- 1** In the Servers and Connections window, select the server (named SERVER in the example).
- 2** Select **Services->Properties**. The Server Properties window opens.



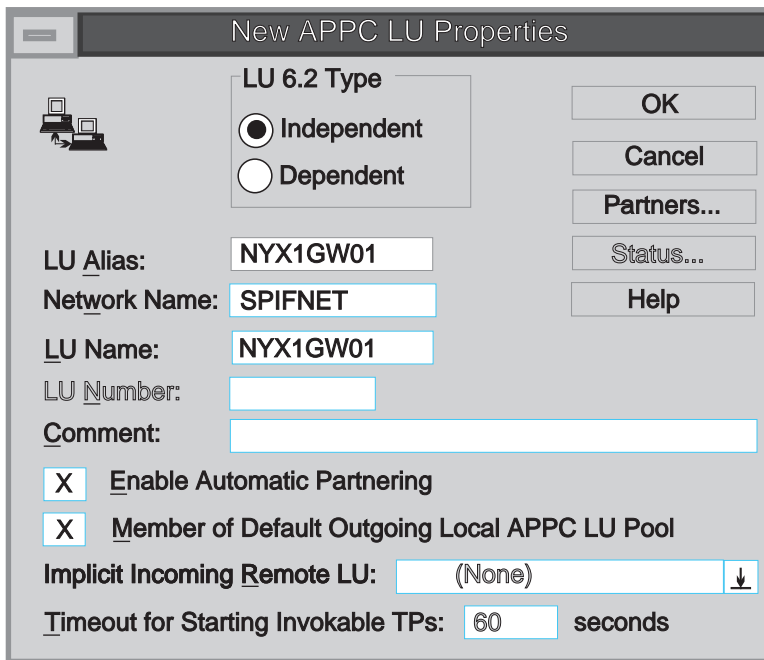
3 Enter the values you filled in on Table 15 on page 126 as follows:

Network Name	9
Control Point Name	10

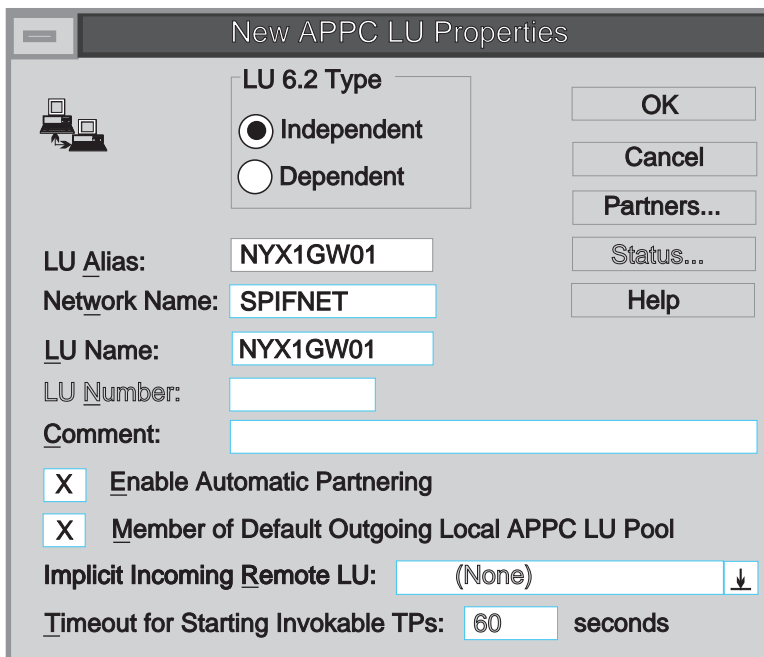
Setting APPC Local LU Properties

To assign a local APPC LU to the Server, perform the following steps:

- 1 In the Servers and Connections window, select the server.
- 2 Select **Services->Assign LUs**. The Insert LU window opens.



- 3 In the Insert LU window, select **APPC (Local)**.
- 4 Click on **OK**. The New APPC LU Properties window opens.



- 5 Make sure that the **Independent** radio button is selected.
- 6 Enter the values you entered in on Table 15 on page 126 as follows:

LU Alias	12
Network Name	9
LU Name	11
- 7 Select the **Enable Automatic Partnering** check box, if it is not already selected.
- 8 Select the **Member of Default Outgoing Local APPC LU Pool** check box, if it is not already selected.
- 9 Click on **OK**. The new LU is added to the window.

Setting APPC Mode Properties

You can use an IBM-defined mode, or add a new mode that is appropriate for the application. Ensure that the values match between your client and server.

To configure a mode for the APPC LU, perform the following steps:

- 1 In the Servers and Connections window, select the local LU with which the mode will be associated.
- 2 Click on **Services->Properties**.

Based on whether the LU is local or remote, either the APPC LU Properties window or the New APPC LU Properties window opens.

New APPC LU Properties

LU 6.2 Type
 Independent
 Dependent

OK
 Cancel
 Partners...
 Status...
 Help

LU Alias: NYX1GW01
 Network Name: SPIFNET
 LU Name: NYX1GW01
 LU Number:
 Comment:

Enable Automatic Partnering
 Member of Default Outgoing Local APPC LU Pool
 Implicit Incoming Remote LU: (None) ↓
 Timeout for Starting Invokable TPs: 60 seconds

- 3 Click on the **Partners...** push button. The LU 6.2 Partner LUs window opens.
- 4 Click on the **Modes...** push button. The APPC Mode Properties window opens.

APPC Mode Properties

Mode Name: IBMRDB
 Comment:

Close
 Add...
 Change...
 Delete...
 Help

Parallel Session Limit: 30
 Minimum Contention Winner Limit: 15
 Partner Min Contention Winner Limit: 0
 Automatic Activation Limit: 0

Enable Automatic Partnering
 High Priority Mode

Pacing Send Count: 7 Max Send RU Size: 4096
 Pacing Receive Count: 7 Max Receive RU Size: 4096

- 5 Use the following suggested value:
Mode Name IBMRDB **15**
- 6 Select the **Enable Automatic Partnering** check box, if it is not already selected.

- 7 Ensure that the **High Priority Mode** check box is *not* selected; if it is, clear the check box.



The rest of the values in our example are arbitrary. The values for items such as **Parallel Session Limit** and **Minimum Contention Winner Limit** are for tuning purposes. See the online help for SNA Server for guidance on setting these values.

- 8 Click on the **Add** push button to add the mode.
- 9 Click on the **Close** push buttons until you return to the APPC LU Properties window.
- 10 Click on the **Cancel** push button to return to the Servers and Connections window.

Step 3. Define Server Connection Properties

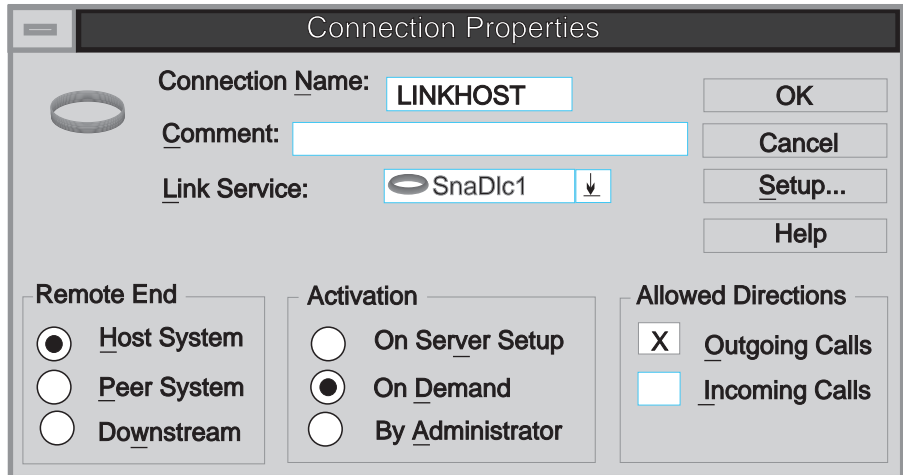
The DB2 Connect workstation needs the following information about each server connection that you want to use:

- Connection properties
- APPC remote LU properties
- CPI-C symbolic destination name properties

Setting Connection Properties

To configure settings for a new connection, do the following:

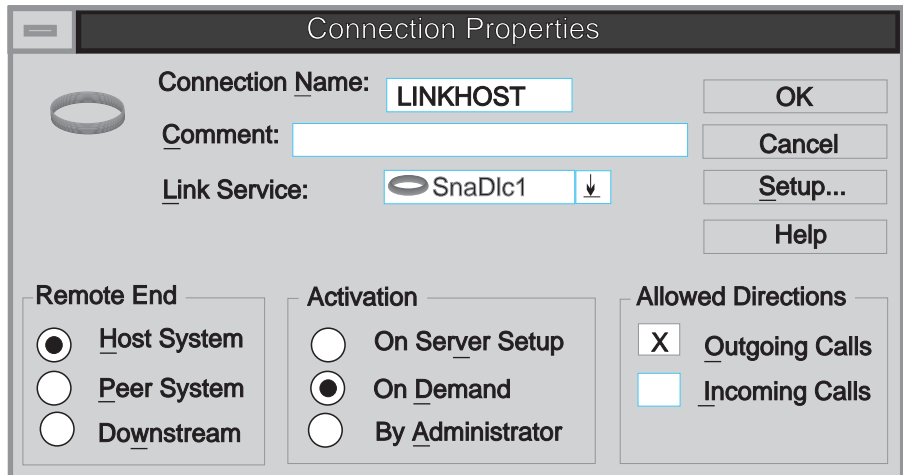
- 1 In the Servers and Connections window, select the server that you want.
- 2 Select **Services->New Connection**. The Insert Connection window opens.
- 3 In the Insert Connection window, select the type of connection you want. Our example uses 802.2. See the online help for information on the other available choices.
- 4 Click on **OK**. The Connection Properties window opens.



Use the following values:

Connection Name LINKHOST **7**
Link Service SnaDlc1
Remote End **Peer System** radio button
Activation **On Demand** radio button
Allowed Directions **Outgoing Calls** check box.

5 The following is an example of an OS/390, MVS, VM, or VSE connection:



Use the following values:

For a connection to OS/390, MVS, VM, or VSE:

Connection Name LINKHOST (**7**)
Link Service SnaDlc1
Remote End **Host system** radio button
Activation **On Demand** radio button
Allowed Directions **Outgoing Calls** check box.

Note: The Link Service Name may be None unless the link was added from the MS SNA setup icon.

For a connection to OS/400:

Connection Name LINKHOST **7**
Link Service SnaD1c1
Remote End **Peer System** radio button
Activation **On Demand** radio button
Allowed Directions **Outgoing Calls** check box.

6 Click on the **Setup** push button.

The 802.2 Setup window opens.

7 Use the following values:

Remote Network Address 400009451902 **8**
Local Node ID 05D 27509 **13** plus **22**
Network Name SPIFNET **1**
Control Point Name NYX **4**

The window would appear as follows:

802.2 Setup

Remote Network Address: 400009451902

Local Node Name

Local Node ID: 05D 27509

Remote Node Name

Network Name: SPIFNET

Control Point Name: NYX

Remote Node ID:

OK
Cancel
Retry Timers
Advanced>>
Help

8 Use the following values:

- For a connection to OS/390, MVS, VM or VSE, use:

Remote Network Address 400009451902 (**8**)
Network Name SPIFNET **1**
Control Point Name NYX **4**

The window would appear as follows:

802.2 Setup

Remote Network Address: 400009451902

Local Node Name: 05D 27509

Remote Node Name: Network Name: SPIFNET, Control Point Name: NYX, Remote Node ID: [] []

Buttons: OK, Cancel, Retry Timers, Advanced>>, Help

- For a connection to OS/400:

Remote Network Address 400009451902 **8**
Local Node ID 05D 27509 **13** plus **22**
Network Name SPIFNET **3**
Control Point Name SYD2101A (the LU name of the AS/400)

In this case, the window would appear as follows:

802.2 Setup

Remote Network Address: 400009451902

Local Node Name: 05D 27509

Remote Node Name: Network Name: SPIFNET, Control Point Name: SYD2101A, Remote Node ID: [] []

Buttons: OK, Cancel, Retry Timers, Advanced>>, Help

- 9 Click on **OK** to save your work and return to the Connection Properties window.
- 10 Click on **OK**.

Setting APPC Remote LU Properties

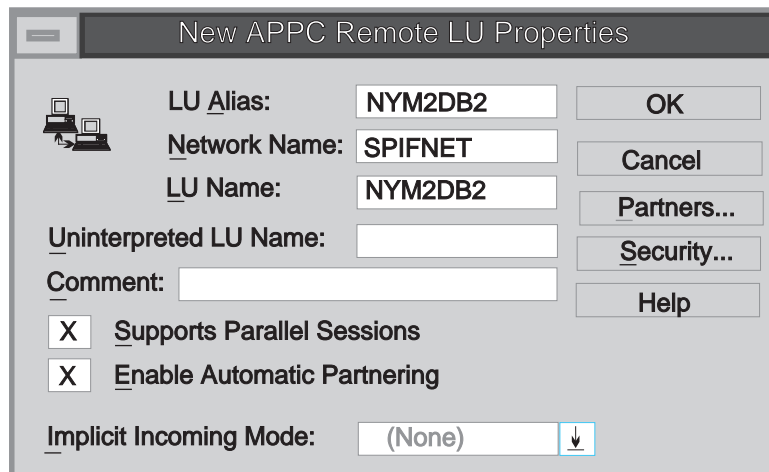
To assign a remote APPC LU to a connection do the following:

- 1 In the Servers and Connections window, select the connection that you want.
- 2 Select **Services->Assign LUs**.
The Insert LU window opens.
- 3 In the Insert LU window, select **APPC Remote**.
- 4 Click on **OK**. The New APPC Remote LU Properties window opens.
- 5 Fill in the values for your system. For example.

LU Alias	NYM2DB2
Network name	SPIFNET 1
Remote LU name	NYM2DB2 2

- 6 Make sure the **Supports Parallel Sessions** and the **Enable Automatic Partnering** check boxes are selected.

The window would appear as follows:



- 7 Click on **OK**.

Setting CPI-C Symbolic Destination Name Properties

To configure the properties for CPI-C, do the following:

- 1 Select **Options->CPI-C**. The Configure CPI-C Names window opens.

- Click on the **Add** push button. The CPI-C Symbolic Destination Name Properties window opens.

- Use the values that you recorded on your worksheet. For example:

Name	DB2CPIC	16
SNA Service TP	07F6C4C2	17
Fully Qualified	SPIFNET.NYM2DB2	1.2
Mode Name	IBMRDB	6

Conversation Security By default, **None** is selected. You will specify the conversation security type later.

- Click on **OK** to save your work and return to the Connection Properties window.
- Click on the **Close** push button to close the Configure CPI-C Names window and return to the Servers and Connections window.

Step 4. Update the DB2 Directories

To configure the DB2 directories, do the following at the DB2 Connect workstation:

- Catalog the DRDA server as an APPC node. The syntax of the command is:

```
catalog appc node node_name remote sym_dest_name security program
```

For example:

```
catalog appc node DB2NODE remote DB2CPIC security program
```

Note: The case of the *sym_dest_name* (DB2CPIC in this example) must match the case of the Symbolic Destination Name in the CPI-C Symbolic Destination Name Properties definition.

- 2 Catalog the remote database as a Data Connection Services (DCS) database. The syntax of the command is:

```
catalog dcs db local_dbname as real_host_dbname
```

For example:

```
catalog dcs db NYC3 as NEW_YORK3
```

- 3 Catalog a Database alias for the remote database. The syntax of the command is:

```
catalog db local_dbname as Db_alias at node node_name authentication dcs
```

For example:

```
catalog db DB2DB as NYC3 at node DB2NODE authentication dcs
```

In the DB2 commands above:

- *node_name* can be any valid eight-character name
- *sym_dest_name* is the name of your Side Information Profile (**16**).
- *local_dbname* can be any valid eight-character name
- *Db_alias* can be any valid eight-character name
- *real_host_dbname* is the name of the database you want to connect to at the DRDA server (**5**).

Step 5. Test the Connection

Issue the following command from the command line processor window at the DB2 Connect server, remembering to substitute your *Db_alias* value from the previous step:

```
connect to Db_alias user userid using password
```

For example:

```
connect to nyc3 user userid using password
```

The user ID and password values required are those defined at the host or AS/400, and must be provided to you by your DB2 Administrator.

Step 6. Bind the Utilities and Applications

The steps you have just completed set up the DB2 Connect workstation to communicate with the host. You must now bind the utilities and applications to the DRDA server.

To bind the utilities and applications to the DRDA server, connect to the DRDA server and use commands similar to the following:

```
connect to dbalias user userid using password
bind path@ddcsmvs.lst blocking all sqlerror continue
      messages mvs.msg grant public
connect reset
```

These commands are described in detail in the *DB2 Connect User's Guide*.



To install remote clients, see Chapter 26, "Installing DB2 Clients" on page 243.

Chapter 17. Configuring Microsoft SNA Client

Read this chapter if you have a Windows NT or Windows 95 workstation that has DB2 Connect installed. This chapter provides step-by-step instructions for setting up the communications between your DB2 Connect workstation and a Windows NT workstation that has Microsoft SNA Server V2.11 (or later) installed.

Figure 11 on page 142 illustrates the example DB2 Connect Server scenario.

Assumptions

The rest of this chapter assumes:

- 1** The Microsoft SNA Server has already been configured for APPC communications with the host, and is enabled for ODBC and DRDA. Refer to the Microsoft SNA Server documentation for further information.
- 2** Microsoft SNA Client Version 2.11 is not already installed on your DB2 Connect workstation.

Step 1. Obtain Required Information

For your Microsoft SNA client software to function properly you must have access to a properly-configured Microsoft SNA Server. Request that your SNA Server administrator:

- 1** Obtain the proper license for you to use Microsoft SNA Client on your workstation.
- 2** Define a user ID for you on the SNA Server domain.
- 3** Define connections to the host and AS/400 databases that you need to access, as described in Chapter 16, "Configuring Microsoft SNA Server for DB2 Connect for Windows NT" on page 125.
- 4** Provide you with the symbolic destination name to use for each database connection defined in the previous step.

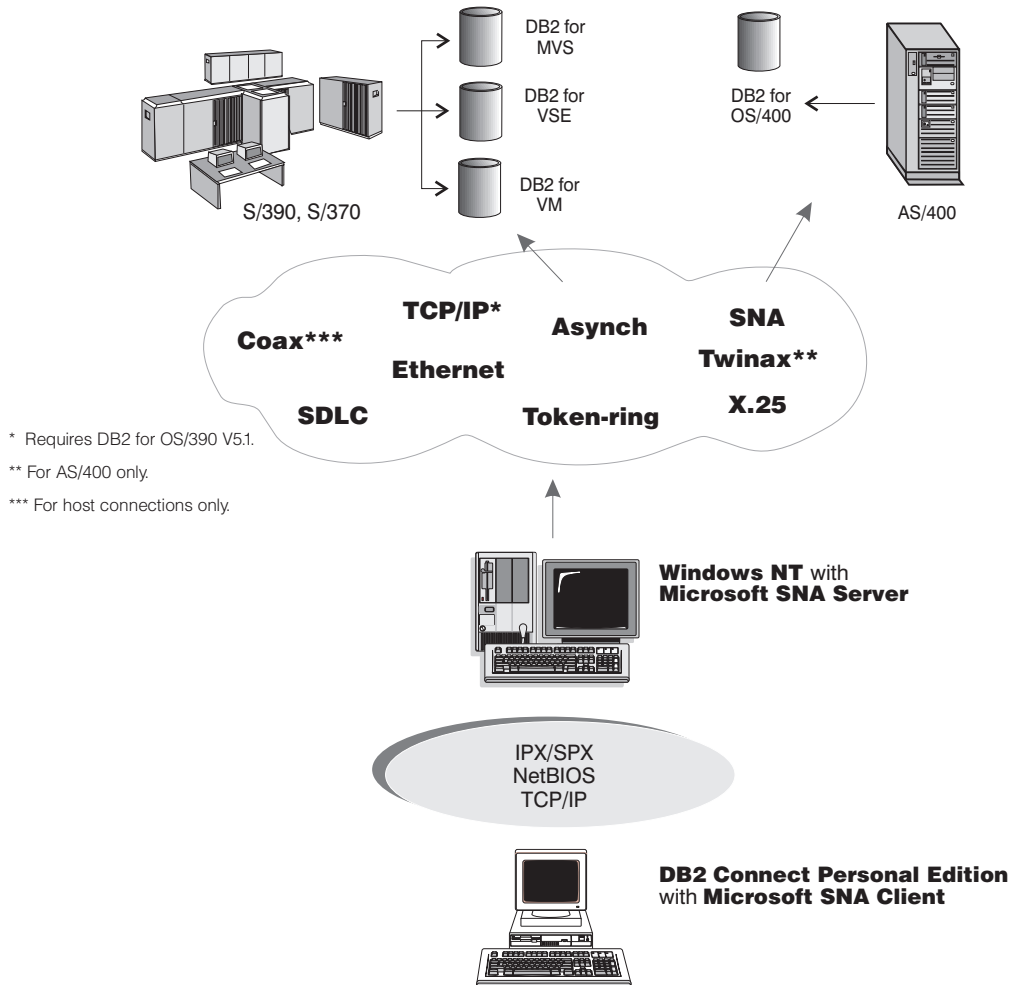


Figure 11. DB2 Connect Server Scenario Using DB2 Connect, MS SNA Client, and MS SNA Server

If you plan to change host passwords, the SNA administrator will also need to provide you with symbolic destination names for password management tasks on each host. See Chapter 10, “Changing Your MVS Password” on page 77 for more information on changing host passwords.

Your host or AS/400 database administrator will need to:

- 1 Define a user ID and password on the host or AS/400 security system for you to use.
- 2 Make sure that your user ID is granted proper access to database objects that you will be working with.
- 3 Provide you with the database name:

Location name	on DB2/MVS or DB2 for OS/390
RDB	on AS/400
DBNAME	on DB2 for VM/VSE (SQL/DS)

Step 2. Install SNA Client on the DB2 Connect Workstation

- 1** Obtain the Microsoft SNA Client software, and follow the instructions provided with it to start the installation program. For example, if you are installing from a Microsoft SNA Server V2.11 CD-ROM, you will need to execute `setup.exe` in the `sna/clients/win3x` subdirectory to install on a Windows 3.1 or Windows for Workgroups 3.11 workstation.
- 2** Follow the instructions on the screen to complete the installation. Choose your SNA Server domain name and communication protocol according to the instructions provided by your SNA Server administrator.
- 3** When you reach the *Optional Components* panel deselect *Install ODBC/DRDA driver* so that it will *not* be installed.

Step 3. Install DB2 Connect for Windows

- 1** Install DB2 Connect Personal Edition, *without* selecting *DB2 Connect Integrated SNA Support*.
- 2** When the installation is completed, reboot.
- 3** Open the DB2 Folder, and click on the **Client Configuration Assistant** to start the configuration dialog.
- 4** You need to provide the following information:
 - a** The Symbolic Destination Name defined at the Microsoft SNA Server for the Partner LU of the target DRDA host. This is **7** on the example worksheet for this configuration (Table 16 on page 144), and **24** on the worksheet provided for use with SNA Server (Table 15 on page 126).
 - b** The real database name, for example the DB2 for OS/390 or DB2 for MVS/ESA "LOCATION NAME." This is **12** on both worksheets.

Table 16. Example Worksheet for Microsoft SNA Client Users			
No.	Description	Sample Value	Your Value
User Information			
1	User Name	A.D.B.User	
2	Contact Info	(123)-456-7890	
	Location		
MS SNA Server Information (provided by SNA Server administrator)			
3	MS SNA Server domain name	ACCOUNTS	
4	Protocol used for communicating with SNA Server (TCP/IP, NetBEUI, IPX/SPX)	NetBEUI	
5	User ID used to login to the MS SNA Server domain	ADBUSER	
6	Password used to login to the MS SNA Server domain	XXXXXXX	
7	Database CPI-C symbolic destination name (defined to MS SNA Server).	DB2CPIC	
8	Password management CPI-C symbolic destination name	DB2PEM	
Database Information (provided by host or AS/400 administrator)			
9	Alias	NYC3	
10	Description	New York DB #3	
11	Database Type	DB2 for MVS/ESA or DB2 for OS/390	
12	Host database name	NEW_YORK3	
13	User ID assigned to you on your host or AS/400 system	ADBUSER	
14	Password to be used to connect to your host or AS/400 system	XXXXXXXX	

Update the DB2 Directories

To configure the DB2 directories, enter the following commands in the command line processor:

- 1 Catalog the DRDA server as an APPC node. The syntax of the command is:
`catalog appc node node_name remote sym_dest_name security program`

For example:

```
catalog appc node DB2NODE remote DB2CPIC security program
```

Note: The case of the *sym_dest_name* (DB2CPIC in this example) must match the case of the Symbolic Destination Name that you defined when you installed MS Client.

- 2** Catalog the remote database as a Data Connection Services (DCS) database. The syntax of the command is:

```
catalog dcs db local_dbname as real_host_dbname
```

For example:

```
catalog dcs db NYC3 as NEW_YORK3
```

- 3** Catalog a Database alias for the remote database. The syntax of the command is:

```
catalog db local_dbname as Db_alias at node node_name authentication dcs
```

For example:

```
catalog db DB2DB as NYC3 at node DB2NODE authentication dcs
```

In the DB2 commands above:

- *node_name* can be any valid eight-character name
- *sym_dest_name* is the name of your Side Information Profile.
- *local_dbname* can be any valid eight-character name
- *Db_alias* can be any valid eight-character name
- *real_host_dbname* is the name of the database you want to connect to at the DRDA server.

Test the Connection

Issue the following command from the command line processor window, remembering to substitute your *Db_alias* value from the previous step:

```
connect to Db_alias user userid using password
```

For example:

```
connect to nyc3 user userid using password
```

The user ID and password values required are those defined at the host or AS/400, and must be provided to you by your DB2 Administrator.

Chapter 18. Configuring SNA Server for DB2 Connect for AIX

This chapter describes how you configure your DB2 Connect for AIX workstation to connect to DRDA hosts using IBM SNA Server for AIX. Note that the examples in this chapter use a Token Ring network and IBM SNA Server for AIX Version 3.1.

For more information about SNA Server for AIX, refer to the *IBM SNA Server for AIX User's Guide*.

Step 1. Fill in the Worksheet

Before you configure the DB2 Connect workstation, have your host-side administrator and LAN administrator fill in copies of the worksheets that follow for each host to which you want to connect:

- For OS/390, MVS, VM, and VSE hosts, use Table 17 on page 149
- For AS/400, use Table 46 on page 468.

To help you fill in the worksheets, Figure 12 illustrates a sample network that has DB2 Connect system and uses APPC to connect to DB2 for OS/390. The values shown in this diagram correspond to the *Sample Value* entries in the worksheet.

After you fill in the *Your Value* entries, you can use the worksheet to configure DB2 Connect. During the configuration process, replace the sample values that appear in the configuration instructions with your values from the worksheet. Use the boxed numbers **1** to relate the configuration instructions to the worksheet values.

In the configuration instructions, the ***** symbol denotes entries that need to be changed but do not have a representation on the worksheet.

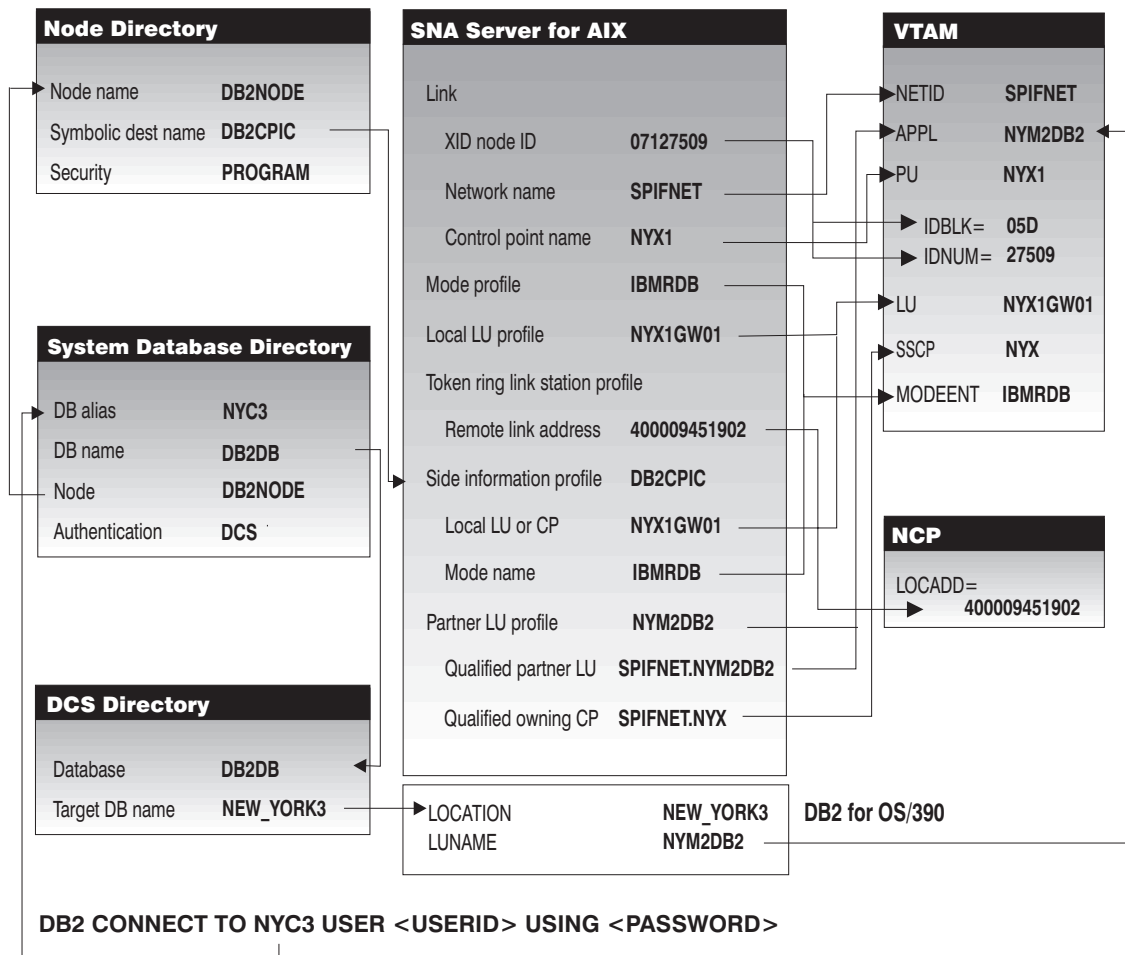


Figure 12. Configuration on the DRDA Server and DB2 Connect for AIX

Table 17. Example Worksheet for Planning APPC Host Connections from SNA Server for AIX

Ref.	Description	VTAM Name	Sample Value	Your Value
Network Elements at the Host				
1	Network name		SPIFNET	
2	Remote partner LU name		NYM2DB2	
3	Network name of adjacent node		SPIFNET	
4	Control point name of adjacent (partner) node		NYX	
5	Target database name		NEW_YORK3	
6	Mode Name		IBMRDB	
Network Connection Information				
7	Link station profile name		NYX1LS	
8	Remote link address		400009451902	
9	DLC profile name		tok0.00001	
Network Elements at the DB2 Connect for AIX Workstation				
10	Network name	NETID	SPIFNET	
11	Local CP name	PU	NYX1	
12	Local LU name (to be used by DB2 Connect)		NYX1GW01	
13	Local LU alias	LU	NYX1GW01	
14	XID node id	ID BLK	071	
15		ID NUM	27509	
16	Mode name	MODEENT	IBMRDB	
17	Symbolic Destination name		DB2CPIC	
18	Remote Transaction program (TP) name		X'07F6C4C2' (default), DB2DRDA for MVS or OS/390, or RDB_NAME for VM and VSE.	
DB2 Directory Entries (at the DB2 Connect workstation)				
19	Node name		db2node	
20	Security		Program	
21	Database name		db2db	
22	Database alias		nyc3	
27	TPNAME		nyserver	

Notes:

1. *Partner CP Name* (**4**) is the System Services Control Point (SSCP) name for OS/390, MVS, VM, and VSE. For AS/400 it is the CP name of the AS/400.
2. *Target database name* (**5**) is the DB2 for MVS/ESA *LOCATION NAME*, the DB2 for AS/400 RDB name, or the *RDB_NAME* for DB2 for VSE & VM.
3. If you use a Syncpoint Manager, the Local LU (NYX1GW01) should be the LU used for the SPM. In this case, that LU cannot also be the Control Point LU.

Completing the Worksheet

Fill in a copy of the primary worksheet for each AS/400, OS/390, MVS, VM, or VSE connection that you want to set up. Note the following:

- 1 XID node ID is the concatenation of the IDBLK and IDNUM values for the DB2 Connect for AIX workstation (**14**) and (**15**). For an OS/400 connection, write an asterisk (*) at (**14**). This value means that you will use the default XID.
- 2 The network name at the host (**1**) may be the same as that at the DB2 Connect for AIX workstation (**10**); check with your network administrator.
- 3 The Control Point name of the DB2 Connect workstation (**11**) is usually the same as the PU name. You can find the control point name of your DB2 Connect workstation by entering **smit** and selecting panels in the following order:
 - a Communications Applications and Services
 - b SNA Server for AIX
 - c Configure SNA Profiles
 - d Advanced Configuration
 - e Control Point
 - f Change/Show a Profile.
- 4 The Control Point name for the host (**4**) is the System Services Control Point (SSCP) name for an OS/390, MVS, VM, or VSE system, or the Local Control Point name for an AS/400 system (see “Preparing DB2 for AS/400 for DB2 Connect” on page 467 and Table 46 on page 468).
- 5 The same mode name should be used at both the host and the DB2 Connect (see **6** and **16**).
- 6 For Local LU alias (**13**), use the same name as the Local LU name (**12**). This helps to avoid confusion.
- 7 For Link station profile name (**7**), choose a value.
- 8 For Remote link address (**8**), provide the controller address or the adapter address for the host.
- 9 For Symbolic destination name (**17**) choose a suitable value. Note that this value is case sensitive.
- 10 For Partner LU name (**2**), for OS/390, MVS, VM, or VSE, this is the VTAM application name (APPL) defined to the host database server. For OS/400, it is the Local Control Point name.
- 11 For Remote transaction program (**18**), The default is X'07F6C4C2' for OS/390, MVS, and OS/400, and the *RDB_NAME* (real database name) for VSE and VM.
- 12 The target database name (**5**) is the *LOCATION NAME* for DB2 for OS/390 or DB2 for MVS/ESA, the *RDB_NAME* for DB2 for VM or the relational database name for DB2 for AS/400.

Step 2. Configure Your DB2 Connect System

Configure your DB2 Connect for AIX system as follows:

- 1 Log on to the AIX machine as *root*.
- 2 On the command line, enter:

```
smit
```
- 3 Select panels in the following order:
 - a Communications Applications and Services
 - b SNA Server/6000
 - c Configure SNA Profiles
 - d Advanced Configuration.

The next several steps begin from the Advanced Configuration panel.

- 4 Update the Control Point Profile as follows:
 - a Select the Control Point panel.
 - b Select the Change/Show a Profile panel.
 - c Between the square brackets [], enter the value of the XID node ID (combine the values for **14** (ID NUM plus IDBLK) plus **15** (Network name), or specify [*].

The control point name was probably set when the SNA Server for AIX was installed. For OS/390, MVS, VSE, and VM, check that this value matches **11**.

To minimize confusion, use the same value for the control point alias as for the control point name.

For example, the panel could look like this:

Change / Show Control Point Profile

```
*Profile name           node_cp
XID node ID             [07127509]
Network name            [SPIFNET]
Control Point (CP) name [NYX1]
Control Point alias     [NYX1]
Control Point type      appn_end_node
Maximum number of cached routing trees [500]
Maximum number of nodes in the TRS database [500]
Route addition resistance [128]
```

14 + **15**
10
11
12

- 5 Check the Token Ring SNA DLC Profile as follows:
 - a Select the Links panel.

- b** Select the Token Ring panel.
- c** Select the Token Ring SNA DLC panel.
- d** Select the Change/Show a Profile panel.
- e** The profile name and data link device name were probably set when SNA Server for AIX was installed. If you have a reason to change these values, you can do so. If no values appear in the profile, talk to your LAN administrator.

Write down the profile name **9**.

For example, the profile might look like this:

Add Token Ring SNA DLC Profile

*Profile name	[tok0.00001]	9
Data link device name	[tok0]	
Force disconnect time-out (1-600 seconds)	[120]	
User-defined maximum I-Field size?	no	
If yes, Max. I-Field size (265-30729)	[30729]	

- f** If you will use APPC for connections from remote clients, make sure that the profile has the following value:

Dynamic link stations supported?	yes
----------------------------------	-----

6 Create a Mode Profile as follows:

- a** Select the Sessions panel.
- b** Select the LU 6.2 panel.
- c** Select the LU 6.2 Mode panel.
- d** Select the Add a Profile panel.
- e** Define your mode profile. For profile name and mode name, use the value that you wrote in item **16** of the worksheet. On the other lines, specify values that match the mode profile defined on your DRDA server systems. If you are using the mode IBMRDB, specify the following values:

*Profile name	[IBMRDB]	16
Mode name	[IBMRDB]	16
Maximum number of sessions (1-5000)	[30]	*
Minimum contention winners (0-5000)	[15]	*
Minimum contention losers (0-5000)	[15]	*
Auto activate limit (0-500)	[0]	
Upper bound for adaptive receive pacing window	[16]	
Receive pacing window (0-63)	[8]	*
Maximum RU size (128,...,32768: multiples of 32)	[4096]	*
Minimum RU size (128,...,32768: multiples of 32)	[1024]	*
Class of Service (COS) name	[#CONNECT]	

- 7** If the DB2 Connect workstation is defined as an LU, update the Local LU Profile as follows. In most cases, a VTAM administrator on OS/390, MVS, VSE, or VM

would define an LU for DB2 Connect for AIX. For OS/400, control point routing would normally be used instead of an LU. Create a Local LU profile as follow:

- a Select the Sessions panel.
- b Select the LU 6.2 panel.
- c Select the LU 6.2 Local LU panel.
- d Select the Add a Profile panel.
- e Update the three lines with the following values: Use **12** for the first two lines, and **13** for the third line. For example, the file could look like this:

Add LU 6.2 Local LU Profile

```

*Profile name                [NYX1GW01]    12
Local LU name                [NYX1GW01]    12
Local LU alias               [NYX1GW01]    13
Local LU is dependent?      no
If yes,
  Local LU address (1-255)   []
  System services control point
  (SSCP) ID (*, 0-65535)    [*]
  Link Station Profile name  []
  Conversation Security Access List Profile name []

```

Configuring Each Server Connection

Before using this section, be sure that you have completed the worksheet Table 17 on page 149 for each OS/400, OS/390, MVS, VM, or VSE host, plus the worksheet Table 46 on page 468 for each OS/400 host.

Configure each DRDA server connection that you require as follows:

- 1 Update the Token Ring Link Station Profile as follows:

- a Select the Links panel.
- b Select the Token Ring panel.
- c Select the Token Ring Link Station panel.
- d Select the Add a Profile panel.
- e Update the profile, as follows:

- Change the profile name to the value for **7**. For example:

```

*Profile name                [NYX1LS]    7
Use Control Point's XID node ID?  yes

```

- Change the SNA DLC profile name to the value for **9**. For example:

```

SNA DLC Profile name         [tok0.00001] 9
Stop link station on inactivity? no

```

- Change the remote link address to the value for **8**. For example:

```

If link_address,
Remote link address          [400009451902] 8
Remote SAP address (04-ec)  [04]

```

- If you want to activate the link only when it is needed (rather than activating it when the SNA starts up), update several lines of the profile, as follows:

```

Adjacent Node Identification Parameters
Verify adjacent node?          yes          *
Network ID of adjacent node    SPIFNET   3
CP name of adjacent node       NYX       4
XID node ID of adjacent node (LEN node only) [*]
Node type of adjacent node     appn_end_node *

```

```

Link Activation Parameters
Solicit SSCP sessions?        yes
Initiate call when link station is activated? yes
Activate link station at SNA start up? no          *
Activate on demand?          yes          *
CP-CP sessions supported?    yes
If yes,
  Adjacent network node preferred server? no
  Partner required to support CP-CP sessions? no
  Initial TG number (0-20)    [1]          *

```

2 Update the LU 6.2 Side Information Profile as follows:

- a Select the Sessions panel.
- b Select the LU 6.2 panel.
- c Select the LU 6.2 Side Information panel.
- d Select the Add a Profile panel.
- e Update the profile, as follows:
 - For the profile name, use the value for **17**. This value is case-sensitive; it is recommended that you use uppercase letters.
 - For the local LU or control point alias, use the value for **12**.
 - For the fully qualified partner LU name, use the value for **1** followed by a period and the value for **2**.
 - For the mode name, use the value for **6**.
 - For the next two lines, specify the remote transaction program name. You must specify a value. There is no default value in SNA Server for AIX. On the DRDA server, the default for OS/390, MVS, or OS/400 is X'07F6C4C2'. For VM or VSE the default is the *RDB_NAME*.
Use the value from **18** on the worksheet, or enter the default value. If the value is hexadecimal, specify yes for the second line; otherwise, specify no.

For example, the file could look like this:

Add LU 6.2 Side Information Profile

*Profile name	[DB2CPIC]	17
Local LU or Control Point alias	[NYX1GW01]	12
Provide only one of the following:		
Partner LU alias		
Fully qualified partner LU name	[SPIFNET.NYM2DB2]	1.2
Mode name	[IBMRDB]	6
Remote transaction program name (RTPN)	[07F6C4C2]	18
RTPN in hexadecimal?	yes	

Note that if you are retrieving information about this server from the DCE Directory, then you do not need to have the Side Information Profile. More information about configuring DB2 Connect with DCE is provided in the *Administration Guide*, and *DB2 Connect User's Guide*.

3 Update the Partner LU 6.2 Location Profile as follows:

- a Select the Sessions panel.
- b Select the LU 6.2 panel.
- c Select the Partner LU 6.2 Location panel.
- d Select the Add a Profile panel.
- e Update the profile, as follows:
 - For the profile name, use the value for **2**.
 - For the fully qualified partner LU name, use the value for **1** followed by a period and the value for **2**.
 - For the fully qualified CP name, use the value for **3** followed by a period and the value for **4**.

For example, the file could look like this:

Add Partner LU 6.2 Location Profile

*Profile name	[NYM2DB2]	2
Fully qualified partner LU name	[SPIFNET.NYM2DB2]	1.2
Partner LU location method	owning_cp	
If owning_cp,		
Fully qualified owning Control Point (CP) name	[SPIFNET.NYX]	3.4
Local node is network server for LEN node?	no	

Configuring DB2 Connect for Remote Clients

Configure your DB2 Connect server to accept inbound APPC requests from remote clients as follows:

- 1 Select the Sessions panel.
- 2 Select the LU 6.2 panel.
- 3 Select the LU 6.2 Transaction Program Name (TPN) panel.

- 4 Select the Add a Profile panel.
- 5 Add the following profile, replacing NYSERVER with the TP name for your DB2 server.

```

*Profile name                [db2v5] *
Transaction program name (TPN) [NYSERVER] 27
Transaction program name (TPN) is in hexadecimal? no
PIP data?                    no
    If yes, Subfields (0-99)   [0]
Conversation type             basic *
Sync level                    none/confirm
Resource security level       none
    If access, Resource Security Access List Prof. []
Full path to TP executable    [INSTHOME/sql1lib/bin/db2acntp] *
Multiple instances supported? yes *
User ID                       [1918] *
Server synonym name           []
Restart action                 once
Communication type             signals
    If IPC, Communication IPC queue key [0]
Standard input file/device     [/dev/console]
Standard output file/device    [/dev/console]
Standard error file/device     [/dev/console]

Comments                       []

```

Notes:

- a. This profile will be used for both database connections and interrupts by DB2 Universal Database Version 5 and Version 2.1 clients.
 - b. If you are migrating from a previous release of DB2 Connect, you should be aware that the **db2acntp**, **db2aittp** and **db2cnsm** executables have been consolidated into the **db2acntp** executable.
- 6 Create any additional APPC partner LU and link profiles that may be required.
 - 7 Ensure the clients are also properly configured.
 - 8 Use SNA Server functions, without using DB2 Connect, in order to validate that all the APPC sessions that you need to establish can be.
 - 9 Configure the database manager. You must add the TP name that will be used by the client. to the database manager configuration file. One way to do this is to issue the following CLP command:


```
update database manager configuration using tpname NYSERVER
```

 The name **NYSERVER** is the TP name for the DB2 server.
 - 10 Stop the database manager, if it is running:


```
db2stop
```
 - 11 Set the value of the DB2COMM environment variable to include the string **APPC**.

- 12 Start the database manager:

```
db2start
```

Step 3. Complete the Configuration

When you have configured all of your server connections, do the following on the DB2 Connect for AIX workstation:

- 1 Confirm that the `db2comm` environment variable includes `APPC`. Enter:

```
db2set db2comm
```

If `APPC` is not set, set it using a command similar to the following:

```
db2set db2comm=appc -g
```

For more details on this command, refer to Chapter 39, “Controlling Your DB2 Environment” on page 357.

- 2 If your token ring has never before been used for SNA, issue the following command:

```
mkdev -c dlc -s dlc -t tokenring
```

- 3 Choose the Verify SNA Configuration Profiles panel. This checks that all of the required profiles exist on your system and that the information in them does not conflict. You should repeat this step any time you change your configuration, even if you only update one profile.

Verification can take several minutes. For each error message that you receive, correct the error. When you have corrected all the errors, redo the verification. The verification program does not guarantee that your network parameters are accurate. It verifies only parameters that can be checked within the local system.

- 4 Stop and start SNA Server for AIX. You can use `smrit` or issue the following commands:

```
sna -stop sna
sna -start
```

- 5 Update the node directory, system database directory, and DCS directory. Enter the following commands in the command line processor, replacing the text in italics with your values from the worksheet:

```
catalog appc node db2node remote DB2CPIC security program
db2 catalog database db2db as nyc3 at node db2node authentication dcs
db2 catalog dcs database db2db as new_york3
```

Refer to the worksheet for:

- The node name, worksheet item **19**, example value *db2node*

- The symbolic destination name, worksheet item **17**, example value *DB2CPIC*
 - The database name, worksheet item **21**, example value *db2db*
 - The security type, worksheet item **20**, example value *Program*
 - The database alias, worksheet item **22**, example value *nyc3*.
 - The target database name, worksheet item **5**, example value *new_york3*
- 6** Connect to the DRDA Server and bind the utilities and applications to the DRDA server using commands similar to the following:

```
connect to dbalias user userid using password
bind path@ddcsmvs.lst blocking all
      sqlerror continue messages mvs.msg grant public
connect reset
```

For further information, refer to the online *DB2 Connect User's Guide*.



To install remote clients, see Chapter 26, "Installing DB2 Clients" on page 243.

APPC Security Considerations for Connections from Clients

SNA Server should be configured appropriately to accept the type of APPC security requested by the client. The APPC security type may be one of the following:

- NONE
- PROGRAM
- SAME

The following section provides some guidance and examples of how to configure the SNA subsystem at the server to handle each of the security types requested by the client. See your SNA Server documentation for more detailed information on configuring APPC security.

Configuring for APPC Security Type NONE

Do the following:

- LU 6.2 TPN Profile

For the LU 6.2 TPN Profile that you are using, set the “Resource security level” to **none**.

- LU 6.2 Partner LU Profile

When configuring for APPC security type NONE, you do not need to define an LU 6.2 Partner LU Profile.

If you have a specific LU 6.2 Partner LU Profile defined for the client partner LU; in that profile, set the “Conversation security level” to **none**.

Configuring for APPC Security Type PROGRAM

Do the following:

- LU 6.2 TPN Profile

For the LU 6.2 TPN Profile that you are using, set the “Resource security level” to **conversation**. The system will check that the username and password are a valid AIX login username and password.

Note: You can also set the “Resource security level” to **access**. If so, the system will check that the username and password are a valid AIX login username and password, and if a Resource Security Access List Profile is also specified in the LU 6.2 TPN Profile, the system will also check that the username is contained in the specified resource security access list.

- LU 6.2 Partner LU Profile

When configuring for APPC security type PROGRAM, you do not need to define an LU 6.2 Partner LU Profile.

If you have a specific LU 6.2 Partner LU Profile defined for the client partner LU; in that profile, set the “Conversation security level” to **conversation**.

Configuring for APPC Security Type SAME

Do the following:

- LU 6.2 TPN Profile

For the LU 6.2 TPN Profile that you are using, set the “Resource security level” to **conversation**.

Note: You can also set the “Resource security level” to **access**. If so, the system will check that the username is a valid AIX login username, and if a Resource Security Access List Profile is also specified in the LU 6.2 TPN Profile, the system will also check that the username is contained in the specified resource security access list.

- LU 6.2 Partner LU Profile

When configuring for APPC security type SAME, you must create a specific LU 6.2 Partner LU Profile for the client partner LU, and in that profile you must set "Conversation security level" to **already_verified**.



If you specify a "Conversation security level" of **already_verified** in the LU 6.2 Partner LU Profile, SNA Server will actually accept both APPC security type SAME and APPC security type PROGRAM from remote clients.

Chapter 19. Configuring Bull SNA for DB2 Connect for AIX

If Bull DPX/20 SNA/20 Server is installed prior to installing DB2 Connect for AIX, DB2 Connect for AIX uses Bull SNA. Otherwise, you need to configure DB2 Connect to work with IBM SNA Server for AIX.

To determine if Bull SNA is installed on your AIX 4.1.4 (or later) system, issue the command:

```
lslpp -l express.exsrv+dsk
```

If Bull SNA is installed, you will see output similar to the following:

Fileset	Level	State	Description

Path: /usr/lib/objrepos			
express.exsrv+dsk	2.1.3.0	COMMITTED	EXPRESS SNA Server and Integrated Desktop

If you install Bull SNA after installing DB2 Connect for AIX and you want DB2 Connect for AIX to use Bull SNA instead of IBM SNA Server for AIX, log on as root and run the command:

```
/usr/lpp/db2_05_00/cfg/db2cfgos
```

Example Bull SNA Configuration

If you want to install the Bull DPX/20 SNA/20 Server, then you must have the following software:

- AIX V4.1.4
- Express SNA Server V2.1.3

You will also need the Bull DPX/20 SNA/20 Server Configuration Guide.

Note: DB2 Connect for AIX, when used with the Bull SNA server, cannot have inbound APPC connections from remote clients. The only APPC connections it can have are outbound APPC connections to the host.

Configuring the Bull DPX/20 SNA/20 Server

The following is a sample configuration:

	Client	Controller	Server (MVS)
	-----	-----	-----
Host name	robocop		
LU 6.2 name	SPIFNET.NYX1GW01	NYX	NYM2DB2

Use the command *express* to configure the following:

Config	Express	Default configuration for EXPRESS
Node	NYX1	SPIFNET.NYX1 (HOSTNAME=ROBOCOP)
Indep. LUs	6.2 LUs Using All	Stations
LU	NYX1	Control Point LU
Link	tok0.00001	Link (tok0)
Station	MVS	To MVS from ROBOCOP
LU	NYX1GW01	To MVS from ROBOCOP
LU Pair	NYM2DB2	To MVS from ROBOCOP
Mode	IBMRDB	IBMRDB

Use default values for fields not listed.


```

Defining hardware:

System (hostname) = robocop
Adapter and Port = robocop.tok0
MAC Address      = 400011529778

Defining SNA node:

Name             = NYX1
Description      = SPIFNET.NYX1 (HOSTNAME=ROBOCOP)
Network ID       = SPIFNET
Control Point    = NYX1
XID Block        = 05D
XID ID           = 29778

Defining token ring link:

Name             = tok0.00001
Description      = Link (tok0)
Connection Network name
Network ID       = SPIFNET
Control Point    = NYX

Defining token ring station:

Name             = MVS
Description      = To MVS from ROBOCOP
Remote MAC address = 400009451902
Remote Node name
Network ID       = SPIFNET
Control Point    = NYX

Defining Local LU 6.2:

Name             = NYX1GW01
Description      = To MVS from ROBOCOP
Network ID       = SPIFNET
LU name          = NYX1GW01

Defining Remote LU 6.2:

Name             = NYM2DB2
Description      = To MVS from ROBOCOP
Network ID       = SPIFNET
LU name          = NYM2DB2
Remote Network ID = SPIFNET
Remote Control Point = NYX
Uninterpreted Name = NYM2DB2

Defining Mode:

Name             = IBMRDB
Description      = IBMRDB
Class of service = #CONNECT

Defining Symbolic Destination Info:

Name             = DB2CPIC
Description      = To MVS from ROBOCOP
Partner LU       = SPIFNET.NYM2DB2
Mode             = IBMRDB
Local LU         = NYX1GW01
Partner TP       = DB2DRDA

```

Figure 13. Sample Bull DPX/20 SNA/20 Configuration

Starting and Stopping SNA/20

The following commands are reproduced from the Bull DPX/20 SNA/20 Administrator's Guide for your convenience:

1. Log on the system as superuser (root)
2. Make sure your PATH contains \$express/bin (/usr/lpp/express/bin)
3. Start EXPRESS by typing:
`express_admin start`
4. To immediately stop all EXPRESS activity:
`express_admin stop`
5. To check for active users before stopping:
`express_admin shutdown`

Chapter 20. Configuring SNAPlus for DB2 Connect for HP-UX

This chapter describes how to configure your DB2 Connect for HP-UX workstation to connect to DRDA servers using APPC. Products that work with DB2 Connect for HP-UX include:

- HP-UX CICS Version 1.4 (A.01.35)
- Encina Version 1.2 (A.02.20).

Before you begin, ensure that your workstation has HP-UX SNAplus installed. Note that in the examples in this chapter, a Token Ring network is used as the communications medium.

If you need further information in order to set up your environment, refer to:

- *HP-UX SNA products Remote System Configuration Guide*
- *HP-UX SNAplusLink Administrator's Guide*
- *HP-UX SNAplus Installation Guide*
- *HP-UX SNAplus Diagnostics Guide*

Configuring Your DRDA Servers

Before you configure the DB2 Connect workstation, have your host-side administrator and LAN administrator fill in copies of the worksheets that follow for each host to which you want to connect:

- For OS/390, MVS, VM, and VSE hosts, use Table 18 on page 168
- For AS/400, use Table 46 on page 468.

To help you fill in the worksheets, Figure 14 illustrates a sample network that has DB2 Connect system and uses APPC to connect to DB2 for OS/390. The values shown in this diagram correspond to the *Sample Value* entries in the worksheet.

After you fill in the *Your Value* entries, you can use the worksheet to configure DB2 Connect. During the configuration process, replace the sample values that appear in the configuration instructions with your values from the worksheet. Use the boxed numbers **1** to relate the configuration instructions to the worksheet values.

In the configuration instructions, the ***** symbol denotes entries that need to be changed but do not have a representation on the worksheet.

Sample Network Scenario

Figure 14 illustrates a sample network scenario involving DB2 Connect for HP-UX with an APPC connection between HP SNAplus and DB2 for OS/390 or DB2 for MVS/ESA. The diagram shows the correspondences between information specified on the DRDA server system, information specified in DB2 Connect for HP-UX configuration files, and information specified in the DB2 node, database, and data connection services directories. The values used in this diagram correspond to the examples shown in Table 18 on page 168.

DB2 Connect For HP-UX Correlations

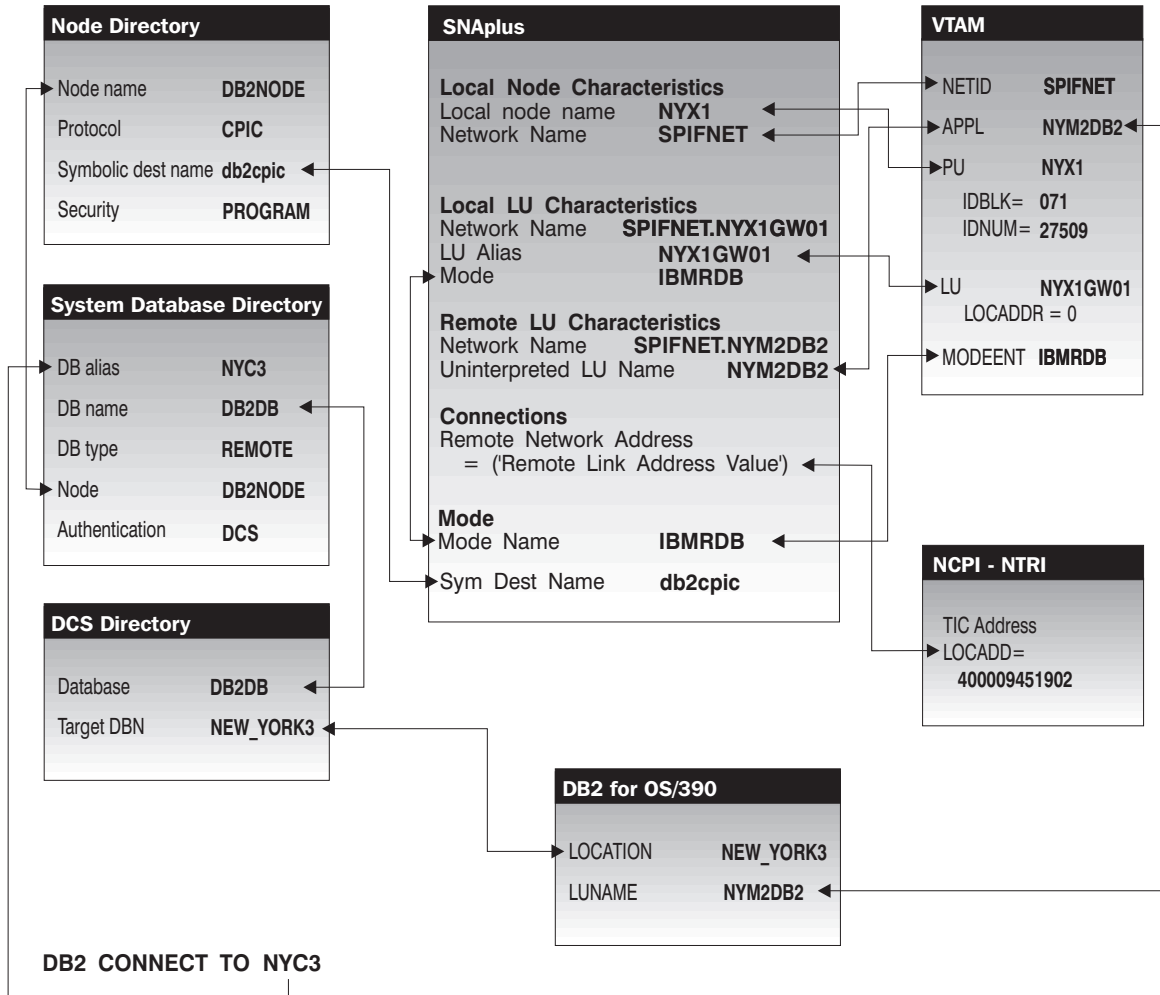


Figure 14. Configuration on the DRDA Server and DB2 Connect for HP-UX

Example Worksheets

Table 18. Worksheet for Planning OS/390, MVS, VM, or VSE Host Connections

Ref.	SNAPLUS Name	VTAM Name	Sample Value	Your Value
Network Elements at the Host				
1	Host Name	Network name	SPIFNET	
2	Partner LU Name	Application Name	NYM2DB2	
3	Network ID		SPIFNET	
4	Partner Node Name	SSCP Name	NYX	
5	Database name	OS/390 or MVS: Location Name VM/VSE: RDB_Name	NEW_YORK3	
6	Mode Name		IBMRDB	
Network Connection Information				
7	Connection name (Link name)	LINKHOST		
8	LAN destination address		400009451902	
Network Elements at the DB2 Connect Workstation				
9	Network ID or C&SM LAN ID		SPIFNET	
10	Local Node name or Local PU Name		NYX1	
11	(Local) LU name		NYX1GW01	
12	(Local LU) alias		NYX1GW01	
13	Local Node or Node ID	ID BLK	05D	
14		ID NUM	27509	
15	Mode name		IBMRDB	
16	Symbolic Destination name		DB2CPIC	
17	(Remote) Transaction program (TP) name		X'07F6C4C2' (or RDB_NAME for DB2 for VSE & VM) (or DB2DRDA for DB2 for OS/390 or DB2 for MVS)	
DB2 Directory Entries (at the DB2 Connect workstation)				
18	Node name		db2node	
19	Security		program	
20	Database name		db2db	
21	Database alias		nyc3	

Note: For a connection to an OS/390, MVS, VSE, or VM system, you must know the local node name of your machine. You can find this by reviewing the Local Node Characteristics specification in your existing CM/2 configuration.

Table 19. Worksheet for Planning OS/400 Connections				
Ref.	SNAPLUS Name	Network Name	Sample Value	Your Value
Network Elements at the Host				
1	Host name	Local Network Name	SPIFNET	
2	Partner LU Name	Application Name	NYM2DB2	
3	Network ID		SPIFNET	
4	Partner Node name	Local CP Name	SYD2101A	
5	Database name	Relational Database Name	NEW_YORK3	
6	Link Name or Mode Name		IBMRDB	
Network Connection Information				
7	Connection name (Link name)	LINKHOST		
8	Remote Network address	Local Adapter Address	400009451902	
Network Elements at the DB2 Connect Workstation				
9	Network ID or C&SM LAN ID		SPIFNET	
10	Local Node Name or Local PU Name		NYX1	
11	(Local) LU name		NYX1GW01	
12	(Local LU) alias		NYX1GW01	
13	Local Node or Node ID	ID BLK	05D	
14		ID NUM	27509	
15	Mode name		IBMRDB	
16	Symbolic Destination name		DB2CPIC	
17	(Remote) Transaction program (TP) name		X'07F6C4C2'	
DB2 Directory Entries (at the DB2 Connect workstation)				
19	Node name		db2node	
19	Security		program	
20	Database name		db2db	
21	Database alias		nyc3	

Note: You can determine some of the above values by running commands at the DB2 for AS/400 system:

- To find the values for **1**, (known at the OS/400 as the local network ID), and for **4**, (the local control point name), enter: DSPNETA
- To find the value for **8**, (known at the OS/400 as the local adapter address), enter: WRKLIND *TRLAN

Next, enter option 5 (**Display**) at the _ when prompted:

```

Opt  Line   Type   Text
_    TRNLINE *TRLAN

```

In the screen that appears one of the lines will be similar to this:

```
Local adapter address .....: 400009451902
```

- To generate a list of mode names for **15**, enter: WRKMODD
- To find the value for **5**, (known at the OS/400 as the relational database name), enter: DSPRDBDIRE

If you are configuring a connection to an OS/390, MVS, VSE, or VM system, you need to know the control point name to be used for the DB2 Connect for HP-UX workstation. Your LAN administrator can provide this information.

Planning to Configure Your DB2 Connect System

For an OS/390, MVS, VSE, or VM connection, do the following:

- 1 For XID node ID, determine the IDBLK and IDNUM of the DB2 Connect workstation (**13** plus **14**).
- 2 For Network name, determine the network name of both the host and the DB2 Connect workstations (**1** and **9**). Usually these values will be the same.
- 3 Determine the control point name of the DB2 Connect for HP-UX workstation (**10**). This is usually the same as the PU name for the system.
- 4 Leave the token ring profile name blank for now.
- 5 For mode name, usually the default is sufficient (**6** and **15**).
- 6 Determine the local LU name to be used by DB2 Connect (**11**).
- 7 For Local LU alias (**12**), you usually use the same value as for the local LU name (**11**). This helps to avoid confusion.
- 8 Repeat steps 6 and 7 above for any additional LUs that you may need to define.

For an OS/400 connection, complete Table 46 on page 468 as follows:

- 1 For XID node ID, write an asterisk (*). This means that you will use the default.
- 2 For Network name, use the Network ID (**1**).
- 3 For Mode name, use your value for (**6**).
- 4 Leave the other items blank for now.

Planning for Each Server Connection

For each server that you are connecting to, fill in a copy of the example worksheet Table 18 on page 168 as follows:

- 1 For Link station profile name (**7**), choose a suitable value.
- 2 For Remote link address (**8**), determine the controller address or local adapter address of the target host.
- 3 For Symbolic Destination name (**16**), choose a suitable value.
- 4 For Partner CP name, use **4** . For OS/390, MVS, VM, or VSE it is the System Services Control Point (SSCP) name. For an AS/400 it is the local control point name at the AS/400. See Table 46 on page 468.
- 5 The remote (partner) LU name for OS/390, MVS, VSE, or VM (**2**), is the VTAM application (APPL) name. You will also need to provide the network name for the remote node (**1**). (For example, SPIFNET.NYM2DB2). Usually the host network name is the same as the network name of the DB2 Connect workstation (**9**). For OS/400, use the local CP name.
- 6 For Application transaction program (**17**), the default is X'07F6C4C2' for OS/390, MVS and OS/400, and the *RDB_NAME* for VSE and VM. We recommend you use *DB2DRDA* for OS/390 and MVS.
- 7 For database name (**5**), provide the name of the host database. This is the *LOCATION NAME* for OS/390 or MVS, the *RDB_NAME* for VM or VSE, or a relational database name for OS/400.

Configuring Your DB2 Connect System

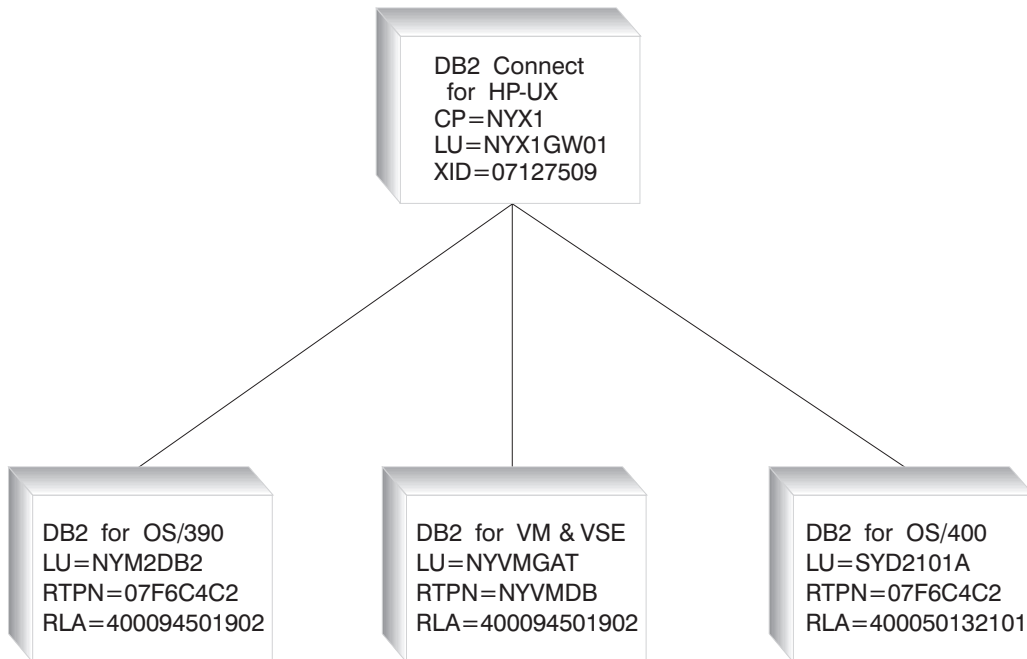
In the example shown in Figure 15 on page 172, the DB2 Connect workstation is connected to a DB2 for AS/400 system, a DB2 for VSE & VM system, and a DB2 for OS/390 or DB2 for MVS/ESA system.

The following assumptions are made:

- The basic installation of the SNAplus package has already been completed, including the execution of the *snapconfig* script.
- DB2 Connect has been installed.
- The user is logged on as root.

The names and addresses used in the sample scenario are:

CP name	NYX1
Remote LINK Address	400009451902 (DB2 for MVS,SQL/DS)
	400050132101 (for AS/400)
XID Node ID	07127509
Network Name	SPIFNET
Local LU Name	NYX1GW01
Remote LU Name	NYM2DB2 (DB2 for OS/390 or DB2 for MVS)
	NYVMGAT (SQL/DS)
	SYD2101A (AS/400)
Remote Transaction Program name	X'07F6C4C2' (DB2 for OS/390, DB2 for MVS, OS/400)
	NYVMDB (for SQL/DS)



NOTE:
 RLA is REMOTE LINK ADDRESS
 RTPN is REMOTE TRANSACTION PROGRAM NAME

Figure 15. Sample scenario

Configuring SNAplus

To configure SNAplus for DB2 Connect for HP-UX, log on as root and use either the `/opt/sna/bin/snapconfig` program or the `/opt/sna/bin/X11/xsnapconfig` program. Information about these programs can be found in the HP-UX documentation. The following steps describe how to use these programs to configure SNAplus for DB2 Connect for HP-UX.

Note: These steps contain suggested values for configuration parameters. For other parameters, use the SNAplus default values.

- 1 Ensure that the SNA daemon is running. Enter:

```
snapstart daemon
```
- 2 Open the configuration file
 - a From the **File** menu, select **Open**.
 - b Select **Open running configuration file**, then click on **OK**.
- 3 Select the links
 - a From the **Services** menu, select **Links**.
 - b Select the option marked **NEW** associated with the type of link you want to use: Token Ring (LAN), SDLC, or QLLC, then select **Add**. Enter a name for this link, for example, TR1 or SDLC4.

For Token Ring links, use the default Device Name and Port Number. For SDLC and QLLC links, consult with your network administrator for the appropriate values. When you have filled in the information, or chosen to use the default values, click on **OK** followed by **Done** to get back to the main screen.
- 4 Select the connections
 - a From the **Services** menu, select **Connections**. Select the option marked **NEW** corresponding to the value selected in the previous step. For example, for Token Ring, select **NEW** next to **LAN**. Enter a name for this connection. You may optionally enter a description.
 - b Set **Remote End** to **Host System** and **Activation** to **On Demand**.
 - c Enter the first three characters of the XID Node ID in the first **Node ID to Send** field. For this example, enter 071.
 - d Enter the SNA Physical Unit Number associated with your system in the second **Node ID to Send** field. For this example, enter 27509.
 - e Set the "Node ID to Receive" field to X'071' and X'FFFF'.
 - f Enter your SNA Network Name in the first field of the **Full Control Point Name**. For this example, enter SPIFNET.
 - g Enter the Physical Unit Name associated with your HP computer in the second field of the **Full Control Point Name**. For this example, enter NYX1.

- h** Move the link you configured in the previous step from the **Other Links** box to the **Links Usable** box.
- i** Select **Parameters** and enter any necessary connection information. For Token Ring, enter the SNA Destination Address assigned for the DRDA server system in the **Remote Network Address** field and leave the other fields with their default values. For this example, use 400009451902 for DB2 for OS/390 DB2 for MVS/ESA and DB2 for VSE & VM and 400050132101 for DB2 for AS/400. For SDLC and QLLC connections, additional information is required. Ask your network administrator for the required values.
- j** Click on **OK** to return to the connection configuration panel, then click on **OK** again, then **DONE**.

5 Select the local nodes

- a** From the **Services** menu, select **Local Nodes**.
- b** Select **NEW**.
- c** Enter a name for the node and click on **OK**. You may optionally enter a description for the node, but you must enter your network name in the **Name of Network** field. For this example, use SPIFNET for this value.
- d** Move the connection you created in the previous step from the **Available Connections** box to the **Connections Used** box using the **Move** button.
- e** Click on **OK**, then **DONE**.

6 Select the modes

- a** From the **APPC** menu, select **Modes**.
- b** Select **NEW**.
- c** Enter IBMRDB in the **Mode Name** field, and optionally enter a description.
- d** In the **Connection** box, highlight the connection you configured above. Make sure that **High priority mode** is not selected. The following configuration values are suggested:
 - Session limit = 020
 - Minimum contention winner limit = 010
 - Partner minimum contention winner limit = 010
 - Automatic activation limit = 001
 - Send and Receive Pacing Counts = 08Other values can be left as defaults.
- e** Click on **OK**, then **DONE**.

7 Select Remote LUs

- a** From the **APPC** menu, select **Remote LUs**.
- b** Select **NEW**.
- c** Enter the Remote LU Name as the LU alias, and click on **OK**. For this example, use NYM2DB2 for DB2 for OS/390 or DB2 for MVS/ESA, NYVMGAT for DB2 for VSE & VM, and SYD2101A for DB2 for AS/400. You may optionally enter a description of the remote LU.

- d** The **Full network name** field is made up of the SNA network name in the first field and the Remote LU Name associated with the DRDA server database in the second field. For this example, use SPIFNET.NYM2DB2 for DB2 for OS/390 or DB2 for MVS/ESA, SPIFNET.NYVMGAT for DB2 for VSE & VM, and SPIFNET.SYD2101A for DB2 for AS/400.
 - e** The **Uninterpreted LU name** must be set to the Remote LU name specified in the previous step (use the same values).
 - f** Select **Supports parallel sessions** and **No session level security**
 - g** Click on **OK**, then **DONE**.
- 8** Select Local LUs
- a** From the **APPC** menu, select **Local LUs**.
 - b** In the **Local Nodes** box, select the node you configured above.
 - c** In the **Configured LUs** box, select **NEW**.
 - d** For the APPC LU alias, enter your Independent LU Name; for this example, it is NYX1GW01. You may optionally enter a description for the Local LU.
 - e** Make sure that the **Full Network Name** fields contain your Network Name and your Independent LU Name. The LU number should be 000 for an independent LU.
 - f** Change the **Session Limit** parameter to 020
 - g** Make sure that you have selected the radio buttons to indicate that this LU is in the pool of default LUs, and that it is locally usable.
 - h** Move the Remote LU you configured above from the **Other Remote LUs** box to the **Partner LUs** box.
 - i** Select **Modes**.
 - j** Move the IBMRDB mode from the **Other Modes** box to the **Associated Modes** box.
 - k** Click on **OK**, then **OK** again, then **DONE**.
- 9** Select the symbolic destination name
- a** From the **APPC** menu, select **Sym Dest Name**.
 - b** Select **NEW**.
 - c** Enter the Symbolic Destination Name you want to associate with the DRDA server database and click on **OK**. You may optionally enter a description.
 - d** For the **Partner TP name**, for **DB2 for MVS/ESA** and **DB2 for AS/400**, select **SNA Service TP (in hex)** and enter the hexadecimal TP number. For DRDA, this is 07F6C4C2. (For DB2 for OS/390 or DB2/MVS, you can also use the application TP DB2DRDA.) For **DB2 for VSE & VM**, select **Application TP** and enter the DB2 for VSE & VM database name.
 - e** For the **Partner LU type**, make sure that **Alias** is selected.
 - f** In the **Partner LU** box, ensure that the **Remote LU** (not the Local LU) you configured above is highlighted.
 - g** In the **Mode Name** box, highlight IBMRDB.

- h** Click on **Security** and indicate what kind of conversation level security you want to use: **none**, **same**, or **program**.
- i** When done, click on **OK**, then **OK**, then **DONE**.

10 Saving your configuration

- a** From the **File** menu, select **Save**.
- b** Select **Update running configuration file**, then click on **OK**. This saves your new configuration as the default, running configuration.

Notes:

1. You may need to stop and restart SNA for your configuration changes to take effect.
2. You may also need to contact your database or network administrators to have your Local LU names added to the appropriate tables in order to access the DRDA server database.

Starting the SNAplus Subsystem

Use `/opt/sna/bin/snapstart` to start the SNAplus subsystem. You can use `/opt/sna/bin/snapstop` to stop the SNAplus subsystem first, if required.

To start the SNAplus connections you can use either the `/opt/sna/bin/snapmanage` program, or the `/opt/sna/bin/X11/xsnapmanage` program.

- 1** From the **Manage** menu, select **Services**.
- 2** Highlight the node you configured in the previous section, and select **start**.
- 3** Highlight the computer you want to start it on, then click on **OK**.
- 4** Highlight the connection you configured in the previous section, and select **start**.
- 5** Highlight the computer you want to start it on, then click on **OK**.

Both the node and the connection lines should indicate that they have been started.

Completing the Configuration

When you have configured your system and all of the server connections, do the following:

- 1 Install your token-ring adapter using the procedures provide by the manufacturer.
- 2 Use SAM to enable data link control for the adapter.
- 3 Stop and start the HP-UX SNAPplus subsystem. Enter:

```
db2stop
db2start
```

- 4 Update the DB2 node directory, system database directory, and DCS directory.

To do this, you will need to know the symbolic destination name (**16**) and the target database name (**5**) from the worksheet (see Table 18 on page 168). The commands are:

```
db2 catalog appc node db2node remote db2cpic security program
db2 catalog dcs database db2db as new_york3
db2 catalog database db2db as nyc3 at node db2node authentication dcs
```

For additional information, refer to the online *DB2 Connect User's Guide*.

- 5 Connect to the DRDA server and bind the utilities and applications to the DRDA server using commands similar to the following in the command line processor:

```
connect to dbalias user userid using password
bind path@ddcsmvs.lst blocking all
sqlerror continue messages mvs.msg grant public
connect reset
```

For further information, refer to the online *DB2 Connect User's Guide*.



To install remote clients, see Chapter 26, "Installing DB2 Clients" on page 243.

Chapter 21. Configuring SunLink SNA for DB2 Connect for Solaris

This chapter describes how to configure an APPC connection between your DB2 Connect for Solaris workstation and a DRDA server. Before you begin, ensure that your workstation has SunLink SNA for Solaris installed. Note that in the examples in this chapter, a Token Ring network is used as the communications medium.

For additional information about configuring a DB2 for MVS/ESA or DB2 for OS/390 server, see Chapter 47, "Configuring DRDA Hosts for DB2 Connect" on page 451.

If you still need further information in order to set up your environment, refer to:

- *DB2 Connectivity Supplement*
- *DRDA Connectivity Guide*
- *SunLink PU 2.1 Server Configuration and Administrator's Manual*.

Configuring Your DRDA Servers

Before you configure the DB2 Connect workstation, have your host-side administrator and LAN administrator fill in copies of the worksheets that follow for each host to which you want to connect:

- For OS/390, MVS, VM, and VSE hosts, use Table 20 on page 180
- For AS/400, use Table 46 on page 468.

To help you fill in the worksheets, Figure 16 on page 180 illustrates a sample network that has DB2 Connect running on a Solaris system and uses APPC to connect to DB2 for OS/390. The values shown in this diagram correspond to the *Sample Value* entries in the worksheet.

After you fill in the *Your Value* entries, you can use the worksheet to configure your Solaris workstation. As you work through the configuration steps, replace the sample values that appear in the configuration instructions with your values from the worksheet. Used the boxed numbers **1** to relate the configuration instructions to the worksheet values.

For additional information about configuring your DRDA host, see Chapter 47, "Configuring DRDA Hosts for DB2 Connect" on page 451.

DB2 Connect for Solaris Correlations

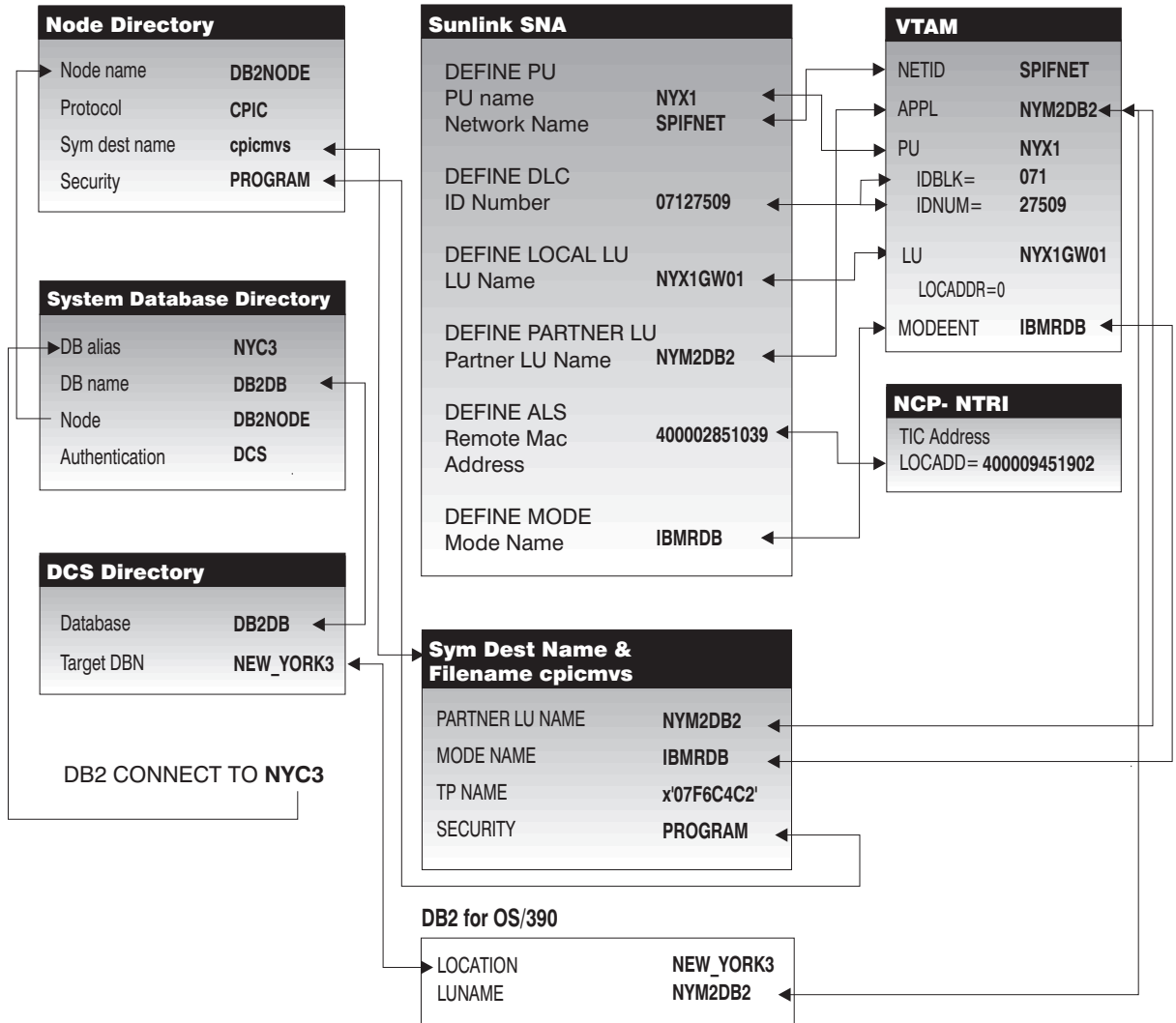


Figure 16. Configuration on the DRDA Server and DB2 Connect Workstation

Table 20 (Page 1 of 2). Example Worksheet for Planning APPC Host Connections

Ref.	Description	Sample Value	Your Value
Network Elements at the Host			
8	Network name	SPIFNET	
9	Remote partner LU name	NYM2DB2	

Table 20 (Page 2 of 2). Example Worksheet for Planning APPC Host Connections

Ref.	Description	Sample Value	Your Value
10	Network name of adjacent node	SPIFNET	
11	Control point name of adjacent (partner) node	NYX	
12	Target database name	NEW_YORK3	
13	Mode Name	IBMRDB	
Network Connection Information			
14	Type	Token-ring	
15	Link station profile name	NYX1LS	
16	Remote link address	400009451902	
17	DLC profile name	tok0.00001	
Network Elements at the DB2 Connect Workstation			
18	Network name	SPIFNET	
19	Local CP name	NYX1	
20	Local LU name (to be used by DB2 Connect)	NYX1GW01	
21	Local LU alias	NYX1GW01	
22	ID BLK	071	
23	ID NUM	27509	
24	Mode name	IBMRDB	
25	Symbolic Destination name	cpicmvs	
26	Remote Transaction program (TP) name	X'07F6C4C2' (default), DB2DRDA for MVS, or RDB_NAME for DB2 for VSE & VM.	
27	TP name in Hex?	No	
DB2 Directory Entries at the DB2 Connect Workstation			
28	Node name	db2node	
29	Security	Program	
30	Database name	db2db	
31	Database alias	nyc3	

Note: If you are configuring a connection to an OS/390, MVS, VM, or VSE system, you need to know the control point name to be used for the DB2 Connect workstation. Refer to your LAN administrator to obtain the control point name for your Solaris workstation.

Planning to Configure Your DB2 Connect for Solaris System

Refer to the example worksheet (Table 20 on page 180):

For an OS/390, MVS, VM, or VSE connection, do the following:

- 1 For XID node ID, use a combination of the IDBLK and IDNUM values (**22** and **23**). For example, X'07127509'.
- 2 For Network name, use the NETID (**18**).
- 3 For Control point name, use the PU name (**19**).
- 4 Leave the token ring (DLC) profile name (**17**) blank for now.
- 5 For Mode name, use the MODEENT (**24**).
- 6 For Local LU name, use **20** .
- 7 For Local LU alias, choose an alias (**21**). This can be the same as the LU name or different. Usually we recommend this be the same as the LU name itself.
- 8 Repeat steps 6 and 7 above for any additional LUs that you may need to define.

For an OS/400 connection, do the following:

- 1 For XID node ID, write an asterisk (*). This means that you will use the default.
- 2 For Network name, use the host network name (**8**).
- 3 For the host mode name, use **13** .
- 4 Leave the other items blank for now.

Planning for Each Server Connection

For each DRDA server that you are connecting to, fill in a copy of the worksheet (Table 20 on page 180) as follows:

- 1 For DLC profile name (**17**), choose a suitable value.
- 2 For Remote link address, use **16** .
- 3 For Symbolic destination name (**25**), choose a suitable value.
- 4 For the host partner CP name, use **11** . For OS/390, MVS, VM, or VSE it is the host System Services Control Point (SSCP) name. For an OS/400 it is the local control point name (see “Preparing DB2 for AS/400 for DB2 Connect” on page 467).
- 5 For Partner LU name for OS/390, MVS, VM, or VSE, use **9** (VTAM APPL name) from the worksheet.

You will also need to provide the network name (**8**) for the remote node (for example, SPIFNET). Usually this is the same as the network name at the DB2

Connect workstation. Together, these make up the fully-qualified partner LU name (SPIFNET.NYM2DB2).

For OS/400, use the local CP name of the AS/400.

- 6 For Remote transaction program (**26**), copy the value from the worksheet. The default is X'07F6C4C2' for OS/390, MVS, and OS/400, and the *RDB_NAME* for VM and VSE. We recommend that you use *DB2DRDA* for OS/390 or MVS.
- 7 For Target database name (**12**), this is the *LOCATION NAME* value for OS/390 or MVS, the *RDB_NAME* for VM or VSE, or a relational database name for OS/400.

Planning for Inbound APPC Client Connections

In addition to setting up an SNA connection between DB2 Connect and your DRDA host AR, you may also want to support inbound APPC connections from one or more clients, either workstations running DB2 Universal Database Client Application Enabler, or a DRDA host acting as an AR. If so, please see the additional definitions that may also be required in the SNA Server configuration file in “Optional sections” on page 185.

Configuring SunLink SNA for Solaris

You can use *vi* or your favorite editor to create the configuration files.

CPIC Side File

This file must be placed in the application's path for a standalone DB2 Connect for Solaris system. However, if DB2 Connect for Solaris is being used as a gateway, in order for DB2 agents to be able to access it, the file should be in either:

- `$HOME/sqllib/adm` or
- `$HOME/sqllib/bin`

Note: The name of the CPIC side file must be the same as the Symbolic destination name specified in the DB2 node directory on the DB2 Connect for Solaris system.

Sample CPIC side file

The file name must be the same as the Symbolic destination name specified in the DB2 node directory for the server.

```
# CPIC Side File information
#
PTNR_LU_NAME=NYM2DB2
MODE_NAME=IBMRDB
TP_NAME= x'07F6C4C2'
SECURITY=PROGRAM
```

SNA Server Configuration File

This file is called `sunpu2.config`, and it must be placed in `/opt/SUNWpu21`, or the directory where SunLink SNA PU 2.1 Server is installed. The example shown in Figure 17 on page 185 matches the scenario in *DB2 Connect Enterprise Edition Quick Beginnings* Figure 16 on page 180.

```

// SunLink SunLU6.2/SunPU2.1 SNA Server Sample Configuration
// Token Ring Peer-to-Peer System A @(#)sunlu62.a.tr
//
// The physical connection is a Token Ring interface adapter.

CP      NAME=NYX1                // Local name (8 char max)
        NQ_CP_NAME=SPIFNET.NYX11 // Network Qualified Name
        ;

TRLINE  NAME=MAC1                // SunLink specific name
        SOURCE_ADDRESS=x'400011527509' // sysA_mac_addr for Sun machine
        ;

DLC     NAME=HOSTLINK            // User defined name (8 char max)
        LINK_NAME=MAC1           // Line name this station is on
        LCLLSAP=x'04'            // Local Link Service Access Point
        RMTLSAP=x'04'            // Remove Link Service Access Point
        RMTMACADDR=x'400009451902' // sysB_mac_addr
        TERMID=x'07127509'       // XID negotiation
        ;

LU      NAME=NYX1GW01            // Local name (8 char max)
        NQ_LU_NAME=SPIFNET.NYX1GW01 // Network Qualified Name
        SESS_LMT=50              // Max LU sessions
        LUTYPE=6.2
        ;

PTNR_LU NAME=NYM2DB2             // Partner LU name(8 char max)
        LOC_LU_NAME=NYX1GW01     // Associated Local LU
        NQ_LU_NAME=SPIFNET.NYM2DB2 // Network Qualified Name
        ;

MODE    NAME=IBMRDB              // Mode Name (8 char max)
        DLC_NAME=HOSTLINK        // Associated DLC
        PTNR_LU_NAME=NYM2DB2NYX1GW01 // Associated Partner LU
        LCL_MAX_SESS_LMT=30      // Max Session Limit
        MIN_CW_SESS=15           // Min Conwinners
        MIN_CL_SESS=15           // Min Conlosers
        ;

```

Figure 17. Sample Solaris PU 2.1 SNA Server Configuration File

Optional sections: The following additional sections would also be required in the configuration file in order to support the inbound APPC client support.

```

// This section adds DLC for the inbound APPC client NYX2

DLC    NAME=NYX2,                // User defined name (8 char max)
        LINK_NAME=MAC1,          // Line name this station is on
        LCLLSAP=x'04',           // Local Link Service Access Point
        RMTLSAP=x'04',           // Remove Link Service Access Point
        RMTMACADDR=x'400011528901', // sysB_mac_addr
        TERMID=x'05d27510',      // IDNUM and IDBLK = XID
        MAXDATA=4096,
        ACTIVITY_TIMEOUT=0,
        RETRIES=20,
        REPLY_TIMEOUT=20,
        RESPONSE_TIMEOUT=20,
        ACTPU_SUPPRESS=yes
        ;

// This section defines the partner LU NYX2

PTNR_LU NAME=NYX2,              // Partner LU name(8 char max)
        LOC_LU_NAME=NYX2,        // Associated Local LU
        NQ_LU_NAME=SPIFNET.NYX2 // Network Qualified Name
        SEC_ACCEPT=ALREADY_VERIFIED // Accept client as already verified
        ;

// This section adds the TP name NYSERVER
// and associates it with the local LU NYX1GW01

TP     TP_NAME=NYSERVER,         // TP Name
        LOC_LU_NAME=NYX1GW01,    // Associated Local LU
        CONV_TYPE=BASIC,         // Conversation Type
        ;

//

SECURITY LOC_LU_NAME=NYX1GW01,   // Local LU Alias
        USER_ID=USERID,         // User id
        PASSWORD=PASSWORD,      // Password (since UNIX_SEC=NO)
        ;

;

```

Figure 18. Additional Sun SNA Server configuration sections for inbound APPC client

Additional Steps Required to Enable Inbound APPC Clients: You need to:

- 1 Create any additional APPC partner LU and link profiles that may be required.
- 2 Ensure the inbound clients are also properly configured.
- 3 Use SNA session control functions, without using DB2 Connect, in order to validate that all the APPC sessions that you need to establish can be.

- 4 Update the database manager configuration on the DB2 Connect workstation by entering the following command in the command line processor:

```
update dbm cfg using tpname NYSERVER
```
- 5 Add the string APPC to the DB2COMM environment variable.
- 6 Stop and restart DB2 in order to activate the APPC listener.

Starting the SunLink SNA Subsystem

Perform the following steps, in sequence:

- 1 Logon as root.
- 2 Change to the SunLink directory, usually;

```
cd /opt/SUNWpu21
```
- 3 Set up environment variables for *FlexLM* licensing, for example:

```
export LD_LIBRARY_PATH=/usr/openwin/lib:/usr/lib  
export LM_LICENSE_FILE=/etc/opt/licenses/licenses_combined
```

Refer to the SunLink documentation for full details.
- 4 Ensure you have created the CPIC side file as described in “CPIC Side File” on page 183, and that it is in the right directory.
- 5 Ensure you have created the SNA server configuration file in the `/opt/SUNWpu21` directory, as shown in Figure 17 on page 185.
- 6 Use the `sunop` utility to check the status of SunLink SNA if it is already started.
Check to see if the PU and/or DLC status is *connected*. Refer to the SunLink documentation for details of the `sunop` utility.
- 7 Stop SunLink if it is active. For example, enter:

```
kill -9 sunpu2.pid  
kill -9 sunlu2.pid
```
- 8 Start SunLink using the following command:

```
sunpu2.1
```

You can use `sunop` to check the status of links.

Restart the Database Manager

- 1 Stop the database manager, if it is running:

```
db2stop
```

- 2 Ensure that the db2comm environment variable setting includes APPC. Enter:

```
db2set -lr
```

If APPC does not appear as a value for db2comm, you need to add it. One way to do this would be to enter a command similar to this:

```
db2set db2comm=tcPIP,appc,ipxspx -g
```

(You should remove any protocols you do not use from that command. There are several different options available with the **db2set** command. For details, see Chapter 39, “Controlling Your DB2 Environment” on page 357.)

- 3 Start the database manager:

```
db2start
```

Completing the Configuration

When you have configured your system and all of the server connections, do the following:

- 1 Start and stop the SunLINK subsystem (see “Starting the SunLink SNA Subsystem” on page 187).
- 2 Update the DB2 node directory, system database directory, and DCS directory. To do this, you will need to know the symbolic destination name (**25**) and the target database name (**12**) from the worksheet.

Enter the following commands in the command line processor:

```
catalog appc node db2node remote sym_dest_name security program
```

Note that the *sym_dest_name* value must be the same name in the same case as the name of the CPIC side file (cpicmvs in the examples in this chapter).

```
db2 catalog dcs database db2db as new_york3  
db2 catalog db db2db as nyc3 at node db2node authentication dcs
```

- 3 In order to run any application, you must set the following environment variables:
APPC_GATEWAY Name of the DB2 for Solaris server (usually the TCP/IP hostname).
APPC_LOCAL_LU Name of the local LU name provided in the SNA configuration file (usually sunpu2.config).

For a DB2 Connect for Solaris server, export these on the DB2 Connect machine before issuing db2start.

- 4 Connect to the DRDA Server and bind the utilities and applications to the DRDA server using commands similar to the following in the command line processor:

```
connect to dbalias user userid using password  
bind path@ddcsmvs.lst blocking all  
    sqlerror continue messages mvs.msg grant public  
connect reset
```

For further information please refer to the online *DB2 Connect User's Guide*.



To install remote clients, see Chapter 26, "Installing DB2 Clients" on page 243.

Chapter 22. Setting Up Two-phase Commit Using SNA

This chapter describes how to implement two-phase commit over SNA connections using the LU 6.2 Syncpoint Manager (SPM). This is supported only on OS/2 and AIX systems.

For information about Distributed Units of Work, refer to the *DB2 Connect User's Guide*.

For the most recent information about DB2 Connect two-phase commit support over SNA connections, access the DB2 Product and Service Technical Library on the World Wide Web:

- 1 Set your Web browser to the following URL:
`http://www.software.ibm.com/data/db2/library/`
- 2 Select "DB2 Universal Database".
- 3 Search for "Technotes" using the search keywords "DDCS" and "SPM".

What is the Syncpoint Manager?

SPM is a function that enables your distributed database applications to access multiple remote database application servers using DRDA2 protocols. The SPM guarantees the integrity of the results in SNA environments.

You need to install and use SPM if your distributed database applications will make use of the DRDA2 Distributed Unit of Work (DUOW) known as two-phase commit, and you will use SNA connections between:

- DB2 Connect workstations accessing DRDA servers
- Host DRDA requesters accessing DB2 Universal Database servers.

For example, your application programs running at DB2 clients can issue SQL requests that result in updates to databases at multiple remote database servers, or your DB2 for OS/390 application program can issue SQL requests that result in updates to multiple remote database servers where at least one of them is a remote DB2 Universal Database server.

The LU 6.2 Syncpoint Manager is included in the following licensed programs:

- DDCS for AIX Multi-User Gateway Version 2.3.1

- DDCS for OS/2 Multi-User Gateway Version 2.3.1
- DB2 Connect Enterprise Edition for AIX Version 5.0
- DB2 Connect Enterprise Edition for OS/2 Version 5.0
- DB2 Universal Database Enterprise Edition for AIX Version 5.0
- DB2 Universal Database Enterprise Edition for OS/2 Version 5.0.

Notes:

1. SPM is not included with DB2 Connect Personal Edition (formerly DDCS Single User) or the DB2 Universal Database Personal Edition licensed programs.
2. In order to use SPM functions, DB2 clients must be at the Version 2.1.1 code level, or higher.
3. Application programs that will issue two-phase commit requests must be pre-compiled with the CONNECT 2 and SYNCPOINT TWOPHASE options.
4. In DB2 Connect Enterprise Edition Version 5.0, the SPM continues to allow host databases to participate in two-phase commit transactions, but they cannot be the TM_DATABASE for such transactions.
5. DB2 Universal Database Servers include the SPM in order to provide two-phase-commit support for DRDA-AS.
6. If you want one workstation to act as a server for both inbound and outbound two-phase commit support, you must install both DB2 Connect Enterprise Edition and DB2 Universal Database.

SPM Scenarios

Figure 19 on page 193 shows different scenarios where you can use SPM. In each case, the SPM logical unit runs on the DB2 Connect workstation.

Note: These scenarios are only supported by the DB2 Connect Enterprise Edition products for AIX, and OS/2.

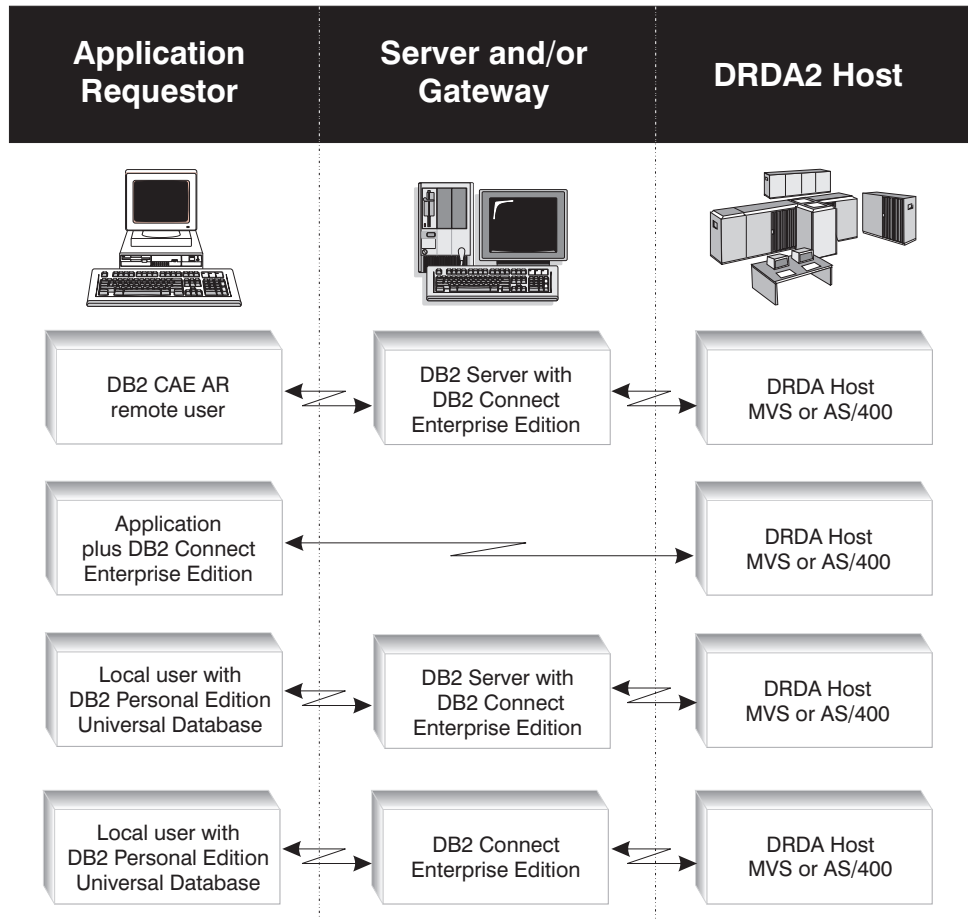


Figure 19. DUOW Scenarios. This diagram illustrates some common DUOW scenarios including SPM. In each case, the SPM LU runs on the DB2 Connect workstation.

Note: Figure 19 does not show SPM as a participant.

Participation in the Two-Phase Commit Process

This section describes the roles played by systems that take part in SPM scenarios.

Application Requester

DB2 Connect assumes the syncpoint model defined by DRDA where only the application requester can initiate a commit. For this reason, syncpoint coordinator functions are included in the DB2 product that is installed at DB2 clients and servers since Version 2.1.1.

The role of the coordinator at an application requester is as follows:

- 1 It registers the DUOW request with a transaction manager.
- 2 It delegates further coordination of the DUOW to the transaction manager and the SPM.

Transaction Manager

Distributed units of work must always be registered with a transaction manager. This is done by the coordinator at the application requester. The transaction manager is responsible for:

- 1 Preserving the integrity of DUOW requests.
- 2 Providing registration, logging, and decision-making services for DUOW requests.
- 3 Guaranteeing the integrity of the results of the DUOW.

The SPM is always a partner with a transaction manager, which is assumed to be at an application requester. The transaction manager can be any of the following:

- A DB2 client/server DUOW TM
- An XA-compliant TM, such as CICS for AIX
- A DB2 for OS/390, DB2 for MVS/ESA, or DB2/400 application requester
- A host-based TP Monitor such as CICS Transaction Server for OS/390.

Notes:

1. For AIX and OS/2, earlier DRDA2 support in Transaction Processing Monitors via the Encina Peer-to-Peer Communications gateway has been replaced by the SPM function provided with DB2 Connect Enterprise Edition Version 5.0.
2. Two-phase commit is not supported through the SPM with the Tuxedo(**) Transaction Manager.

Syncpoint Manager

The SPM can serve as:

- The LU 6.2 coordinator on behalf of application requesters, the transaction manager database, and DRDA2 application servers. This is the case when you connect from a DB2 Universal Database client to a DRDA server, such as DB2 for OS/390, through DB2 Connect.
- An LU 6.2 participant on behalf of DB2 Universal Database servers or DB2 Common servers. This is the case when you connect from a DRDA Application requester, such as DB2 for OS/390, to a DB2 Universal Database server through a DB2 Universal Database server that has the SPM operational.

For example, when an application issues a commit, it is the transaction manager that controls the ultimate success or failure of the commit on behalf of the application, but it is the SPM that propagates the unit of work decision to DRDA2 application servers involved in the unit of work.

The SPM is an independent logical unit and it communicates with DRDA servers using APPC protocols. However, communications from DB2 clients to DB2 Connect/SPM gateways or from a DB2 Universal Database/SPM server to remote DB2 Universal Database servers can use any protocol supported by DB2 (APPC, IPX, Named Pipes, NETBIOS, or TCP/IP, depending on your workstation's operating system).

Two-phase Commit Scenario

Figure 20 on page 197 illustrates a typical DUOW scenario. In this example the sequence of events is as follows:

- 1** The coordinator at Client A registers automatically with the Transaction Manager database at Server B, using `TM_DATABASE=TMB`.
- 2** The application requester at Client A issues a DUOW request to Servers C and E. For example, the following REXX script illustrates this:

```

/**/
'set DB2OPTIONS=+c' /* in order to turn off autocommit */

'db2 set client connect 2 syncpoint twophase'

'db2 connect to DBC user USERC using PASSWRDC'
'db2 create table twopc (title varchar(50) artno smallint not null)'
'db2 insert into twopc (title,artno) values("testCCC",99)'

'db2 connect to DBE user USERE using PASSWRDE'
'db2 create table twopc (title varchar(50) artno smallint not null)'
'db2 insert into twopc (title,artno) values("testEEE",99)'

'commit'

exit (0);

```

- 3** When the commit is issued, the coordinator at the application requester sends prepare requests to the SPM for the updates requested at servers C and E.
- 4** The SPM is running on Server D, as part of DB2 Connect, and it sends the prepare requests to servers C and E.
- 5** Servers C and E in turn acknowledge the prepare requests.
- 6** The SPM sends back an acknowledgement to the coordinator at the application requester.
- 7** The coordinator at the application requester sends a request to the transaction manager at Server B for the servers that have acknowledged, and the transaction manager decides whether to commit or roll-back.
- 8** The transaction manager logs the commit decision, and the updates are guaranteed from this point.
- 9** The coordinator issues commit requests, which are processed by the SPM, and forwarded to servers C and E, as were the prepare requests.
- 10** Servers C and E commit and report success to the SPM.
- 11** SPM then returns the commit result to the coordinator, which updates the TMB with the commit results.

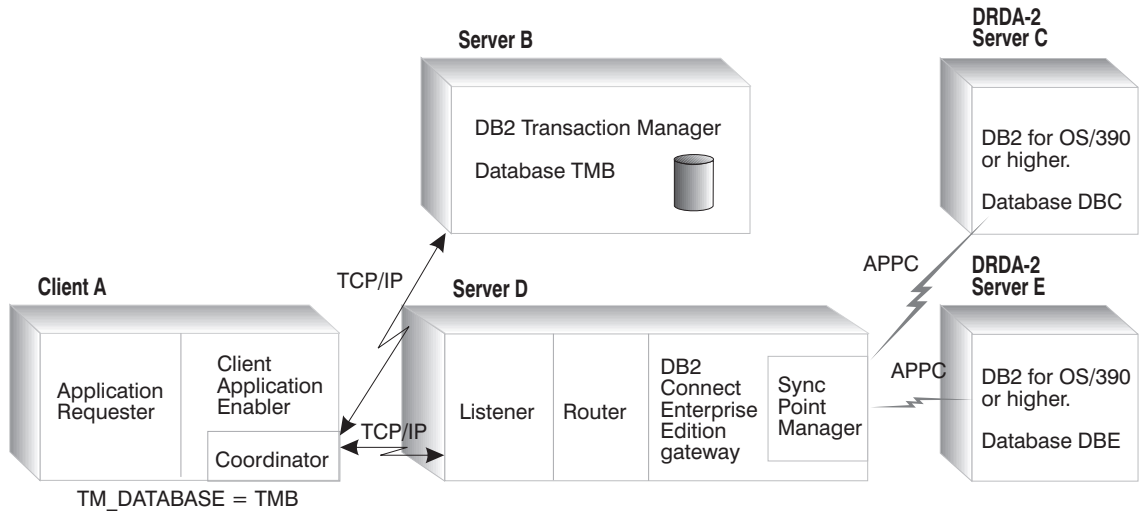


Figure 20. Two-phase Commit RDBMS Scenario

Planning to Use SPM

This section describes important planning considerations that you should take into account before attempting to install and use the SPM.

Software Prerequisites for SPM

The following minimum software levels are required to support the SPM. Refer to the README file for any additional PTFs that may be required.

- With AIX:
 - SNA Server for AIX Version 2.1 or higher must be installed on the system where DB2 Connect Enterprise Edition for Version 5.0 is installed or on the DB2 Universal Database server that has SPM support installed.
 - The following PTFs are also required:

AIX SNA Server/6000 2.1 PTFs
PTF U437491 (fixes for APAR IX50393)
PTF U437840 (fixes for APAR IX51831)
PTF U440157 (fixes for APAR IX54025)

AIX SNA Server/6000 2.2 PTFs
PTF U437857 (fixes for APAR IX50393)
PTF U440318 (fixes for APAR IX51831)
PTF U444012 (fixes for APAR IX54025)

AIX SNA Server/6000 3.1 PTFs
PTF U440156 (fixes for APAR IX54025)

- With OS/2:
 - IBM Communications Server for OS/2 Warp Version 4 or higher must be installed on the system where DB2 Connect Enterprise Edition for Version 5.0 is installed or on the DB2 Universal Database server that has SPM support installed.
- With DB2 for MVS/ESA or DB2 for OS/390:
 - All DB2/MVS V3.1 systems
PTFs UN73393 and UN76673 (fixes APARs PN67179 and PN70102)
 - All DB2/MVS V4.1 systems
PTF UN76674 (fixes APARs PN70102 and PQ03146)
 - All DB2 for OS/390 systems
PTF UN76674 (fixes for APAR PQ03146)
- With DB2 for AS/400:
 - All DB2/400 V3R1 systems
PTF SF27513 (fixes for OS/400 V3R1M0, product 5763SS1)
 - All DB2/400 V3R6 systems
PTF SF31329 (fixes APAR SA46917)
PTF SF31329 (fixes for APAR SA48935)
- With DB2 for VSE & VM:
 - The following APAR fixes are required:
PQ01680
PQ03829
VM60922
VM61072
VM61194

Note: DB2 clients that will issue syncpoint coordination requests to the SPM must be at DB2 Version 2.1.1 or higher.

Database Manager Configuration Parameters for SPM

The following database manager configuration parameters are required in order to use SPM, on workstations where a DB2 Connect Enterprise Edition is installed:

SPM_LOG_FILE_SZ

Determines the size of the SPM log file, in 4K pages. For more information about SPM logging, see “SPM Logging” on page 212. The default value is 256.

SPM_MAX_RESYNC

Determines the number of SPM agents that can simultaneously perform resync operations. The default is 20.

SPM_NAME

Identifies SPM to both DB2 and SNA. This parameter must be set in order for SPM to start when the database manager is started. The default value for this parameter is NULL.

See “Configuring Communications Server for OS/2” on page 207 for additional information about the use of this parameter with OS/2.

See “Configuring SNA Server for AIX” on page 204 for additional information about the use of this parameter with AIX.

For more details about these parameters, see the *Administration Guide*.

Other Requirements

- 1** In addition to having the correct software prerequisites installed, additional planning is required in order to assign LU names for use by the SPM and its partners. See “Setting up Communications for the SPM” on page 204 for further information about what actions may be required in your installation.
- 2** On AIX, the SNA Server list of Trusted Group Names should be updated to include the groups which will be able to start SPM. To list the trusted group name, use SNA Defaults.
- 3** Additional planning may also be required prior to defining your transaction manager database, and arranging for database manager configuration parameters to be set accordingly at application requesters and application servers.
- 4** Ensure that your DRDA2 host databases are syncpoint-enabled. Contact your database administrator. For example, when using DB2 for MVS/ESA or DB2 for OS/390, the VTAM APPL statement that defines the DDF LU must include SYNCLVL=SYNCPT. See “Sample VTAM APPL Definition for OS/390” on page 454 and the *DB2 Connectivity Supplement*.

Installing the SPM

This section describes the steps required to install the SPM on a DB2 Connect server or on a DB2 Universal Database server, and to configure remote clients and remote DB2 Universal Database servers. It also lists considerations that apply with respect to the location of the transaction manager database, which may reside:

- At the application requester
- At the DB2 Connect server (the recommended location)
- At a separate node.

The following rules apply throughout the remainder of this section:

Notes:

1. The SPM instance name *must* be the same as the SPM_NAME database manager configuration parameter.
2. For both the TM database and the SPM instance, the Database alias name *must* be the same as the actual database name.

Inbound DRDA 2 connections via the SPM LU to DB2 Universal Database V5.0 servers running DRDA-AS do not require a TM database, nor do they need such a database to be defined. The reason is that, for such connections, the SPM itself is the Transaction Manager (TM) for the DB2 Universal Databases, having its own logging by means of the SPM instance.

3. You do not need to take any actions to create the SPM instance. It is created automatically by the SPM, through emulation. This allows connections to the SPM to occur with normal CONNECT commands. Because no instance is actually created, you will not see the instance in the output from the `db2ilist` command.

If the SPM is on a different node to the TM database, then the SPM name must be cataloged in the database directory and the SPM node must be cataloged in the node directory on the TM node.

Summary of Steps

Perform the following steps at the workstation that has the SPM installed. This could be a DB2 Connect Enterprise Edition server, or a DB2 Universal Database Enterprise Server, or a workstation that contains both.

Note: If you expect to have only connections originating from a host system to a DB2 Universal Database server or if you use only a TP Monitor environment such as CICS for AIX, you do not require a TM Database. In order to be able to use SPM, and therefore you can omit steps 4, 5, and 6 in this section.

1 Install DB2 Connect Enterprise Edition in order to provide DRDA AR support, and/or DB2 Universal Database Enterprise Edition in order to provide DRDA AS support.

2 Create a database instance on the same system. For example, you can use the default instance DB2, or use the following command to create a new instance:

```
db2icrt myinstance
```

3 Supply licensing information as required.

4 Create a TM database. Any DB2 Version 5 database can be used for this purpose. The TM database should be a local database on the DB2 Connect workstation. For example, to create the TM database, enter the following command in the command line processor:

```
create Database TMB alias TMB
```

The Database alias name *must* be the same as the actual database name.

Note: If you have only DB2 Connect Enterprise Edition installed, you are licensed to create one database that can be used as the TM database.

5 If the TM database is local, update the *TM_DATABASE* Database Manager Configuration parameter with the name of the TM database. For example:

```
update database manager configuration using tm_database TMB
```

6 If the TM database is remote, in order for the SPM to be able to access it during resync operations, you must catalog the TM database and node directory entries on the DB2 Connect workstation. For example:

```
catalog tcpip node TMBNODE remote SERVERB server dbinst1c  
db2 catalog database TMB as TMB at node TMBNODE
```

The Database alias name *must* be the same as the actual database name.

You must also perform the following steps at the TM database node, in order that it can connect to the location of the SPM. For example:

```
catalog tcpip node SPMNODE remote SERVERD server dbinst1c  
db2 catalog database SPMNAME as SPMNAME at node SPMNODE
```

The Database alias name *must* be the same as the actual database name.

7 Configure SNA communications as required. See “Setting up Communications for the SPM” on page 204.

The configuration will be easier if the *SPM_NAME* value is the same as the LU name, and the SPM uses the same LU as the DB2 Connect workstation.

On an AIX system, the *SPM_NAME* value *must* be same as the names of:

- a** The transaction program (TP) profile used by the SPM.
- b** The local side information profile used by the SPM.
- c** The SPM instance name on application requesters.

Refer to Figure 21 on page 204.

- 8 Catalog remote DB2 Universal Database server databases being accessed from a DRDA Application Requester (such as DB2 for OS/390 V5.1) through the SPM. For example:

```
catalog tcpip node DB2UDSRV remote DB2UDSRV server db2inst1c
db2 catalog database DB2UDB1 as DB2UDB1 at node DB2UDSRV
```

- 9 Determine the value to be specified for the the SPM_NAME database manager configuration parameter, and optionally values for the SPM_LOG_FILE_SZ and SPM_MAX_RESYNC database manager configuration parameters if the defaults are not appropriate for your situation. See “Database Manager Configuration Parameters for SPM” on page 199 for further details.
- 10 Update SPM_NAME on the DB2 Connect workstation/DB2 Universal Database server. For example, you can use the following command:

```
update database manager configuration using spm_name SPMNAME
```
- 11 Ensure that the registry value db2comm includes the value APPC.
- 12 Stop and restart the database manager on the DB2 Connect workstation/DB2 Universal Database server to start the SPM LU for the first time.

Summary of Steps for DB2 Clients Connecting to a Host

The database administrator must also perform the following steps at each system where a client will use SPM services.

Note: If you only use a TP monitor, such as CICS for AIX, you can omit steps 1 and 3 in this section.

- 1 Update the *TM_DATABASE* Database Manager Configuration parameter with the name of the TM database. For example:

```
update database manager configuration using tm_database TMB
```

- 2 Configure communications as required for the application requester to connect to the SPM LU at the DB2 Connect workstation.
- 3 If the TM database is remote, catalog the database directory entry for the TM database, and catalog the node entry for the location of the TM database. For example:

```
catalog tcpip node TMBNODE remote SERVERB server db2inst1c
db2 catalog Database TMB as TMB at node TMBNODE
```

The Database alias name *must* be the same as the actual database name.

- 4 If the SPM is remote, catalog the database directory entry for the SPM instance, and catalog the node entry for the location of the SPM. For example:

```
catalog tcpip node SPMNODE remote SERVERD server db1inst1c
db2 catalog database SPMNAME as SPMNAME at node SPMNODE
```

The Database alias name *must* be the same as the actual database name.

- 5 Stop and restart the database manager on the application requester.

The remaining sections in this chapter review specific implementation considerations.

Summary of Steps for Remote DB2 Universal Database Servers Accessed from DRDA Hosts

This section summarizes the steps required at the DB2 Universal Database servers that contain databases accessed by host systems through the SPM. These DB2 databases are remote from the SPM workstation.

- 1 Ensure that the appropriate communication protocols are installed and enabled. To see which protocols are enabled, enter:

```
db2set -a11
```

For instructions on enabling a communication protocol, see Chapter 39, “Controlling Your DB2 Environment” on page 357.

- 2 As the SPM is remote, catalog the database directory entry for the SPM instance, and catalog the node entry for the location of the SPM. For example:

```
db2 catalog tcpip node SPMNODE remote SERVERD server db1inst1c
db2 catalog database SPMNAME as SPMNAME at node SPMNODE
```

Note: There is no need to configure the SPM_NAME database configuration parameter on this workstation.

Setting up Communications for the SPM

This section describes the SNA configuration requirements of the SPM, and explains the interdependencies between the SPM_NAME database manager configuration parameter and the communications configuration files.

SNA communications must be configured for SPM on the DB2 Connect workstation.

Configuring SNA Server for AIX

An LU6.2 Side Information profile and an LU6.2 Transaction Program Name profile must be defined to identify the SPM to the AIX SNA Server. The Side Information profile name and the Transaction Program Name profile name that SPM uses must match the SPM_NAME parameter of the database manager configuration. These profiles are used to allow DB2 to configure the syncpoint support. They *are not* used for any SNA communication.

Figure 21 shows the relationships between these entities.

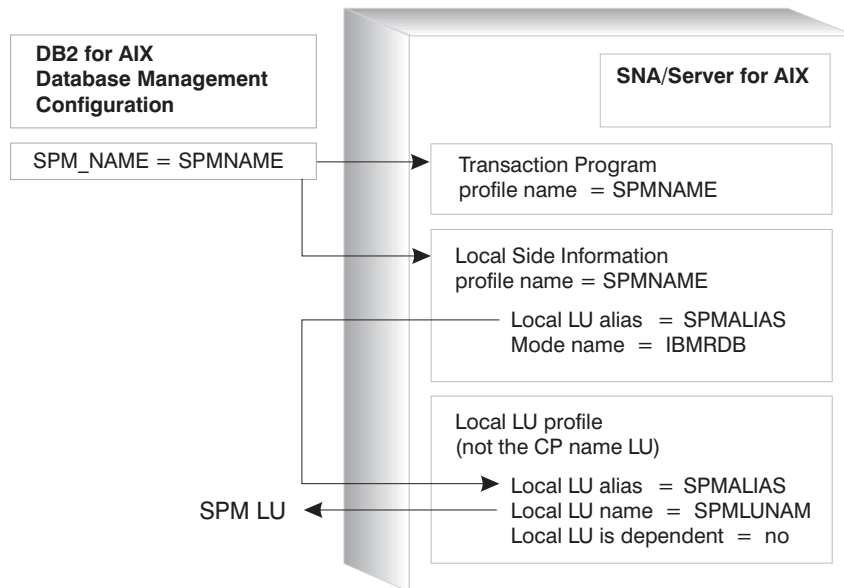


Figure 21. SPM_NAME Usage with SNA Server for AIX. This diagram shows the relationships between SPM_NAME and SNA Server for AIX configuration objects.

Using SMIT

In the examples which follow:

- 1 The Database Manager configuration has SPM_NAME set to SPMNAME.
- 2 The Local LU name for the SPM is SPMLUNAM.

SPM_NAME can be set using the following command:

```
update database manager configuration using spm_name SPMNAME
```

Side Information: Figure 22 illustrates the sample settings for defining the SPM LU in SMIT. The SPM Side Information profile identifies the local LU to be managed by the SPM. When a node directory entry is cataloged for a DRDA2 server, the Side Information profile (symbolic destination name) must use the same local LU alias as the local LU alias specified in the SPM Side Information profile.

This example uses SPMALIAS as the name of the SPM LU alias and SPMNAME as the profile name.

Add LU 6.2 Side Information Profile		
Type or select values in entry fields.		
After making all desired changes, press Enter.		
	[Entry Fields]	
* Profile name	[SPMNAME]	
Local LU or Control Point alias	[SPMALIAS]	+
Provide only one of the following:		
Partner LU alias	[]	+
Fully qualified partner LU name	[]	
Mode name	[IBMRDB]	+
Remote transaction program name (RTPN)	[]	
RTPN in hexadecimal?	no	+
Comments	[DB2 SyncPoint Profile]	

Figure 22. Side Information Profile for the SPM Local LU

The SPM local LU cannot be the Control Point LU.

Transaction Program Name: Figure 23 on page 206 illustrates the sample settings for defining the SPM Transaction Program Name profile using SMIT. The SPM Transaction Program Name profile identifies that the SPM supports all sync level conversations. Also, multiple instances supported must be set to no. Each DB2 instance is required to have a unique SPM_NAME.

```

                                Add LU 6.2 TPN Profile
Type or select values in entry fields.
After making all desired changes, press Enter.

[TOP]                                [Entry Fields]

* Profile name                        [SPMNAME]
Transaction program name (TPN)        []
Transaction program name (TPN) is in hexadecimal? no +
PIP data?                              no +
    If yes, Subfields (0-99)          [0] #
Use Command Line Parameters?          no +
Command Line Parameters                []
Conversation type                       either +
Sync level                             all +
Resource security level                 none +
    If access, Resource Security Access List Prof. []
Full path to TP executable              [/dev/sna]
Multiple instances supported?           no +
User ID                                 [100] #
Server synonym name                     []
Restart action                           once +
Communication type                       signals +
    If IPC, Communication IPC queue key [0] #
Standard input file/device              [/dev/console]
Standard output file/device             [/dev/console]
Standard error file/device              [/dev/console]

Comment                                [DB2 SyncPoint TP]

[BOTTOM]

```

Figure 23. Transaction Program Name Profile Required for SPM (for AIX)

System Defaults: The SNA node profile must have recovery resource support enabled.

For SNA Server for AIX Version 3 this flag is moved to the local LU profile, and the recovery resource manager should be enabled for the local LU profile identified in the SPM side information profile.

AIX/SNA Server Operational Considerations

Terminating SNA Server for AIX while the SPM is active causes the SPM to stop. Once SNA Server for AIX is restarted, you must issue `db2stop` and `db2start` on the DB2 Connect workstation in order to allow the SPM to reinitialize.

AIX SNA Server Coexistence Considerations

If a DB2 Connect workstation has Syncpoint Manager started and you want to use it as a DRDA1 AS or as a database server for clients accessing via APPC, you must do the following:

- 1** On the DB2 Connect for AIX Syncpoint Manager (SPM) Server Node:
 - a** You must install DB2 for AIX Server
 - b** Ensure that there are no SNA Server/6000 LU 6.2 Transaction Program Name (TPN) definitions defined for the following transaction programs:
 - X'07F6C4C2'
 - X'07F6E2D5'
 - X'06F2'
 - X'06F2F0F1'
 - DB2INTERRUPT (alphanumeric)
 - DB2DRDA (alphanumeric)
 - TP name defined in the database manager configuration parameter TPNAME.

You can validate this by setting the SPM_NAME to the correct LU name and setting the DIAGLEVEL = 4 in the Database Manager Configuration. When you issue db2start to initiate the SPM you should NOT see the following message in the db2diag.log:

```
SPM0445 The Transaction Program TPname will not be listened for
by DB2. This is not a severe error, but if you require this Transaction
Program, you must ensure that it is not defined in the Transaction
Profile of the AIX SNA configuration.
```

- 2** On the Database Client Node:

Ensure all clients use the LU specified on the SPM node in the Database Manager Configuration parameter SPM_NAME as their partner LU.

Configuring Communications Server for OS/2

The following example assumes:

- IBM Communications Server for OS/2 V4.1 is installed
- SPMNAME is the local LU name
- SPM_NAME is set to SPMNAME.

All these requirements must be met:

- 1 The SPM_NAME Database Manager Configuration parameter must specify the local LU name to be used by SPM. The value set can be either the LU name or the LU alias. The SPM LU cannot be the Control Point LU.

SPM_NAME can be set using the following command:

```
update database manager configuration using spm_name SPMNAME
```

- 2 The DEFINE_LOCAL_LU statement of the Network Definition File must indicate that the SPM provides syncpoint services and remote TP services for the SPM_NAME local LU.

Inspect the DEFINE_LOCAL_LU statement for the SPM LU in your NDF file, and, if necessary, edit it manually to ensure that it includes the following:

```
EXTERNAL_SUPPORT(SYNCPT_PROVIDER,REMOTE_TP_PROVIDER)
```

Figure 24 illustrates the format of the required statement, using the local LU name SPMNAME. Note that The LU name specified cannot be the Control Point LU.

```
DEFINE_LOCAL_LU LU_NAME(SPMNAME)
                LU_ALIAS(SPMNAME)
                EXTERNAL_SUPPORT(SYNCPT_PROVIDER,REMOTE_TP_PROVIDER)
                NAU_ADDRESS(INDEPENDENT_LU)
```

Figure 24. Sample Communications Server Definition for SPM

- 3 When using DB2 Universal Database server DRDA AS inbound SPM support, in addition to the above steps, a transaction program definition is also required. The user needs to ensure that the parameter SYNC_LEVEL(SYNCPT_NEGOTIABLE) is set for each Transaction Program used to connect to a DB2 Universal Database server. These include:

- x'07'6DB

This is a DRDA default service TP Name.

- DB2DRDA

This is a DRDA default TP Name.

- The transaction program name specified in the *tpname* field of the database manager configuration. This is user-specified.

The Communications Server .NDF file should include for each of the above TPs the following definition (Service TP x'07'6DB is used as an example):

```

DEFINE_TP SNA_SERVICE_TP_NAME(X'07',6DB)
          DESCRIPTION(ACCEPTS INBOUND SYNCPOINT CONVERSATIONS)
          PIP_ALLOWED(NO)
          FILESPEC(d:\dummy.exe)
          CONVERSATION_TYPE(ANY_TYPE)
          CONV_SECURITY_RQD(YES)
          SYNC_LEVEL(SYNCPT_NEGOTIABLE)
          TP_OPERATION(QUEUED_OPERATOR_PRELOADED)
          PROGRAM_TYPE(BACKGROUND)
          INCOMING_ALLOCATE_QUEUE_DEPTH(255)
          INCOMING_ALLOCATE_TIMEOUT(INFINITE)
          RECEIVE_ALLOCATE_TIMEOUT(INFINITE);

```

- 4** If your DB2 Universal Database SPM workstation will be used as a server accepting DB2 Universal Database client connections through APPC, you will need to ensure that you configure the database manager configuration parameter *tpname* with an appropriate value. For example:

```
db2 update dbm cfg using tpname NYSERVER
```

You must then also ensure that a TP definition exists for this TP. An example follows:

```

DEFINE_TP TP_NAME(NYSERVER)
          PIP_ALLOWED(NO)
          FILESPEC(notused)
          CONVERSATION_TYPE(ANY_TYPE)
          CONV_SECURITY_RQD(NO)
          SYNC_LEVEL(SYNCPT_NEGOTIABLE)
          TP_OPERATION(QUEUED_OPERATOR_PRELOADED)
          PROGRAM_TYPE(BACKGROUND)
          INCOMING_ALLOCATE_QUEUE_DEPTH(255)
          INCOMING_ALLOCATE_TIMEOUT(INFINITE)
          RECEIVE_ALLOCATE_TIMEOUT(INFINITE);

```

Note: If all of the following apply to your environment:

- You are using the SPM workstation to connect to DRDA application servers.
- You are using the SPM workstation to accept connections from DRDA application requesters.
- You have DB2 Universal Database clients accessing the SPM workstation through APPC.

then the DB2 Universal Database clients and the DRDA application requesters must:

- Use the same transaction program name to connect to the SPM workstation. These TP names are listed in the third bullet above.
- Use the SPM_NAME LU as their partner logical unit.

- 5** After saving your changes, use the `cmverify` command to verify the new configuration.

Communications Server Operational Considerations

Terminating IBM Communications Server for OS/2 Warp Version 4 while the SPM is active causes the SPM to stop. Once IBM Communications Server for OS/2 Warp Version 4 is restarted, you must issue a db2stop and db2start on the DB2 Connect workstation to allow the SPM to reinitialize.

Communications Server for OS/2 requires that syncpoint LUs be registered by the SPM before they can be used for DRDA2 calls. Thus DB2 must be started explicitly beforehand, in order that the SPM can register the syncpoint LU. Otherwise you may encounter the following message on DRDA2 calls:

```
SQL0859N Access to the Transaction Manager Database failed with
SQLCODE "-1032".  SQLSTATE=08502.
```

In order to execute DRDA1 calls successfully when DB2 is not started, the default LU should specify a non-SPM LU. You can use the APPCLLU environment variable to specify an LU name that does not have syncpoint support defined. Otherwise you may encounter the following message:

```
SQL30081N A communication error has been detected. Communication protocol
being used: "APPC". Communication API being used: "CPI-C". Location where
the error was detected: "". Communication function detecting the error:
"xcstp". Protocol specific error code(s): "20", "*", "*". SQLSTATE=08001
```

Support for SERVER Authentication

Before SPM, if a DB2 client specified SERVER authentication, connection requests would fail if the userid could not be authenticated properly by the DB2 server. Now, providing the SPM is configured at a DB2 server, SERVER authentication is supported if the DRDA application requester connects to the DB2 server via the SPM LU.

SPM Migration Considerations

When migrating from DB2 or DDCS Version 2 to the Version 5 SPM, first ensure that there are no indoubt transactions. You can verify this by entering the following command in the command line processor:

```
list drda indoubt transactions
```


Note that, before issuing `LIST DRDA INDOUBT TRANSACTIONS`, the application must be connected to the Syncpoint Manager (SPM) instance - use the `SPM_NAME` database manager configuration parameter as the `dbalias` on the `CONNECT` statement. If any transactions are listed, ensure that automatic resolution occurs, or - if automatic resolution is not possible - you can force the resolution by issuing the following command:

```
list drda indoubt transactions with prompting
```

Migrating from the Encina PPC Gateway

If the Encina PPC Gateway was defined on a node different from the node on which the SPM will be defined, then the user must make sure that the required SNA definitions are available on the SPM node.

The following are special considerations when migrating from a DB2 for AIX V2.1.0 Encina Peer-to-Peer Communications (PPC) Gateway environment.

In this case, follow all the steps defined above in "Setting up Communications for the SPM" on page 204, including those for the TP Name and CPI-C Side Information profiles, which must be redefined.

Otherwise, if you will use the same non-CP LU name for SPM as in your DB2 for AIX V2.1.0 configuration, the existing CPI-C Side Information profile can be re-used without change, but you will have to define the TPN profiles that you require.

Additional PPC Gateway Migration Steps for CICS for AIX

- 1** Ensure that the userid `cics` is a member of a trusted group within SNA.
- 2** Recreate DB2 support for CICS. This involves:
 - a** Recreating the shared object `db2.o`.
 - b** Rebuilding your switchload file(s).
 - c** Re-executing `CICSMKC0BOL` for any COBOL applications which you may have.

For details, refer to the *CICS for Open Systems Administration Guide*.

Encina PPC Gateway and SPM Coexistence

The Encina PPC Gateway and the DB2 SPM cannot share the same LUs. If the Encina PPC Gateway is still required you must configure either the DB2 SPM or the PPC Gateway to use a different LU.

SPM Processes

This section describes the SPM processes.

EDU Process Names

The LU 6.2 SPM has Engine Dispatchable Units (EDUs) with the following names:

- db2spmcm** The SPM APPC listener. This is a long-lived EDU that remains as long as DB2 is started.
- db2spmrm** The SPM restart/resync manager EDU. This is a long lived EDU that remains as long as DB2 is started.
- db2spmlw** The log write EDU of the SPM Logger. This is a long lived EDU that remains as long as DB2 is started.
- db2spmri** The resynchronization initiator EDU. This is a short lived EDU that exists until the resync operation is completed. The number of EDUs of type db2spmri are controlled by the SPM_RESYNC_AGENT_LIMIT.
- db2spmrr** The resynchronization receiver or XLN receiver EDU. This is a short lived EDU that is spawned by the SPM SNA listener when a syncpoint TP attach request is received.

In UNIX, these EDU names can be displayed as separate processes.

SPM Logging

The SPM maintains a log in which it records information about connections, and UOW status. This log is contained in the *spmlog* directory which is a sub-directory of *sqliib*. This directory is created the first time that the SPM is started.

The SPM log consists of the following files and directories:

- SPMLLOG - this is the log directory, under sqllib.
- SPMLLOG.LCF - this is the log control file.
- SPMLLOGSD - this is a sub-directory under spmllog which contains the primary and secondary log files:
 - SPM00000.LOG - the first primary log file.
 - SPM00001.LOG - the second primary log file.
 - SPM00002.LOG - the third primary log file.
 - SPM00003.LOG - the first secondary log file.
 - SPM00004.LOG - the second secondary log file.

SPM Log File Size

The SPM_LOG_FILE_SIZE database manager configuration parameter defines the number of 4K pages of each primary and secondary log file, and it can have the following values:

- Minimum - the minimum value is 4.
- Maximum - the maximum value is 1000 (4M bytes).
- Default - the default is 256 (1M byte).

The log normally only uses the primary extents which are allocated when the log is created. Secondary extents are allocated on demand when log space is constrained. Secondary extents are usually deleted during normal shutdown of the logger.

The SPM log size should be large enough so that performance is not adversely affected but small enough so that space is not wasted. The size that is required depends on the number of transactions using protected conversations and how often commit/rollback is issued. The SPM takes a checkpoint every time DB2 is started and stopped and when the log is 50% full. If the log is too small, the checkpoint process may be invoked often enough to impact performance. The log is probably too small if secondary log files are allocated. If the log is too large, then space will be wasted.

You should use the default log size to begin with.

Changing the SPM Log File Size

The size of the SPM log can be changed when the database manager is stopped and there are no in doubt transactions. The following procedure can be used:

- 1** Use the LIST DRDA INDOUBT TRANSACTIONS command to determine whether there are indoubt transactions for which the SPM is responsible. Note that, before issuing LIST DRDA INDOUBT TRANSACTIONS, the application must be connected to the Syncpoint Manager (SPM) instance - use the SPM_NAME database manager configuration parameter as the dbalias on the CONNECT statement. DB2 clients must be at Version 2.1.2 or higher to use the WITH PROMPTING capability of LIST INDOUBT.

- 2 If there are some indoubt transactions, stop the database manager:
`db2stop`
- 3 Update the Database Manager Configuration with a new `SPM_LOG_FILE_SIZE` value. For example, to double the log size from the default of 256 * 4K pages:
`db2 update dbm configuration using spm_log_file_size 512`
- 4 Go to the `sqllib` directory and delete the current SPM log. For example, on AIX:
`rm -fr spmlog`
- 5 Start the database manager:
`db2start`
A new SPM log of the specified size will be created during DB2 start-up.

Performance Characteristics

Distributed two-phase commit requires more request/response message exchanges than single-phase commit, which requires only a single message exchange. The overhead of protected conversations, even for read only applications, depends on the SNA LU 6.2 Syncpoint options supported by the server.

Memory Utilization

In order to support the LU 6.2 Syncpoint function, most of the control blocks used by the SPM are in global memory. The amount of global memory required is dependent on the number of protected conversations active at any one time. The amount of memory required can also be affected by the number of resynchronization connections that are pending.

SPM Protocol Violation Records

These are documented in the *Message Reference*.

Chapter 23. Setting up Two-phase Commit using TCP/IP

This chapter tells you how to set up two-phase commit using TCP/IP connections between DB2 Connect Enterprise Edition Version 5 and DB2 for OS/390 Version 5.1.

Overview

If your application programs have been pre-compiled with both the CONNECT 2 and SYNCPOINT TWOPHASE options, you can use DB2 Connect Enterprise Edition to update multiple DB2 for OS/390 Version 5.1 databases over TCP/IP connections using two-phase commit.

Note: For ODBC applications, use the ODBC Manager to set the DSN two-phase option **ON** for the database.

Any connection between your two-phase commit application and a DB2 for OS/390 Version 5.1 database can also participate with DB2 Universal Database Version 5 database servers in the same transaction.

Additionally, when using DB2 Connect Enterprise Edition Version 5, DB2 for OS/390 Version 5.1 can act as the *TM_DATABASE* for the entire two-phase commit transaction *providing that all the databases participating in the unit of work are either:*

- DB2 Universal Database Version 5.0 (Workgroup Edition or Enterprise Edition only), or
- DB2 for OS/390 Version 5.1.

You can set the *TM_DATABASE* database manager configuration parameter using the following CLP command:

```
update dbm cfg using tm_database 1ST_CONN
```

What to Do

Follow these steps:

- 1 Choose your setting for *TM_DATABASE*. We recommend 1ST_CONN, especially if the first database connected to will be a DB2 for OS/390 Version 5.1 database. Set *TM_DATABASE* as indicated above.

- 2 Ensure that those databases to be updated by your DUOW transaction over TCP/IP connections will be accessible READ-WRITE if required. See “Limitations” on page 216.
- 3 CLP users must turn off autocommit and use the following **set client** command prior issuing **connect** commands:

```
set db2options=+c
set client connect 2 syncpoint twophase
```

Limitations

The following limitations apply when using two-phase commit with DB2 Connect Enterprise Edition Version 5.0:

- Any connection involved in a distributed unit of work can be over *either* TCP/IP or SNA. If these protocols are mixed, and the TM_DATABASE is at DB2 for OS/390, then databases connected via SNA will be READ_ONLY participants in the transaction. (If you want to use SNA, see Chapter 22, “Setting Up Two-phase Commit Using SNA” on page 191).
- If DB2 for OS/390 owns the TM_DATABASE, then the client initiating the transaction must specify 1ST_CONN for TM_DATABASE.
- DB2 for OS/390 Version 5.1 *cannot* act as a TM_DATABASE if *any* of the databases participating in the transaction is either:
 - DB2 Common Server Version 2.1 or earlier
 - DB2 for MVS/ESA Version 3.1 or earlier.
- When SNA connections are used, the LU 6.2 Syncpoint Manager (SPM) permits DB2 for MVS/ESA Version 3.1 databases to be participants in two-phase transactions, *but not to act as the TM_DATABASE for such transactions*.
- You can mix connections to different database levels, including
 - DB2 for OS/390 Version 5.1 over TCP/IP
 - DB2 for MVS/ESA Version 3.1 over SNA (using SPM)
 - DB2 Common Server Version 2.1
 - DB2 Universal Database Version 5.0 databases

To do so, you must use a DB2 Universal Database Version 5 client, and DB2 Universal Database Version 5.0 must provide the *TM_DATABASE* for the transaction.

Migration

The diagram Figure 25 on page 218 illustrates possible two-phase commit scenarios:

- DB2 for OS/390 can function as the TM_DATABASE (we recommend setting TM_DATABASE=1ST_CONN in this case).
- If you will mix DB2 CS V2.1 and DB2 Universal Database Version 5.0 databases in the same unit of work, then DB2 Connect Version 5.0 must own the TM_DATABASE locally.
- If you will mix SNA and TCP/IP Wide Area Network (WAN) Connections to DB2 for MVS/ESA Version 3.1 as well as DB2 for OS/390 Version 5.1, then DB2 Connect Version 5.0 must run the SPM, and own the TM_DATABASE locally.
- If you will connect to DB2 Universal Database Version 5.0 in these scenarios, then the DB2 Client also must be at Version 5.0.

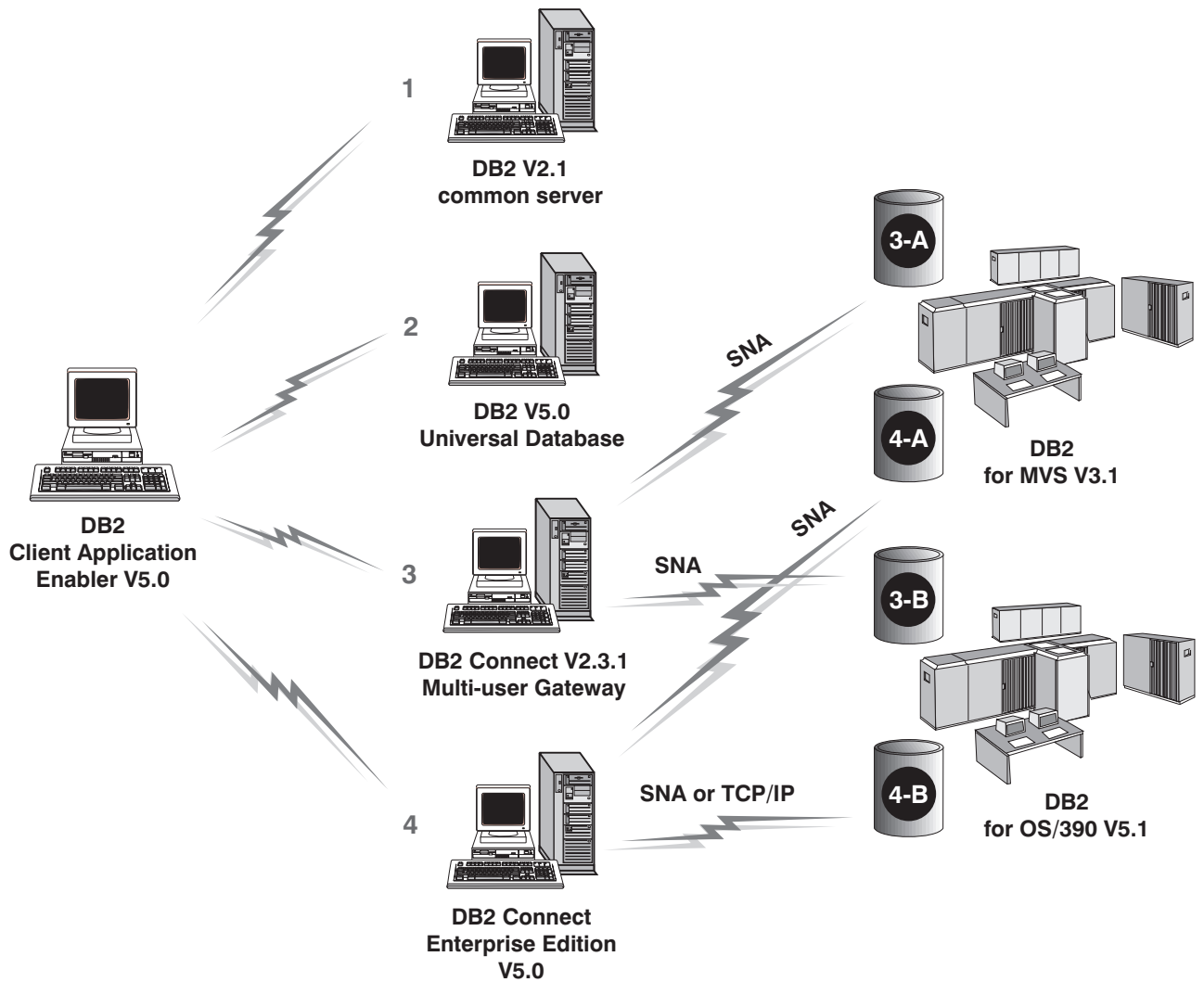


Figure 25. Two-Phase Commit Migration Scenarios.

- In the diagram, databases 3-A and 4-A are back-level (DB2 for MVS/ESA Version 3.1).
- Systems 1 and 3 are back-level.
- Only a DB2 Version 5.0 client can use DB2 Connect Version 5.0 functions, including TCP/IP connections to DB2 for OS/390 Version 5.1.
- Connections from system 3 (DDCS Version 2.3 gateway) can use only SNA (lightly shaded arrows).
- Connections from system 4 (DB2 Connect Version 5.1 gateway) can use SNA for any connection to DB2 for OS/390, DB2 for MVS, DB2 for AS/400, and DB2 for VM & VSE; or they can use TCP/IP to DB2 for OS/390 Version 5.1 only.

Chapter 24. Configuring DB2 Connect Server Communications Using the Control Center



To configure the Administration Server for communications, go to Chapter 25, "Using the Command Line Processor to Configure the DB2 Connect Server to Accept Clients" on page 221.

The Control Center is a graphical tool available on OS/2, Windows 95, and Windows NT operating systems. Use the Control Center's Setup Communications function to configure communications on the server. The Control Center allows you to:

- Display the protocols and configuration parameters that a server instance is configured to use.
- Maintain the configured protocols:
 - You can modify the parameter values of a configured protocol.
 - You can add or delete a protocol.

When you add support for a new protocol to the server system, the Setup Communications function detects and generates parameter values for the new protocol; you can accept or modify them before use. When you remove support for an existing protocol from the server system, the Setup Communications function detects the protocol that has been removed and disables its use by the instance.

You can add a protocol that has not been detected, however, you must supply all parameter values before you proceed.

The Setup Communications function can be used to maintain communications of both local and remote server instances.

Modifying the DB2 Communication Configuration of DB2 Connect Server Instances

- 1 To start the Control Center on an OS/2 system, double-click on the **Control Center** icon in the **Administration Tools** folder. (The **Administration Tools** folder is located in the DB2 folder.) To start the Control Center on a Windows NT system, click on the **Start** button and select **Programs->DB2 for Windows NT->Administration Tools->Control Center**.
- 2 Click on the **[+]** sign beside the **Systems** icon in the Control Center to get a list of systems.
- 3 Click on the **[+]** sign beside the system name to get a list of that system's database instances.
- 4 Select the instance you want to configure and click on the right mouse button.
- 5 Select the **Setup communications** option from the pop-up list. The Setup Communications window opens.
- 6 Use the Setup Communications window to configure communication protocols for the instance. Click on the **Help** push button for more information.
- 7 You must stop and start the instance for these changes to take effect.
 - a To stop the database manager instance, select the instance and click with the right mouse button on the instance and select the **Stop** option from the pop-up menu.
 - b To start the database manager instance, select the instance and click with the right mouse button on the instance and select the **Start** option from the pop-up menu.



Modifying an instance's communications settings may require you to update the database connection configuration on the client.

Chapter 25. Using the Command Line Processor to Configure the DB2 Connect Server to Accept Clients

This section describes how to configure your DB2 Connect Enterprise Edition workstation to communicate with remote client workstations.

Also described in this section are considerations when configuring the DB2 Administration Server for communications. The Control Center and the Discovery function of the Client Configuration Assistant are dependent on the Administration Server's protocol configuration.

Follow the instructions in this section if you deselected a detected communication protocol during the installation or, you have added a communication protocol to your network since running the install program.



If you have installed the Control Center, you can use the Setup Communications function to configure the instance for communications; however, it cannot be used to set up communications for the Administration Server. The Control Center can be installed on OS/2 and Windows NT servers, or on OS/2, Windows 95, and Windows NT clients.

On OS/2, the Setup Communications function can configure the APPC communications subsystem, in addition to updating the DB2 instance to use APPC.

For all other operating systems, the Setup Communications function cannot update the APPC communications subsystem; however, it will update the required instance parameters on the server.

Go to Chapter 24, "Configuring DB2 Connect Server Communications Using the Control Center" on page 219 for more information.

For instructions on using the command line processor, see Chapter 38, "Entering DB2 Commands and SQL Statements" on page 351.

Setting the DB2COMM Registry Value

Your DB2 Connect server can support multiple communication protocols concurrently; however, you only need to enable the protocols that you want to use.

If you deselected a detected protocol during installation, did not install the Control Center (for DB2 for OS/2 or Windows NT servers), or have added a communication

protocol to your network since installation, you must update the *DB2COMM* registry value with the protocol that you now want to support.

The *DB2COMM* registry value determines which protocol's connection managers will be enabled when the database manager is started. You can set this value for multiple communication protocols by separating the keywords with commas.

For your DB2 Connect server, *DB2COMM* can be any combination of the following keywords:

appc starts APPC support
ipxspx starts IPX/SPX support
netbios starts NetBIOS support
npipe starts NAMED PIPE support (for Windows NT servers) or Local support (for OS/2 servers)
tcPIP starts TCP/IP support

To set the *DB2COMM* registry value for the current instance, issue the **db2set DB2COMM= protocol_names** command. Change the *protocol_names* parameter to reflect those protocols that you want to start when the database manager is started.

For example, to set the database manager to start connection managers for the APPC and TCP/IP communication protocols, enter:

```
db2set DB2COMM=appc,tcPIP
db2stop
db2start
```



If you are setting up communications for the Administration Server, use the **db2set** command as follows:

```
db2set DB2COMM=appc,tcPIP -i DB2DAS00
db2admin stop
db2admin start
```

where:

DB2DAS00 The name of the Administration Server's instance. If you are not sure of the instance name, issue the following command to resolve it:

```
db2set DB2ADMINSERVER
```

When the **db2start** command is reissued, connection managers for the protocols specified by the *DB2COMM* registry value are started.



If there are problems starting a protocol's connection managers, a warning message is displayed and the error messages are logged in the db2diag.log file. The location of this file depends on your operating system.

UNIX-based Platforms

\$HOME/sqlib/db2dump directory, where *\$HOME* is home directory of the instance owner.

Other Platforms

x:\sqlib%\db2instance% directory, where *x*: is the drive that the client is installed and *%db2instance%* represents the DB2 instance.

Refer to the *Troubleshooting Guide* for information on the db2diag.log file.

If *DB2COMM* is undefined or set to null, no protocol connection managers are started when the database manager is started.

For more information on setting DB2 parameters, see "Controlling the DB2 Profile Registry" on page 358.



You are now ready to configure the server workstation to use any of the following communication protocols:

- Named Pipes - see "Configuring Named Pipes on the DB2 Connect Server"
- TCP/IP - see "Configuring TCP/IP on the DB2 Connect Server to Accept Clients" on page 224
- NetBIOS - see "Configuring NetBIOS on the DB2 Connect Server" on page 227
- IPX/SPX - see "Configuring IPX/SPX on the DB2 Connect Server" on page 232
- APPC - see "Configuring APPC on the DB2 Connect Server to Accept Clients" on page 237 to configure DB2 Connect to accept inbound clients requests

Configuring Named Pipes on the DB2 Connect Server

To access a remote server through Named Pipes, you must first have installed and configured communication software for both the client and DB2 Connect server workstations. See "Software Requirements" on page 26 for the communication protocol requirements for your platform. See "Possible Client-to-DB2 Connect Gateway Connectivity Scenarios" on page 35 for the supported communication protocols for your particular client and server.

If you have read and completed the instructions in "Setting the DB2COMM Registry Value" on page 221, there are no further steps required to set up Named Pipe communications on the server or to support the Administration Server.



Now that you have configured the server, you are ready to install a DB2 client. Go to Chapter 26, “Installing DB2 Clients” on page 243 for more information.

Configuring TCP/IP on the DB2 Connect Server to Accept Clients

To access a remote server through TCP/IP, you must first have installed and configured communication software for both the client and DB2 Connect Server workstations. See “Software Requirements” on page 26 for the communication protocol requirements for your platform. See “Possible Client-to-DB2 Connect Gateway Connectivity Scenarios” on page 35 for the supported communication protocols for your particular client and server.

Before completing the steps in this section, be sure that you have completed the instructions in “Setting the DB2COMM Registry Value” on page 221.

If you are setting up communications for the Administration Server, it was configured for TCP/IP (using the registered Port number 523) when it was created. There are no further steps required to enable the Administration Server to use TCP/IP.

The following steps are required to set up TCP/IP communications:

- 1** Identify and record parameter values.
- 2** At the server:
 - a** Update the services file.
 - b** Update the database manager configuration file.



Due to the characteristics of the TCP/IP protocol, the TCP/IP subsystem 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 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.

Parameter	Explanation	Sample Value	Your Value
Connection Port <ul style="list-style-type: none">• Connection Service name (<i>svcename</i>)• Port number/Protocol (Port_number/tcp)	Values required in the services file. The Connection and Interrupt Service names are arbitrary, but each must be unique within the services file.	server1 3700/tcp	
Interrupt Port <ul style="list-style-type: none">• Interrupt Service name• Port number/Protocol (Port_number + 1/tcp)	The Connection and Interrupt Ports must be unique within the services file, with the Interrupt Port number equal to the Connection Service Port number plus one.	server1i 3701/tcp	
Service name (<i>svcename</i>)	The name used to update the Service name (<i>svcename</i>) parameter in the database manager configuration file at the server. This value must be the same as the Connection Service name specified in the services file.	server1	

Step 2. Configure the DB2 Connect Server

The following steps describe how to configure this protocol on the server. Replace the sample values with your values and record them on your worksheet.

A. Update the Services File

The TCP/IP services file specifies ports that the DB2 Connect server will listen on for client requests. The services file must contain two entries for each database manager instance.

You need to update the services file and specify the ports that you want the DB2 Connect server to listen on for incoming client requests. The first entry describes the Connection Port, and the second entry describes the Interrupt Port.

The location of the services file depends on the operating system installed on the server.

OS/2 \mptn\etc

UNIX /etc

Windows NT \winnt\system32\drivers\etc



If you are using Network Information Services (NIS) on your network (for UNIX servers only), you must update the services file located on your master server.

The location of the services file can depend on the products you have installed on your system. See your TCP/IP documentation for more information.

OS/2 users can type **set etc**, from a command window, to determine the location of the services file.

Using a local text editor, add the Interrupt Port and Connection Port entries to the services file for TCP/IP support. For example:

```
server1        3700/tcp        # DB2 connection service port
server1i       3701/tcp        # DB2 interrupt connection service port
```

where:

server1 is the Connection Service name

server1i is the Interrupt Service name

3700 and 3701 are the Port numbers for the Connection and Interrupt Ports

tcp is the communication protocol that you are using

B. Update the Database Manager Configuration File

You must update the database manager configuration file with the Service name (*svccname*) parameter.

To update the database manager configuration file, perform the following steps:

- 1** Log on to the system as a user with System Administrative (SYSADM) authority.



If you have trouble logging on to the system, see "Logging on to the System" on page 313.

- 2** If you are using UNIX, set up the instance environment and invoke the DB2 command line processor as follows:
 - a. Run `db2profile` or `db2cshrc` as follows:


```
. INSTHOME/sql1lib/db2profile (for Bourne or Korn shell)
source INSTHOME/sql1lib/db2cshrc (for C shell)
```

where INSTHOME is the home directory of the instance

b. Start the DB2 command line processor by issuing the **db2** command.

3 Update the database manager configuration file with the Service name (*svcename*) parameter using the following commands in the command line processor:

```
update database manager configuration using svcename svcename
db2stop
db2start
```

For example, if the Connection Service name in the services file was entered as *server1*, use:

```
update database manager configuration using svcename server1
db2stop
db2start
```



The *svcename* used must match the Connection Service name specified in the services file.

View the database manager configuration file, to ensure that these changes have taken effect, by issuing the following command in the command line processor:

```
get database manager configuration
```



Now that you have configured the server, you are ready to install a DB2 client. Go to Chapter 26, "Installing DB2 Clients" on page 243 for more information.

Configuring NetBIOS on the DB2 Connect Server

To access a remote server through NetBIOS, you must first have installed and configured communication software for both the client and DB2 Connect server workstations. See "Software Requirements" on page 26 for the communication protocol requirements for your platform. See "Possible Client-to-DB2 Connect Gateway Connectivity Scenarios" on page 35 for the supported communication protocols for your particular client and server.

Before completing the steps in this section, be sure that you have completed the instructions in “Setting the DB2COMM Registry Value” on page 221.

The following steps are required to set up NetBIOS communications:

- 1 Identify and record parameter values.
- 2 Configure the server:
 - a Configure the NetBIOS Interface.
 - b Update the database manager configuration file.

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.

Parameter	Description	Sample Value	Your Value
Adapter number (<i>Adapter_number</i>)	The logical network adapters that will be used for the NetBIOS connection. The server uses adapter 0 by default.	0	
Workstation name (<i>nname</i>)	The NetBIOS name of the server workstation. <i>nname</i> is a name, chosen by the user, which must be unique among all NetBIOS nodes in the network.	server1	

Step 2. Configure the DB2 Connect Server

The following steps describe how to configure this protocol on the server. Replace the sample values with your values and record them on your worksheet.

A. Configure the NetBIOS Interface

This section describes how to configure the NetBIOS interface on your OS/2 or Windows NT DB2 Connect server.

- For OS/2:

If the *db2nbadapters* parameter is not set, the default adapter will be 0. If you want to use additional server adapters, or you need to specify a server adapter other than 0, set the *db2nbadapters* parameter to the number you want to use.

- For Windows NT:

In order for a client to connect to a Windows NT server, the network route of the adapter number used must be **Nbf** for native NetBIOS operation. If the *db2nbadapters* parameter is not set, the default adapter will be 0. If you want to use additional server adapters, or you need to specify a server adapter other than 0, set the *db2nbadapters* parameter to the number that you want to use.



DB2 uses registry values to control its use of the NetBIOS resources on the server. Use the *db2nbadapters* registry parameter when you want to specify a value other than the default Logical adapter number 0.

For the DB2 server, set the *db2nbadapters* parameter by issuing the **db2set db2nbadapters=Adapter_number** command.

For the Administration Server, set the *db2nbadapters* parameter by issuing the **db2set db2nbadapters=Adapter_number -i DB2DAS00** command.

For more information, see Chapter 39, "Controlling Your DB2 Environment" on page 357.

To view or modify the NetBIOS interface configuration, which maps network routes to adapter numbers, do the following:

- For OS/2:
 - 1 Double-click on the **MPTS** icon.
 - 2 Click on the **Configure** push button.
 - 3 Select the **LAN adapters and protocols** radio button and click on the **Configure** push button.
 - 4 Record the Logical adapter number associated with the **IBM OS/2 NETBIOS** entry in the Current Configuration window.
 - 5 If you want to change the Logical adapter number associated with NetBIOS, select the **IBM OS/2 NetBIOS** entry from the Current Configuration window and click on the **Change number** push button.
 - 6 Select a Logical adapter number and click on the **Change** push button.
 - 7 Record the new Logical adapter number associated with the **IBM OS/2 NETBIOS** entry in the Current Configuration window on your worksheet.
 - 8 Click on **OK**.
 - 9 Click on the **Close** push button.
 - 10 Click on the **Exit** push button.

- 11 Ensure that the **Update CONFIG.SYS** check box is selected and click on the **Exit** push button.
 - 12 Click on the **Exit** push button.
 - 13 Shutdown and reboot your system for these changes to take effect.
- For Windows NT:
 - 1 Click on the **Start** button and select **Settings->Control Panel**.
 - 2 Double-click on the **Network** icon and select the **Services** tab.
 - 3 Select the **NetBIOS Interface** option from the Network Services window and click on the **Properties** push button.
 - 4 Scroll through the network routes until you find the Logical adapter number associated with **Nbf** and record it on your worksheet.
 - 5 To change the Logical adapter number associated with **Nbf**, select the associated **Lana Number**, and click on the **Edit** push button. Enter the new adapter number 0 (or the value that you set for *db2nbadapters*).
 - 6 Record the new Adapter number associated with **Nbf** on your worksheet.
 - 7 Click on **OK**.
 - 8 Click on the **Close** push button.
 - 9 Shutdown and reboot your system for these changes to take effect.



Each adapter number must be uniquely associated with a network route. Windows NT has a built in checking facility that will not allow you specify the same adapter number for different network routes. If a Network route already exists that is using the adapter number 0, assign a different number to that route. (The valid range for adapter numbers is 0 to 255.) This will allow you to select 0 as the adapter number that corresponds to **Nbf**. Approve the changes by clicking on **OK**.

B. Update the Database Manager Configuration File

You must update the database manager configuration file with the server's Workstation name (*nname*) parameter.

To update the database manager configuration file, perform the following steps:

- 1 Log on to the system as a user with System Administrative (SYSADM) authority.



If you have trouble logging on to the system, see "Logging on to the System" on page 313.

- 2 Update the database manager configuration file with the server's Workstation name (*nname*) parameter using the following commands in the command line processor:

```
update database manager configuration using nname nname
db2stop
db2start
```

For example, if the server's workstation name (*nname*) is *server1*, use:

```
update database manager configuration using nname server1
db2stop
db2start
```

If you are configuring the Administration Server for NetBIOS, you must update the admin server configuration file, use:

```
update admin configuration using nname server1
db2admin stop
db2admin start
```



If you are configuring a DB2 Connect for OS/2 server, you are now finished the configuration and are ready to install a DB2 client. Go to Chapter 26, "Installing DB2 Clients" on page 243 for more information.

Autostarting DB2 with NetBIOS (for Windows NT only)

If your NetBIOS protocol was configured during installation, the setup program automatically created a dependency for the Administration Server and the default instance (DB2) on NetBIOS. If you create additional instances of DB2, you will have to manually create a dependency on NetBIOS for each new instance.

You can create this dependency with the **db2depnb** command as follows:

- 1 Go to the `x:\sqlib\misc` directory, where *x*: is the drive on which DB2 was installed
- 2 Enter the **db2depnb** command as follows:

```
db2depnb instance_name
```

This records a dependency on the startup order which causes NetBIOS to start before DB2.



If you remove the NetBIOS protocol from your network, you *must* remove the dependencies that were created during installation, and any dependencies that you created for additional instances. Failure to remove these dependencies may cause problems when running DB2 after the NetBIOS protocol has been removed from the network.

To remove a dependency, enter the **db2depnb** command as follows:

```
db2depnb instance_name /r
```



Now that you have configured the server, you are ready to install a DB2 client. Go to Chapter 26, “Installing DB2 Clients” on page 243 for more information.

Configuring IPX/SPX on the DB2 Connect Server

To access a remote database server through IPX/SPX, you must first have installed and configured communication software for both the client and DB2 Connect server workstations. See “Software Requirements” on page 26 for the communication protocol requirements for your platform. See “Possible Client-to-DB2 Connect Gateway Connectivity Scenarios” on page 35 for the supported communication protocols for your particular client and server.

Before completing the steps in this section, be sure that you have completed the instructions in “Setting the DB2COMM Registry Value” on page 221.

If you are setting up communications for the Administration Server, it was configured for IPX/SPX (using the registered Socket number 87A2) when it was created. There are no further steps required to enable the Administration Server to use IPX/SPX.

Your DB2 Connect server can be set up to support IPX/SPX client communications via Direct Addressing or File Server Addressing.

Direct Addressing:

The client connects to the DB2 Connect server by directly specifying the IPX/SPX internetwork address of the server (bypassing the NetWare file server). Using this method, a NetWare file server is not required on the network. Configure DB2 Connect servers using this addressing method if they will be accessed solely by clients using Direct Addressing.

File Server Addressing:

The DB2 Connect server instance registers its address at the NetWare file server. The client connects to the DB2 Connect server instance through an address stored at a NetWare file server. Configure DB2 Connect servers using this addressing method if

they will be accessed by clients using both File Server and Direct Addressing, or just File Server Addressing.

See Table 23 for a list of the supported IPX/SPX addressing methods for your server.

DB2 Connect Server Platform	Direct Addressing	File Server Addressing
AIX	√	√
HP-UX	√	√
OS/2	√	√
Solaris	√	
Window NT	√	

The following steps are required to set up IPX/SPX communications:

- 1 Identify and record parameter values.
- 2 Configure the server:
 - a Update the database manager configuration file.
 - b Register the server on the NetWare file server (for File Server Addressing only).

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.

Parameter	Explanation	Our Example	Your Value
File server name (FILESERVER)	<p>Direct Addressing A * value indicates that you are using Direct Addressing.</p> <p>File Server Addressing The name of the NetWare file server where the database server instance is registered. This parameter must be entered in UPPERCASE.</p>	<p>Direct Addressing *</p> <p>File Server Addressing NETWSRV</p>	

Table 24 (Page 2 of 2). IPX/SPX Values Required at the DB2 Connect Server

Parameter	Explanation	Our Example	Your Value
DB2 server object name (<i>OBJECTNAME</i>)	<p>Direct Addressing A * value indicates that you are using Direct Addressing.</p> <p>File Server Addressing The database manager server instance, represented as the object <i>OBJECTNAME</i> on the NetWare file server. The server's IPX/SPX internetwork address is stored and retrieved from this object.</p> <p>This parameter must be entered in UPPERCASE and be unique on the NetWare file server system.</p>	<p>Direct Addressing *</p> <p>File Server Addressing DB2INST1</p>	
Socket number (<i>IPX_SOCKET</i>)	<p>Represents the connection end point in a DB2 Connect server's internetwork address. It must be unique for all server instances, and all IPX/SPX applications running on the workstation. It is entered in hexadecimal format.</p> <p>DB2 has registered well known sockets with Novell in the range 0x879E to 0x87A1. If you run more than 4 instances on the server machine, you must prevent socket collisions for instances 5 and up by choosing a socket number that is not 0x0000, in the dynamic socket range 0x4000 to 0x7FFF, or in the range 0x8000 to 0x9100 (these are well known sockets that are registered to various applications). The maximum value for this parameter is 0xFFFF.</p>	879E (default)	
IPX/SPX Internetwork Address	The internetwork address required when configuring a client to communicate with a server using Direct Addressing.	09212700.400011527745.879E	

Naming Restrictions for File Server Addressing

The following characters are not valid for the File server (*FILESERVER*) or the DB2 server object name (*OBJECTNAME*) parameters: / \ : ; , * ?

Step 2. Configure the DB2 Connect Server

The following steps describe how to configure this protocol on the server. Replace the sample values with your values and record them on your worksheet.

A. Update the Database Manager Configuration File

You must update the database manager configuration file with the File server (*FILESERVER*), DB2 server object name (*OBJECTNAME*), and Socket number (*IPX_SOCKET*) parameters.

To update the database manager configuration file, perform the following steps:

- 1 Log on to the system as a user with System Administrative (SYSADM) authority.



If you have trouble logging on to the system, see “Logging on to the System” on page 313.

- 2 If you are using UNIX, set up the instance environment and invoke the DB2 command line processor as follows:
 - a. Run `db2profile` or `db2cshrc` as follows:

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

where `INSTHOME` is the home directory of the instance
 - b. Start the DB2 command line processor by issuing the **db2** command.
- 3 In the database manager configuration file, update the File server (*FILESERVER*), DB2 server object name (*OBJECTNAME*), and Socket number (*IPX_SOCKET*) parameters using the following commands in the command line processor:

```
update dbm cfg using fileserver FILESERVER objectname OBJECTNAME ipx_socket IPX_SOCKET
db2stop
db2start
```

Direct Addressing

For example, if you have chosen a value of `879E` for the Socket number (*IPX_SOCKET*) parameter, use:

```
update dbm cfg using fileserver * objectname * ipx_socket 879E
db2stop
db2start
```

File Server Addressing

For example, if the name of the File server (*FILESERVER*) is `NETWSRV`, the DB2 server's object name (*OBJECTNAME*) is `DB2INST1`, and you have chosen a value of `879E` for the Socket number (*IPX_SOCKET*) parameter, use:

```
update dbm cfg using fileserver NETWSRV objectname DB2INST1 ipx_socket 879E
db2stop
db2start
```

View the database manager configuration file, to ensure that these changes have taken effect, by issuing the following command in the command line processor:

```
get database manager configuration
```



If you are planning to only support clients that use Direct Addressing, you will be required to enter the server's IPX/SPX internetwork address as the DB2 server object name when cataloging the node on the client.

Determine the value for the *OBJECTNAME* parameter by issuing the **db2ipxad** command on the server. This command is located in the `sqllib/misc/` directory for UNIX platforms, or the `sqllib\misc\` directory for all other platforms.

Make note of this output on your worksheet for use when you configure an IPX/SPX client using the command line processor.



If you are planning to support clients using only Direct Addressing, you are now finished the configuration and are ready to install a DB2 client. Go to Chapter 26, "Installing DB2 Clients" on page 243 for more information.

B. Register the DB2 DB2 Connect Server Instance on the NetWare File Server (for File Server Addressing Only)

The DB2 Connect server must be registered *after* the database manager configuration file has been updated with the IPX/SPX parameters. To register the DB2 Connect server instance at the NetWare File server, issue the following command in the command line processor:

```
register db2 server in nwbindery user USERNAME password PASSWORD
```

Notes:

1. *USERNAME* and *PASSWORD* must be specified in UPPERCASE.
2. The *USERNAME* and *PASSWORD* are used to log on to the NetWare file server and must have Supervisor/Administrator or Workgroup Manager security equivalence.
3. If you want to register at a NetWare 4.x file server (which uses directory services and provides bindery emulation capability), the *USERNAME* used must be created within the same context as the current bindery context used by Directory Services when it does bindery emulation. The bindery emulation context currently in use can be found by checking the bindery emulation setting on the NetWare 4.x file server (for example, by using the *SERVMAN* utility). For more information, refer to your IPX/SPX documentation.



Now that you have configured the server, you are ready to install a DB2 client. Go to Chapter 26, “Installing DB2 Clients” on page 243 for more information.

Configuring APPC on the DB2 Connect Server to Accept Clients

To access a remote server through APPC, you must first have installed and configured communication software for both the client and DB2 Connect server workstations. See “Software Requirements” on page 26 for the communication protocol requirements for your platform. See “Possible Client-to-DB2 Connect Gateway Connectivity Scenarios” on page 35 for the supported communication protocols for your particular client and server.

Before completing the steps in this section, be sure that you have completed the instructions in “Setting the DB2COMM Registry Value” on page 221.

The following steps are required to set up APPC communications:

- 1** Identify and record parameter values.
- 2** Configure the server:
 - a** Update the database manager configuration file.
 - b** Configure the APPC communications subsystem.

Step 1. Identify and Record Parameter Values

Before you proceed through the configuration steps, enter your value for the Transaction program name in the following table.

Parameter	Description	Sample Value	Your Value
Transaction program name (<i>tpname</i>)	The Transaction program that the server listens on for client requests.	nyserver	

Step 2. Configure the DB2 Connect Server

The following steps describe how to configure this protocol on the server. Replace the sample value with your value as recorded on your worksheet.

A. Update the Database Manager Configuration File

You must update the database manager configuration file with the Transaction program name (*tname*).

To update the database manager configuration file, perform the following steps:

- 1 Log on to the system as a user with System Administrative (SYSADM) authority.



If you have trouble logging on to the system, see "Logging on to the System" on page 313.

- 2 If you are using UNIX, set up the instance environment and invoke the DB2 command line processor as follows:
 - a. Run `db2profile` or `db2cshrc` as follows:

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

where `INSTHOME` is the home directory of the instance
 - b. Start the DB2 command line processor by issuing the **db2** command.
- 3 Update the database manager configuration file with the server's Transaction program name (*tname*) using the following commands in the command line processor:

```
update dbm cfg using tname tname
db2stop
db2start
```

For example, if the server's Transaction program name (*tname*) is *nyserver*, use:

```
update dbm cfg using tname nyserver
db2stop
db2start
```

If you are configuring the Administration Server to use APPC, you must update the admin server configuration file, use:

```
update admin configuration using tname nyserver
db2admin stop
db2admin start
```

B. Configure the APPC Communications Subsystem

To configure your DB2 server to accept remote clients using APPC, you need to update the APPC communications subsystem to support the Transaction program name (*tpname*) that the server will use.



If you have not already configured your APPC communication subsystem to support the Transaction program name that you have specified for the DB2 Connect server, use the instructions in Chapter 11, “Configuring Communications to Host and AS/400 Databases Manually” on page 81 to complete the configuration.

If you have already configured your DB2 Connect server to support inbound APPC client communications, go to Chapter 33, “Configuring Client-to-Server Communications Using the Command Line Processor” on page 277.

Part 5. Installing and Configuring DB2 Clients

Chapter 26. Installing DB2 Clients

Use the instructions in this section to perform an interactive installation of a DB2 client. You can also run unattended installations of DB2 products to remote target machines running OS/2, Windows 3.x, Windows 95, or Windows NT.



Go to the section that gives instructions for the DB2 client that you want to install.

- Chapter 27, "Installing DB2 Clients on OS/2 Workstations" on page 245.
- Chapter 28, "Installing DB2 Clients on Windows 95 or Windows NT Workstations" on page 247.
- Chapter 29, "Installing DB2 Clients on Windows 3.x Workstations" on page 251.
- Chapter 30, "Installing DB2 Clients on UNIX Workstations" on page 255.
- Chapter 31, "Installing DB2 Clients on Macintosh Workstations" on page 271.
- Chapter 41, "Unattended DB2 Installation on OS/2 Workstations" on page 379.
- Chapter 42, "Unattended DB2 Installation on Windows 95 or Windows NT Workstations" on page 389.

Clients on a LAN that will connect to a DB2 Connect or DB2 Universal Database must have the DB2 Client Application Enabler or the DB2 Software Developer's Kit installed.



The DB2 Client Application Enabler is installed with any DB2 Version 5 product. If a DB2 Version 5 product currently exists on this workstation, the DB2 Client Application Enabler component has already been installed, and there is no need to install a DB2 Client Application Enabler. To configure your client to access remote servers, go to Chapter 32, "Configuring Client to DB2 Connect Server Communications Using the CCA" on page 273.

(The DB2 SDK must be ordered separately from DB2 Connect.)

DB2 Client Application Enablers and DB2 SDKs are available for the following operating systems: AIX, DOS, HP-UX, Macintosh, OS/2, SCO OpenServer, Silicon Graphics IRIX, SINIX, Solaris, Windows 3.1x, Windows 95, and Windows NT.

You may install DB2 Client Application Enablers on any number of workstations; there are no licensing restrictions for installation. DB2 Enterprise Edition allows an unlimited number of user to connect to the server, DB2 Workgroup has use-based entitlement restrictions for the number of users that can connect to the server.



To obtain DB2 Client Application Enablers for all clients, including DOS, connect to the IBM Web site (<http://www.software.ibm.com>), search for the IBM Database 2 Client Application Enabler Pack, and follow the instructions provided.

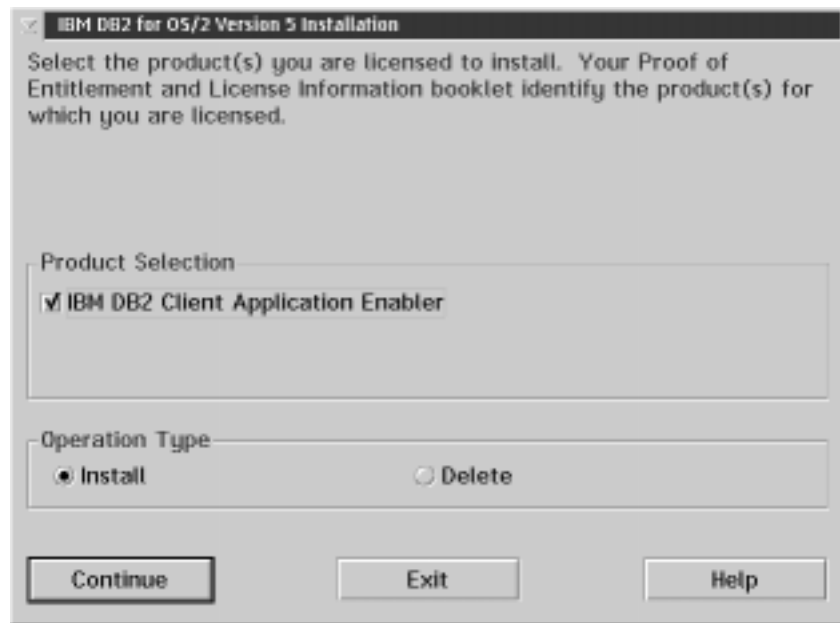
Chapter 27. Installing DB2 Clients on OS/2 Workstations

This section contains the information you need to install the DB2 Client Application Enabler or the DB2 Software Developer's Kit on OS/2 workstations.

To install the DB2 Client Application Enabler for OS/2:

- 1 Insert the DB2 Client Pack CD-ROM that contains the OS/2 client into the drive.
- 2 Begin the installation program as follows:
 - Open an OS/2 windows and set the drive to x:, where x is the letter that represents your CD-ROM drive.
 - Set the current directory to `\db2\os2\language\install`, where *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.
 - Enter the command **install**.

The IBM DB2 for OS/2 Version 5 Installation window opens.



To select the product that you want to install on your system, click on the **Continue** push button. The Update CONFIG.SYS File window opens.

- 3 Indicate whether or not you want to update the config.sys file as part of the installation.
 - If you want the config.sys file updated, click on **OK**. A backup copy of your existing file is kept as config.0xx.
 - If you do not want the config.sys file updated, clear the **Update CONFIG.SYS** check box and click on **OK**. You will need to manually update your config.sys file with the values that are stored in the config.add file.
- 4 The Install - Directories window provides a list of the product's components. You can choose which of the components you want to install on your system.

For the Install - Directories window, complete the entries as follows:

- a Select each of the components you want to install.

You have the option of installing the Client Configuration Assistant component. The Client Configuration Assistant makes it easy for you to configure and administer connections to databases and to bind applications and utilities to a database. If the Client Configuration Assistant is not installed, you will need to manually configure connections to DB2 servers. Refer to "Managing Connections to Databases Using the Client Configuration Assistant" on page 6 for a complete description of the Client Configuration Assistant's features.
- b In the **File directory** field, type the directory where you want the product installed. The default value is c:\sqlib.

Note: If a DB2 Version 5 product is already installed on the workstation, you must install on the same drive and directory.
- c Click on the **Disk Space** push button to see how much space you have on each of the drives on your machine and to change disks if necessary.
- d Click on the **Install** push button to continue.

A progress window appears until the installation is complete. You can click on the **Stop** push button at any time to end the installation.

- 5 At the end of the installation, shut down and reboot your workstation before you can use the client.

Note: If you want to run Windows 3.1 applications on your OS/2 client, you must also install the DB2 Client Application Enabler for Windows 3.1 component on your system. You should install this client component in the same directory as DB2 Client Application Enabler for OS/2. Having both DB2 Client Application Enablers in the same directory merges the DB2 directories and allows the CCA to be used to configure the access to remote DB2 databases for both OS/2 and Windows 3.x applications.



To configure your client to access remote servers, go to Chapter 32, "Configuring Client to DB2 Connect Server Communications Using the CCA" on page 273.

Chapter 28. Installing DB2 Clients on Windows 95 or Windows NT Workstations

This section contains the information you need to install the DB2 Client Application Enabler on Windows 95 or Windows NT workstations.

Before You Begin

Read and perform the steps in this section before you begin the installation to ensure that you have the required items and information that you will need.

Creating a Username for Installing DB2 Products

Windows 95

The username must be a valid DB2 username.

A valid DB2 username is eight characters or less, and complies with DB2's naming rules. For more information on DB2's naming rules, see Appendix D, "Naming Rules" on page 501.

Windows NT

You need to have a username that will be used to install DB2. The username must belong to the Administrators group, and also be a valid DB2 username or have the *"Act as part of the operating system"* advanced user right.

A valid DB2 username is eight characters or less, and complies with DB2's naming rules. For more information on DB2's naming rules, see Appendix D, "Naming Rules" on page 501.

If this username does not comply with DB2's naming rules, but has the *"Act as part of the operating system"* advanced user right, the setup program will create the username *DB2ADMIN* to perform the installation.



This username will be removed from the system when the installation is complete.

Performing the Installation

To install a DB2 Client Application Enabler for Windows 95 or Windows NT:

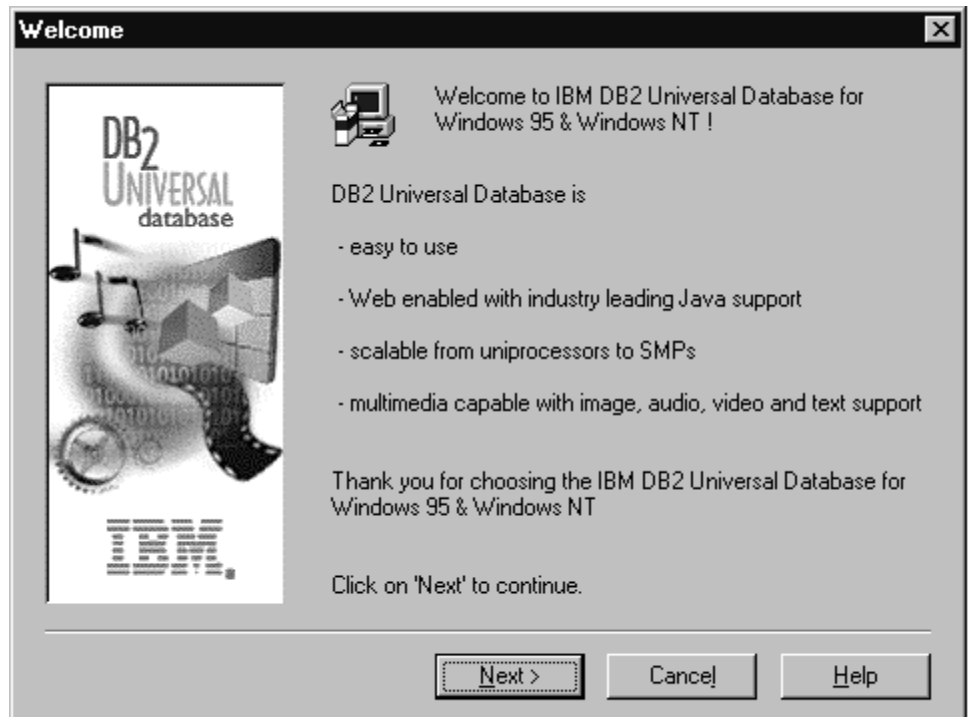
- 1 Log on as a user that meets the requirements for installing DB2. For more information, see “Creating a Username for Installing DB2 Products” on page 247.
- 2 Shut down any other programs so that the setup program can update files as required.
- 3 Insert the DB2 Client Pack CD-ROM that contains the Windows 95 or Windows NT client 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, see the tip that follows.



To manually invoke the setup program, do the following:

- 1 Click on the **Start** button and select **Run**
- 2 Type the following in the **Open** field:
`x:\setup /i=LANGUAGE`
where
 - x: represents your CD-ROM drive
 - LANGUAGE represents the two-character country code for your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.
- 3 Select **OK**

- 4 The Welcome window opens.



Click on the **Next** push button to continue.

5 The Enable Remote Administration window opens. Select the **Install components required to administer remote servers** check box if you would like to administer remote servers from this client, then click on the **Next** push button.

6 Select the installation type you prefer:



Typical Install: Installs those DB2 components that are used most often, including all required components, ODBC support, documentation, and commonly used DB2 tools such as the Client Configuration Assistant and the Information Center. The DB2 instance is created.



Compact Install: Installs only the required DB2 components and ODBC support. The DB2 instance is created.



Custom Install: Installs only those components that you select. The DB2 instance is created.



The Client Configuration Assistant (CCA) component makes it easy for you to configure and administer connections to databases and bind applications and utilities to a database. See “Managing Connections to Databases Using the Client Configuration Assistant” on page 6 for a complete description of the CCA's features.

If the CCA is not installed, you will need to use the command line processor to configure connections to a DB2 server.

See Chapter 33, “Configuring Client-to-Server Communications Using the Command Line Processor” on page 277 to configure clients using the command line processor.

- 7 Respond to the setup program's prompts. Online help is available to walk you through the remaining steps. Invoke online help by clicking on the **Help** push button at any time.

Note: If a DB2 Version 5 product is already installed on the workstation, you must install the product on the same drive and in the same directory.

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

- 8 After you install the product, you must reboot your workstation before you can begin to use it. Select a reboot option and click on the **Finish** push button. This completes the installation.



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

The installation program has:

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



To configure your client to access remote servers, go to Chapter 32, “Configuring Client to DB2 Connect Server Communications Using the CCA” on page 273.

Chapter 29. Installing DB2 Clients on Windows 3.x Workstations



If you are planning to support only local communications from a WIN-OS/2 session to an OS/2 server, it is recommended that you use the local Windows Support supplied with the DB2 for OS/2 server, and do not install the Windows 3.x Client Application Enabler. Go to Chapter 5, "Installing DB2 Connect on OS/2 Systems" on page 39 to install Windows support on your OS/2 server.

Note: If you have a previous version of the DB2 Client Application Enabler for Windows 3.1 installed on your system, it is recommended that you back it up before beginning this installation procedure.

To install the DB2 Client Application Enabler on Windows 3.x workstations:

- 1 Insert the DB2 Client Pack CD-ROM that contains the Windows 3.x client into the drive.
- 2 To begin the installation program enter:

`x:\db2\windows\language\install\install.exe`

where *x*: is the letter representing your CD-ROM drive and where *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.

The Install window opens.



- 3 In the Install window, indicate whether or not you want to update the autoexec.bat file as part of the installation.
 - If you want the autoexec.bat file updated, check that the **Update CONFIG.SYS/AUTOEXEC.BAT** check box is selected, then click on **OK**. A

backup copy, called autoexec.bak, is created in the same directory as your autoexec.bat file.

- If you do not want the autoexec.bat file updated, clear the **Update CONFIG.SYS/AUTOEXEC.BAT** check box. You will need to manually update your autoexec.bat file with the values that are stored in the autoexec.add file.



The **Overwrite files** check box is selected by default, it is recommend that you do not change this setting.

- 4 Click on **OK** to continue. The Install-directories window opens.

Install - directories

Select the components that you want to install:

Client Application Enabler
Documentation

Bytes needed: Unknown

Enter the directories where you want to install the components.
These directories will be created if they do not already exist.

File directory: C:\SQLLIB

Install... Disk space... Cancel Help

- 5 In the **File directory** field, type the directory where you want the product installed. The default value is c:\sqllib.



If you are installing the DB2 Client Application Enabler for Windows 3.x on an OS/2 system that already has the DB2 Client Application Enabler for OS/2 Version 5 product installed, enter the same directory in the **File directory** field as the DB2 Client Application Enabler for OS/2 product. This will merge the two DB2 directories together, allowing tools like the Client Configuration Assistant to be used to configure clients to access a remote DB2 database for both Windows 3.x and OS/2 applications.

- 6 Select the components that you want to install.

7 Click on the **Install** push button to start the installation. A progress window appears until the installation is complete.

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

8 Once you have completed the installation, shut down and reboot your system.



To configure your client to access a remote DB2 Connect server, see Chapter 33, "Configuring Client-to-Server Communications Using the Command Line Processor" on page 277.

Chapter 30. Installing DB2 Clients on UNIX Workstations

This section contains the information you need to install the DB2 Client Application Enabler on UNIX systems. Refer to the following sections as appropriate:

- “Installing on AIX, HP-UX and Solaris Systems” on page 256.
- “Installing on Other UNIX Systems” on page 264.

Before You Begin

Before you begin installing DB2 products using the DB2 Installer, you need to gather the following information:

Where is the CD-ROM mount point?

You need to mount the CD-ROM before you can install the DB2 product. To mount the CD-ROM, you must know where the mount point is. For example, the CD-ROM mount point can be /cdrom.

Note: On some UNIX operating systems, the CD-ROM is automatically mounted.

How much disk space does my operating system require for all selected products?

See “Estimating Fixed Disk Requirements” on page 23 and “Disk Requirements Table” on page 23 to find out how much disk space is required for selected products and how to estimate disk space requirements.

How do I assign a group name and user name for a DB2 instance?

A separate user name must be used for each DB2 Instance. We recommend that a new group be created which should be used as a primary group for the DB2 instance user.

Installing on AIX, HP-UX and Solaris Systems

To install the DB2 Client Application Enabler on AIX, HP-UX and Solaris systems, you will perform the following steps:

- 1 Update the kernel configuration parameters - see "Step 1. Updating Kernel Configuration Parameters." This step is not required on AIX.
- 2 Mount the DB2 Client Pack CD-ROM (see "Step 2. Mounting the DB2 Client Pack CD-ROM" on page 258).
- 3 Install the DB2 products - see "Step 3. Performing the Installation" on page 260.

Step 1. Updating Kernel Configuration Parameters

To run DB2 Client Application Enabler for UNIX systems, you may have to update some kernel configuration parameters.



This step is not required on AIX.

Recommended Values for HP-UX

The following values in Table 26 are recommended for the HP-UX kernel configuration parameters.

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.
2. To maintain the interdependency among kernel parameters, change parameters in the same sequence in which they appear in the preceding table.

To change the values, do the following:

- 1 Use **SAM** and select **Kernel Configuration**.
- 2 Select **Configurable Parameters**.
- 3 Highlight the parameter to be changed.
- 4 Select **Modify Configurable Parameter** from the **Actions** menu and make the appropriate changes.
- 5 Repeat the previous two steps for every kernel parameter which needs to be updated.
- 6 Create a new kernel by selecting **Create a New Kernel** from the **Actions** menu.
- 7 Reboot the system so that the changes can take effect.



Go to "Step 2. Mounting the DB2 Client Pack CD-ROM" on page 258 to continue with the installation.

Recommended Values for Solaris

The following values in Table 27 are recommended for Solaris kernel configuration parameters.

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

Notes:

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

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 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.

Step 2. Mounting the DB2 Client Pack CD-ROM

To install DB2 Client Application Enabler using the DB2 Installer, you must first mount the CD-ROM. Use the Client Pack CD-ROM to perform the installation. Once you have mounted the CD-ROM, you can start installing the DB2 products.

Mounting on AIX Systems

Perform the following steps to mount the CD-ROM on AIX operating systems:

- 1 Log in as root.
- 2 Insert the CD-ROM in the drive.
- 3 Create a root directory by typing the following command:

```
mkdir -p /cdrom
```



The directory name `/cdrom` is used here as an example only. You may use a different name for your root directory.

- 4 Allocate a CD-ROM file system by typing the following command:

```
smit storage
```
- 5 Select **FileSystems**.
- 6 Select **Add/Change/Show/Delete FileSystems**.
- 7 Select **CD-ROM FileSystems**.
- 8 Select **Add CDRom FileSystems**.
- 9 Select the **DEVICE Name**.



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

- 10 Respond to the prompt, `mount point`, by typing the following:

/cdrom

- 11 Mount the CD-ROM file system by typing the following command:

```
smit mountfs
```
- 12 Select the **FileSystem** name. For example, the name can be /dev/cd0.
- 13 Select the **Directory** name, /cdrom.
- 14 Select the **Type of filesystem**, cdrfs.
- 15 Set the **Mount as READ-ONLY system** to Yes.
- 16 Log out.



Go to "Step 3. Performing the Installation" on page 260 to continue with the installation.

Mounting on HP-UX Systems

Perform the following steps to mount the CD-ROM on HP-UX operating systems:

- 1 Log in as root.
- 2 Insert the CD-ROM in the drive and mount it as in the following example:

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

where /cdrom is the CD-ROM mount directory.

- 3 Log out.



Go to "Step 3. Performing the Installation" on page 260 to continue with the installation.

Mounting on Solaris Systems

Perform the following steps to mount the CD-ROM on Solaris operating systems:

- 1 Log in as root.
- 2 Insert the CD-ROM in the drive.

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

```
/cdrom/unnamed_cdrom
```

where `/cdrom/unnamed_cdrom` is the CD-ROM mount directory.

If the Volume Manager is not installed on your system, mount the CD-ROM by entering commands as shown in the following example:

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

- 3 Log out.

Step 3. Performing the Installation

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



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

- 1 Log in as root.
- 2 Insert the DB2 Client Pack in the drive.
- 3 If required, mount the CD-ROM. Refer to “Step 2. Mounting the DB2 Client Pack CD-ROM” on page 258 if required.
- 4 Change to the directory where DB2 install images are available by typing the following command:
 - On AIX:

```
cd /cdrom/db2/aix
```
 - On HP-UX:

```
cd /cdrom/db2/hpux
```
 - On Solaris:

```
cd /cdrom/unnamed_cdrom/db2/solaris
```
- 5 Type the following command to start the DB2 Installer:

```
./db2setup
```



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

Note: Your screen will be different if you already installed DB2 Version 5 products on your system. See “Installing Additional Products and Creating Additional Instances” on page 65 for more information.

6 Select **Install** to display the Install DB2 V5 screen as shown as follows.

```
+----- Install DB2 V5 -----+
|
|   Select the products you are licensed to install. Your Proof of
|   Entitlement and License Information booklet identify the products for
|   which you are licensed.
|
|   To see the preselected components or customize the selection, select
|   Customize for the product.
|   [ * ] DB2 Client Application Enabler           [ Customize. . . ]
|   [   ] DB2 UDB Workgroup Edition               [ Customize. . . ]
|   [   ] DB2 UDB Enterprise Edition              : Customize. . . :
|   [   ] DB2 Connect Enterprise Edition          : Customize. . . :
|   [   ] DB2 UDB Extended Enterprise Edition     : Customize. . . :
|   [   ] DB2 Software Developer's Kit           [ Customize. . . ]
|
|   To choose a language for the following components, select Customize for
|   the product.
|       DB2 Product Messages                       [ Customize. . . ]
|       DB2 Product Library                         [ Customize. . . ]
|
|   [ OK ]           [ Cancel ]           [ Help ]
+-----+-----+-----+-----+
```

7 From the product list on the Install DB2 V5 screen, select the DB2 products that you want to install.

To display the required and optional components for the product you want to install, select **Customize**. The optional components that are most typically used are pre-selected for you.

When you have finished selecting the product components to install, select **OK** to go to the Create DB2 Services screen. To undo any selections you made, select **Cancel**.



Go to step 10 on page 262 if you do not want to create a DB2 Instance at this time.

8 At the Create DB2 Services screen, select **Create a DB2 Instance** to display the DB2 Instance screen as shown as follows.

```

+----- Create DB2 Services -----+
|
| +--- DB2 Instance -----+
|
| Authentication:
|   Enter User ID, Group ID and Password that will be used for
|   the DB2 Instance.
|   User Name      [ db2inst1 ]
|   User ID       :      :      [ * ] Use default UID
|   Group Name    [db2iadm1]
|   Group ID     :      :      [ * ] Use default GID
|   Password     [          ]
|   Verify Password [          ] [ Default ]
|
| Protocol:
|   Select Customize to change the default : Customize. . . :
|   communication protocol.
|
| : : Auto start DB2 Instance at system boot.
| : : Create a sample database for DB2 Instance.
|
| [ OK ] [ Cancel ] [ Help ]
|
+-----+

```

You can use the default values displayed at the DB2 Instance screen or change them. To change the default **User ID** for the instance, deselect **Use Default UID** and enter a new value for the **User ID**.

- 9 Enter the information and select **OK** to return to the Create DB2 Services screen.
- 10 After entering the values for the DB2 Instance, select **OK** to display the Summary Report as shown in the following screen. The report lists the installable items as well as the location of the installation log file.

```

+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                                                 |
| +-----+-----+-----+-----+-----+-----+-----+-----+
| | Summary Report |-----+-----+-----+-----+-----+
| |                                     | [ More... ] |
| | DB2 Services Creation |-----+-----+-----+-----+
| | DB2 Instance | |
| | Group Name | db2iadmn1 |
| | Group ID | 381 |
| | User Name | db2inst1 |
| | User ID | 431 |
| | Service Name | db2cdb2inst10 |
| | Port Number | 30004 |
| | Update DBM configuration file for TCP/IP |
| |
| | User-Defined Functions |
| | Group Name | [ More... ] |
| |-----+-----+-----+-----+-----+-----+-----+
| | [ Continue... ] |
| |-----+-----+-----+-----+-----+-----+-----+
|
+-----+-----+-----+-----+-----+-----+-----+-----+

```

- 11** Use the Up or Down arrow keys to review the Summary Report. If the selections are not correct, press the **F3** key, to return to the previous screen. Otherwise select **Continue** to start the installation.
- 12** When the installation is complete, use the Up or Down arrow keys to review the Status Report. Select **ViewLog** to view the installation log file. Select **OK** to close the Status Report screen.
- 13** Select **Close** from the DB2 Installer screen to terminate the DB2 Installer.

After the installation is complete, the software is installed in the DB2DIR directory,

where DB2DIR = /usr/lpp/db2_05_00 on AIX
 = /opt/IBMDB2/V5.0 on HP-UX or Solaris



Proceed either to Chapter 32, "Configuring Client to DB2 Connect Server Communications Using the CCA" on page 273 or "Installing on Other UNIX Systems" on page 264.

Installing on Other UNIX Systems

To install the DB2 Client Application Enabler on SINIX, SCO OpenServer or Silicon IRIX, you will perform the following steps:

- 1 Install the DB2 products. This includes mounting the DB2 Client Pack CD-ROM.
- 2 Update the kernel configuration parameters.
- 3 Create or assign groups and users.
- 4 Create an instance of the product.

You can also set the DB2 operating environment and optionally create links for DB2 files.

Installing on a SINIX System

On the CD-ROM, the installation image for the DB2 Client Application Enabler for SINIX is available in the `/cdrom/db2/sinix/IBMdb2` directory. To install the DB2 products, you must use the **pkgadd** command.

Install the DB2 products as follows:

- 1 Log in as root.
- 2 Insert the Client Pack CD-ROM into the drive.
- 3 Mount the CD-ROM using either the **sysadm** or the **mount** command as follows:

```
mkdir /cdrom
mount -F hs /dev/ios0/sdisk006s0 /cdrom
```

where `/cdrom` is the CD-ROM mount directory.

The install images for DB2 for SINIX products are available in the `/cdrom/db2/sinix/IBMdb2` directory.

- 4 Install the DB2 Client Application Enabler. Type the following command:

```
pkgadd -d /cdrom/db2/sinix/IBMdb2 db2cliv21 db2msgDe db2conv
```

Some kernel configuration parameters must be changed to use DB2 Client Application Enabler for SINIX. Use the SINIX **idtune** command to update the values as given in Table 28 on page 265. After doing so, rebuild the SINIX kernel and reboot the system for the changes to take effect.

The following values are the minimum recommended:

Table 28. SINIX Kernel Configuration Parameters (Recommended Values)

SINIX RM600 Kernel Parameter	Recommended Value
MSGMAX	65535
MSGMNB	65535
MSGSEG	8192
MSGSSZ	16

Note: The kernel configuration parameters MDGMNB and MSGMAX must be changed to 65535.



Go to "Creating or Assigning Groups and Users" on page 267.

Installing on an SCO OpenServer System

Install the DB2 products as follows:

- 1 Log in as root.
- 2 Insert the Client Pack CD-ROM into the drive.
- 3 Mount the CD-ROM. For example, to mount the CD-ROM as /cdrom, type:

```
mkdir /cdrom
mount /dev/cd0 /cdrom
```

Install images for DB2 products are available in the /cdrom/db2/sco/IBMdb2 directory.
- 4 Run the **custom** command. Type:

```
custom
```

The Software Manager window opens.
- 5 From the Software Manager window, do the following:
 - a From the **Software** pulldown menu, select **Install New**.
 - b If you are doing a remote install, select the host from which you want to install. Otherwise, select **Continue**.
 - c From the **Media Device** menu, select **Media Images** and select **Continue**.
 - d In the **Image Directory** field, enter:

```
/cdrom/db2/sco/IBMdb2
```
 - e Choose the software you want to install:
 - To install all components, select **Full**.

- To install selected components, choose **Partial**. On the Software Selection window, highlight the products you want to install:
 - DB2 Client Application Enabler for SCO OpenServer
 - DB2 Product Messages for SCO OpenServer.

Press Enter.

6 Update the kernel configuration parameters.

Change the values as given in the table that follows by updating the **/etc/conf/cf.d/stune** file. Then, rebuild the kernel and reboot the system for the changes to take effect.

Table 29. SCO OpenServer Kernel Configuration Parameters (Recommended Values)

Kernel Parameter	Recommended Value
MSGSSZ	64
SEMMAP	100
SEMMNI	100
SEMMNS	100
SEMMNU	100



Go to “Creating or Assigning Groups and Users” on page 267.

Installing on a Silicon Graphics IRIX System

On the CD-ROM, the installation image for Silicon Graphics IRIX products is contained in the **/cdrom/db2/sgi/IBMdb2** directory.

Install the DB2 software as follows:

- 1 Log in as root.
- 2 Insert the Client Pack CD-ROM into the drive.
- 3 Mount the CD-ROM 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/sc0d710 /cdrom
```

- 4 Install the DB2 Client Application Enabler. Type the following command:

```
pkgadd -d /cdrom/db2/sgi/IBMdb2 db2cliv21 db2conv
```




Go to "Creating or Assigning Groups and Users" on page 267.

Creating or Assigning Groups and Users

If you do not already have a user ID to own the instance and a system administration group ID that is the primary group of the instance owner, create these as follows:

- 1 Log in as root.
- 2 Create a system administration group ID. Use these commands on the following operating systems:

SINIX, SGI Use **sysadm** or **groupadd**

SCO OpenServer Use **scoadmin** or **groupadd**

For example, to create a group named dbadmin1 on SCO OpenServer, type:

```
groupadd dbadmin1
```

Use the appropriate command for the other operating systems when you create a group.

- 3 Create a user ID that will be the instance owner.

SINIX, SGI Use **sysadm** or **useradd**

SCO OpenServer Use **scoadmin** or **useradd**

For example, to create a user named inst1 on SCO OpenServer, type:

```
useradd -g dbadmin1 -G dbadmin1 -d /home/inst1 inst1  
passwd inst1
```

Use the appropriate command for the other operating systems when you create a user.



- When choosing a name for a group or user, follow the rules described in Appendix D, "Naming Rules" on page 501.
- Dedicate the instance-owner user ID to that instance's use only. This allows for easier error recovery if a system error occurs.

Creating an Instance of the Product

Use the **db2icrt** command to create an instance of the product. Where you find **db2icrt** depends on your operating system:

- On SCO OpenServer, go to the `/usr/IBMdb2/V2.1/instance` directory.
- On SINIX and Silicon Graphics IRIX operating systems, go to the `/opt/IBMdb2/V2.1/instance` directory.

The syntax of the **db2icrt** command is:

```
▶▶ db2icrt — InstName — [-a AuthType] — [-u FencedID] —▶▶
```

where:

InstName is the login name of the instance owner.

-a AuthType is an optional parameter that 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 server product is installed. Otherwise, the *AuthType* is set to **CLIENT**.

Note: The authentication type of the instance applies to all databases under the instance.

-u FencedID is the user under which the fenced UDFs and Stored Procedures will execute. This is not required if you install the DB2 Client Application Enabler or the DB2 Software Developer's Kit. For other products, this is an required parameter.

Note: *FencedID* may not be root or bin.

To create an instance for the DB2 client, you can use the following command:

```
db2icrt db2inst1
```

When an instance is created, its name is also added to the list of instances on the system.

The **db2icrt** command creates the *INSTHOME*/sqllib directory, where *INSTHOME* is the home of the instance owner.



You should not create files or directories under *INSTHOME* other than those created by DB2 products. This avoids a potential loss of data if an instance is deleted. There is one exception. If your system supports fenced User Defined Functions and fenced Stored Procedures, put the fenced User Defined Functions and the fenced Stored Procedures applications in the *INSTHOME*/sqllib/function directory.

Setting the DB2 Operating Environment

You must execute a script to set the DB2 operating environment and select an instance before starting DB2. On AIX, HP-UX, and Solaris, see Chapter 39, “Controlling Your DB2 Environment” on page 357 for more information on how to do this. For other UNIX operating systems, the sample scripts, **db2profile** (for Bourne or Korn shell) and **db2cshrc** (for C shell) are provided to help you set up the operating environment for a DB2 instance.

The instance owner may customize these scripts for all users of an instance. These scripts are available in the `INSTHOME/sqllib` directory, where `INSTHOME` is the home directory of the instance.

Determine the most appropriate way to execute the commands in the sample **db2profile** or **db2cshrc** script in your environment and instruct your users to do it.

Creating Links for DB2 Files

If you are developing or running applications, you may want to create links for DB2 libraries to avoid needing to specify the full path to the product libraries and include files. To create these links, use the **db2ln** command.

- On SCO OpenServer systems, type:
`/usr/IBMdb2/V2.1/cfg/db2ln`
- On SINIX and Silicon Graphics IRIX systems, type:
`/opt/IBMdb2/V2.1/cfg/db2ln`

This creates links from the DB2 libraries to `/usr/lib`, and from the DB2 include files to `/usr/include`.



To configure your client to access remote DB2 Connect workstations or DB2 servers, go to Chapter 33, “Configuring Client-to-Server Communications Using the Command Line Processor” on page 277. To configure your DB2 Connect workstation to access remote hosts, go to Chapter 11, “Configuring Communications to Host and AS/400 Databases Manually” on page 81.

Chapter 31. Installing DB2 Clients on Macintosh Workstations

To install the DB2 Client Application Enabler on a Macintosh workstation, perform the following steps:

- 1 Insert the Client Pack CD-ROM into the drive.
- 2 Double-click on the **DB2 CLIENTS** icon.
- 3 Double-click on the **MAC** folder.
- 4 Double-click on the *language* folder, where *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.
- 5 Double-click on the **CLIENT** folder.
- 6 Double-click on the **CAEMAC** icon to start the installation. The Welcome window opens.
- 7 Follow the instructions provided to complete the installation.
- 8 When the install program is finished, you will need to restart your computer to complete the installation. Click in the **Restart** push button to restart your computer and complete the installation.



To configure your client to access a remote DB2 Connect server, see Chapter 33, "Configuring Client-to-Server Communications Using the Command Line Processor" on page 277.

Chapter 32. Configuring Client to DB2 Connect Server Communications Using the CCA



Use the information in this section to use the Client Configuration Assistant to configure OS/2, Windows 95, and Windows NT workstations to access remote DB2 Universal Database servers.

To configure all other clients, see Chapter 33, "Configuring Client-to-Server Communications Using the Command Line Processor" on page 277.

Use the Client Configuration Assistant to configure your OS/2, Windows 95, or Windows NT client workstation to access remote DB2 Connect workstations or DB2 Universal Database servers. The Client Configuration Assistant provides three configuration methods: one makes use of a server's access profile, one searches the network for databases, and the other requires that you enter the database name and the communication protocol values of the DB2 server.

Perform the following steps to configure your workstation to access remote servers:

- 1 Start the Client Configuration Assistant (CCA).

For OS/2:

Double-click on the **Client Configuration Assistant** icon, located in the **DB2 for OS/2** folder.

For Windows 95 or Windows NT:

Click on **Start** and select **Programs->DB2 for Windows->Client Configuration Assistant**.

The Welcome panel opens each time you start the CCA, until you have added at least one database to your client.

- 2 Click on the **Add Database** or **Add** push button to configure connections using the Add Database SmartGuide. Choose one of the following configuration methods:
 - If your administrator provided you with a file containing database access information, select the **Use an access profile** radio button and click on the **Next** push button.
 - a Click on the **Browse** push button to select an access profile, or enter the path and name of the file in the **File** field.
 - b You are presented with a list of systems, instances, and databases. Select the database that you want to use and proceed to Step 3.

- If you want to search the network for databases, select the **Search the network** radio button and click on the **Next** push button.



The **Other Systems (Search the network)** icon will only appear if the client's *discover* parameter is set to SEARCH.

- a Click on the **[+]** sign beside the **Known Systems** icon to list all the systems known to your workstation.
 - b Click on the **[+]** sign beside the system to get a list of the instances and databases on it. Select the database that you want to add and proceed to Step 3.
 - c If the system that contains the database that you want is not listed, click on the **[+]** sign beside the **Other Systems (Search the network)** icon to search the network for additional systems. Click on the **[+]** sign beside the system to get a list of the instances and databases on it. Select the database that you want to add and proceed to Step 3.
 - d If the system you want is still not listed, it can be added to the list of systems by clicking on the **Add Systems** push button. Enter the required communication protocol parameters and click on the **Next** push button. For more information, click on the **Help** push button.
Select the database that you want to add and proceed to Step 3.
- If you have the protocol information for the database that you want to connect to, select the **Manually configure a connection to a DB2 database** radio button and click on the **Next** push button.
 - a Select the radio button that corresponds to the protocol that you want to use from the **Protocol** list. Click on the **Next** push button.
 - b Enter the required communication protocol parameters and click on the **Next** push button. For more information, click on the **Help** push button.
 - c Specify the name of the database that you want to connect to in the **Target database** field and proceed to Step 3.
- 3 To specify the database alias name or to add a description, click on the **Next** push button. If you do not specify a database alias name, the default will be the same as the database name.
 - 4 If you want to run ODBC-enabled applications, click on the **Next** push button. If you do not plan to use ODBC, click on the **Done** push button to finish using the Add Database SmartGuide and proceed to Step 6.
 - 5 If you are using ODBC applications, select the **Register this database for ODBC** check box, select the radio button that describes the type of data source that you want to register this database as, and select the application that you want to use

from the **Application** drop down box. Click on the **Done** push button to finish using the Add Database SmartGuide.

- 6** The Confirmation window opens. Click on the **Test Connection** push button to test the connection to the specified database.
- 7** Enter your user ID and password to access the database and click on **OK**. If the connection is successful, a message confirming the connection appears. If the connection fails, click on the **Help** push button for more information. If you require additional information, refer to the *Troubleshooting Guide*.
- 8** You are now able to use the database. If you want to access another database, select the **Add Another** push button. To finish using the Add Database SmartGuide, click on the **Close** push button.

Chapter 33. Configuring Client-to-Server Communications Using the Command Line Processor

This section describes how to use commands to configure a client workstation to communicate with a DB2 Connect server using the command line processor.



If you are planning to use an OS/2, Windows 95, or Windows NT client for communications, the Client Configuration Assistant (CCA) makes it easy to automate the tasks of configuring and administering clients to communicate with servers. If you have installed the CCA, it is recommended that you use this utility to configure your clients for communications. See Chapter 32, “Configuring Client to DB2 Connect Server Communications Using the CCA” on page 273 for more information.

For instructions on using the command line processor, see Chapter 38, “Entering DB2 Commands and SQL Statements” on page 351.



Go to the communication protocol that you want your client to use to access a remote server.

- Named Pipes - see “Configuring Named Pipes on the Client”
- TCP/IP - see “Configuring TCP/IP on the Client” on page 282
- NetBIOS - see “Configuring NetBIOS on the Client” on page 291
- IPX/SPX - see “Configuring IPX/SPX on the Client” on page 299
- APPC - refer to the *Installing and Configuring DB2 Clients* online manual for more information

Configuring Named Pipes on the Client

This section assumes that Named Pipes is functional on the client and DB2 Connect server workstations. See “Software Requirements” on page 26 for the communication protocol requirements for your platform. See “Possible Client-to-DB2 Connect Gateway Connectivity Scenarios” on page 35 for the supported communication protocols for your particular client and server.

The following steps are required to set up a client to use Named Pipe communications:

- 1 Identify and record parameter values.
- 2 Configure the client:

- a Catalog the Named Pipes node.
 - b Catalog the database.
- 3 Test the connection between the client and server.

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.

<i>Table 30. Named Pipe Values Required at the Client</i>			
Parameter	Description	Sample Value	Your Value
Computer name (<i>Computer_name</i>)	The Computer name of the DB2 Connect server machine. On the server machine, to locate the value for this parameter, click on the Start button and select Settings->Control Panel . Double-click on the Network folder and select the Identification tab. Record the Computer name.	server1	
Instance name (<i>Instance_name</i>)	The name of the instance on the DB2 Connect server.	db2	
Node name (<i>Node_name</i>)	A local alias, or nickname, that describes the DB2 Connect server to the node where the database resides. 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 describe how to configure this protocol on the client. Replace the sample values with your worksheet values.

A. Catalog the Named Pipes 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 server's Computer name (*Computer_name*), and the Instance name (*Instance_name*) that are to be used to access the remote server.

To catalog the Named Pipes node, perform the following steps:

- 1 Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.



If you have trouble logging on to the system, see “Logging on to the System” on page 313.

- 2 Catalog the node by issuing the following commands in the command line processor:

```
catalog npipe node Node_name remote Computer_name instance Instance_name  
terminate
```

For example, to catalog a remote node called *db2node*, which is located on the server called *server1*, in the *db2* instance, use:

```
catalog npipe node db2node remote server1 instance db2  
terminate
```



If you need to change values that were set with the **catalog node** command, first run the **uncatalog node** command in the command line processor as follows:

```
uncatalog node Node_name
```

Recatalog the node with the value that you want to use.

B. 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.

- 1 Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.



If you have trouble logging on to the system, see “Logging on to the System” on page 313.

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

Table 31. Parameter Values for Cataloging Databases

Parameter	Description	Sample Value	Your Value
Database name (<i>Database_name</i>)	The Database alias (<i>Database_alias</i>) of the remote database. When you create a database, it is automatically cataloged on the server with the Database alias name (<i>Database_alias</i>) the same as the Database name (<i>Database_name</i>).	sample	
Database alias (<i>Database_alias</i>)	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 (<i>Database_name</i>). This is the name that you use when connecting to a database from a client.	tor1	
Node name (<i>Node_name</i>)	The name of the node directory entry that describes where the database resides. Use the same value for Node name (<i>Node_name</i>) that you used to catalog the node in the previous step.	db2node	

3 Catalog the database by issuing the following commands in the command line processor:

```
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*, use:

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



If you need to change values that were set with the **catalog database** command, first run the **uncatalog database** command in the command line processor as follows:

```
uncatalog database Database_alias
```

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

Step 3. Test the Client-to-DB2 Connect Server Connection

When the configuration of the server and client is complete, use the following steps to verify that you can access data from a remote database:



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

- 1 Start the database manager by issuing the **db2start** command on the server (if it was not automatically started at boot time).
- 2 Issue the following command in the client's Command Center or command line processor 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. Authentication for connecting to host databases is set while configuring the DB2 Connect server. Refer to the *DB2 Connect User's Guide* for more information.

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 tablename from syscat.tables" (for UNIX-based platforms)
select tablename from syscat.tables (for other platforms)
```

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



You are ready to start using the DB2 server. See Chapter 35, "Getting Started with the DB2 Universal Database" on page 313 for details.

Troubleshooting the Client-to-DB2 Connect Server Connection

If the connection fails, check the following items:

At the *server*:

- 1 The *DB2COMM* registry parameter includes the value *npipe*.



Check the settings for the *DB2COMM* registry value by issuing the **db2set DB2COMM** command. For more information, see Chapter 39, “Controlling Your DB2 Environment” on page 357.

- 2 The database was created and cataloged properly.
- 3 The database manager was stopped and started (issue the **db2stop** and **db2start** commands on the server).



If there are problems starting a protocol's connection managers, a warning message is displayed and the error messages are logged in the *db2diag.log* file. The location of this file depends on your operating system.

UNIX-based Platforms

\$HOME/sqllib/db2dump directory, where *\$HOME* is home directory of the instance owner.

Other Platforms

x:\sqlib\%db2instance% directory, where *x*: is the drive that the client is installed and *%db2instance%* represents the DB2 instance.

Refer to the *Troubleshooting Guide* for information on the *db2diag.log* file.

At the *client*:

- 1 The node was cataloged with the correct Computer name (*Computer_name*) and Instance name (*Instance_name*), of the server, where the database DB2 Connect server resides.
- 2 The Node name (*Node_name*), specified in the database directory, points to the correct entry in the node directory.
- 3 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.

After you verify these items, refer to the *Troubleshooting Guide* if the connection still fails.

Configuring TCP/IP on the Client

This section assumes that TCP/IP is functional on the client and DB2 Connect server workstations. See “Software Requirements” on page 26 for the communication protocol requirements for your platform. See “Possible Client-to-DB2 Connect Gateway Connectivity Scenarios” on page 35 for the supported communication protocols for your particular client and server.

The following steps are required to set up a DB2 client to use TCP/IP communications:

- 1 Identify and record parameter values.
- 2 Configure the client:
 - a Resolve the server's host address.
 - b Update the services file.
 - c Catalog the TCP/IP node.
 - d Catalog the database.
- 3 Test the connection between the client and server.



Due to the characteristics of the TCP/IP protocol, the TCP/IP subsystem 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 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.

Parameter	Description	Sample Value	Your Value
Hostname (<i>hostname</i>) or IP address (<i>ip_address</i>)	Use the <i>hostname</i> or <i>ip_address</i> of the remote server workstation. To resolve this parameter: <ul style="list-style-type: none"> • Issue the hostname command at the server to obtain the <i>hostname</i> parameter. • Issue the ping gateway_hostname command to obtain the <i>ip_address</i> parameter. 	serverhost or 9.21.15.235	

Table 32 (Page 2 of 2). TCP/IP Values Required at the Client

Parameter	Description	Sample Value	Your Value
Connection Port <ul style="list-style-type: none"> • Connection Service name (<i>svcname</i>) • Port number/Protocol (<i>Port_number/tcp</i>) 	Values required in the services file. The Connection Service name is an arbitrary name used to represent the Port number (<i>Port_number</i>) on the client. The Port number for the client must be the same as the Port number that the <i>svcname</i> parameter maps to in the services file at the server. (The <i>svcname</i> parameter is located in the database manager configuration file on the DB2 Connect server.) This value must not be in use by another application and must be unique within the services file.	server1 3700/tcp	
Node name (<i>Node_name</i>)	A local alias, or nickname, that describes the DB2 Connect server to the node where the database resides. 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 describe how to configure this protocol on the client. Replace the sample values with your worksheet values.

Step A. Resolve the DB2 Connect 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 286.

The client workstation 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 host in the local hosts file. See Table 33 on page 285 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 33. Location of the Local Hosts and Services Files

Platform	Location
Macintosh	The hosts file is located in the folder called System Folder . Note: This operating system does not use a services file. You must catalog this node using the <i>Port_number</i> parameter. See "Step C. Catalog the TCP/IP Node" on page 286 for more information.
OS/2	Specified by the <i>etc</i> environment variable. Issue the set etc command to determine the location of your local hosts or services files. Note: For DOS and WIN-OS2 sessions, you might need to update the hosts and services files located in the <i>tcpip_product\dos\etc</i> directory.
Windows 3.x	Typically in the <i>tcpip_product\etc</i> directory, but it depends on the products that you have installed. Refer to your TCP/IP documentation for more information.
Windows 95	<i>windows</i> directory
Windows NT	<i>winnt\system32\drivers\etc</i> directory
UNIX	<i>/etc</i> directory

Using a local text editor, add an entry to the client's hosts file for the server's hostname. For example:

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

where:

9.21.15.235 is the *ip_address*

serverhost is the *hostname*

is a comment describing the entry

Notes:

1. If the server is not in the same domain as the client, you must provide a fully specified domain name such as *serverhost.vnet.ibm.com*, where *vnet.ibm.com* is the domain name.
2. For specific information on resolving host addresses, refer to your TCP/IP documentation.

Step B. Update the Services File



If you are planning to catalog the TCP/IP node using the Port number (*Port_number*), skip this step and go to “Step C. Catalog the TCP/IP Node.”

If you are configuring a DB2 for Macintosh client, you must catalog the TCP/IP node using the Port number (*Port_number*). Go to “Step C. Catalog the TCP/IP Node” to catalog the node.

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 is the Connection Service name

3700 is the Port number for the Connection Port

tcp is the communication protocol that you are using

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 is using 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 “Step A. Resolve the DB2 Connect Server's Host Address” on page 284.

See Table 33 on page 285 for the location of the services file for your particular platform.

Step C. Catalog the 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 *svcname* (or *Port_number*) that are to be used to access the remote server.

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

- 1 Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.



If you have trouble logging on to the system, see “Logging on to the System” on page 313.



If you are configuring communications for a Windows 3.x client, you can use the Client Setup tool to complete this task. Go to “Using the Client Setup Tool to Configure a Windows 3.x Client” on page 307 to catalog a node using the Client Setup tool.

2 If you are using UNIX, set up the instance environment and invoke the DB2 command line processor as follows:

a. Run `db2profile` or `db2cshrc` as follows:

```
. INSTHOME/sql1lib/db2profile (for Bourne or Korn shell)
source INSTHOME/sql1lib/db2cshrc (for C shell)
```

where `INSTHOME` is the home directory of the instance

b. Start the DB2 command line processor by issuing the **db2** command.

3 Catalog the node by issuing the following commands in the command line processor:

```
catalog tcpip node Node_name remote [ hostname | ip_address ] server [ svcname | Port_number ]
terminate
```

For example, to catalog the remote server `serverhost` on the node called `db2node`, using the service name `server1`, use:

```
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`, use:

```
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, first run the **uncatalog node** command in the command line processor as follows:

```
uncatalog node Node_name
```

Recatalog the node with the value 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.

- 1 Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.



If you have trouble logging on to the system, see “Logging on to the System” on page 313.

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

Table 34. Parameter Values for Cataloging Databases

Parameter	Description	Sample Value	Your Value
Database name (<i>Database_name</i>)	The Database alias (<i>Database_alias</i>) of the remote database. When you create a database, it is automatically cataloged on the server with the Database alias name (<i>Database_alias</i>) the same as the Database name (<i>Database_name</i>).	sample	
Database alias (<i>Database_alias</i>)	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 (<i>Database_name</i>). This is the name that you use when connecting to a database from a client.	tor1	
Node name (<i>Node_name</i>)	The name of the node directory entry that describes where the database resides. Use the same value for Node name (<i>Node_name</i>) that you used to catalog the node in the previous step.	db2node	



If you are configuring communications for a Windows 3.x client, you can use the Client Setup tool to complete this task. Go to “Using the Client Setup Tool to Configure a Windows 3.x Client” on page 307 to catalog a database node using the Client Setup tool.

- 3 If you are using UNIX, set up the instance environment and invoke the DB2 command line processor as follows:
 - a. Run db2profile or db2cshrc as follows:


```
. INSTHOME/sql1lib/db2profile    (for Bourne or Korn shell)
source INSTHOME/sql1lib/db2cshrc (for C shell)
```

 where INSTHOME is the home directory of the instance
 - b. Start the DB2 command line processor by issuing the **db2** command.

- 4 Catalog the database by issuing the following commands in the command line processor:

```
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*, use:

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



If you need to change values that were set with the **catalog database** command, first run the **uncatalog database** command in the command line processor as follows:

```
uncatalog database Database_alias
```

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

Step 3. Test the Client-to-DB2 Connect Server Connection

When the configuration of the server and client is complete, use the following steps to verify that you can access data from a remote database:



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

- 1 Start the database manager by issuing the **db2start** command on the server (if it was not automatically started at boot time).
- 2 Issue the following command in the client's Command Center or command line processor 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. Authentication for connecting to host databases is set while configuring the DB2 Connect server. Refer to the *DB2 Connect User's Guide* for more information.

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 tablename from syscat.tables" (for UNIX-based platforms)
select tablename from syscat.tables (for other platforms)
```

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



You are ready to start using the DB2 server. See Chapter 35, "Getting Started with the DB2 Universal Database" on page 313 for details.

Troubleshooting the Client-to-DB2 Connect Server Connection

If the connection fails, check the following items:

At the *server*:

- 1 The *DB2COMM* registry parameter includes the value *tcpip*.



Check the settings for the *DB2COMM* registry value by issuing the **db2set DB2COMM** command. For more information, see Chapter 39, "Controlling Your DB2 Environment" on page 357.

- 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 (issue 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 (issue the **db2stop** and **db2start** commands on the server).



If there are problems starting a protocol's connection managers, a warning message is displayed and the error messages are logged in the *db2diag.log* file. The location of this file depends on your operating system.

UNIX-based Platforms

\$HOME/sqllib/db2dump directory, where *\$HOME* is home directory of the instance owner.

Other Platforms

x:\sqllib\%db2instance% directory, where *x*: is the drive that the client is installed and *%db2instance%* represents the DB2 instance.

Refer to the *Troubleshooting Guide* for information on the *db2diag.log* file.

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 map to, the Port number used on the server.
- 4 The Node name (*Node_name*), 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.

After you verify these items, refer to the *Troubleshooting Guide* if the connection still fails.

Configuring NetBIOS on the Client

This section assumes that NetBIOS is functional on the client and DB2 Connect server workstations. See “Software Requirements” on page 26 for the communication protocol requirements for your platform. See “Possible Client-to-DB2 Connect Gateway Connectivity Scenarios” on page 35 for the supported communication protocols for your particular client and server.

The following steps are required to set up a client to use NetBIOS communications:

- 1 Identify and record parameter values.
- 2 Configure the client:
 - a Record the network route for the Logical adapter number.
 - b Update the database manager configuration file.
 - c Catalog the NetBIOS node.
 - d Catalog the database.
- 3 Test the connection between the client and server.

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.

Parameter	Description	Sample Value	Your Value
Logical adapter number (<i>Adapter_number</i>)	The logical network adapters that will be used for the NetBIOS connection.	0	
Workstation name (<i>nname</i>) - on the client	The NetBIOS name of the <i>client</i> workstation. <i>nname</i> is chosen by the user and must be unique among all NetBIOS nodes in the network.	client1	
Workstation name (<i>nname</i>) - on the server	The NetBIOS name of the <i>server</i> workstation. Locate this parameter in the database manager configuration file on the server.	server1	
Node name (<i>Node_name</i>)	A local alias, or nickname, that describes the DB2 Connect server to the node where the database resides. 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 describe how to configure this protocol on the client. Replace the sample values with your worksheet values.

A. Record the Logical Adapter Number Used for the NetBIOS Connection

To view and record the Logical adapter number (*Adapter_number*) used for the NetBIOS connection, perform the following:

- For OS/2:
 - 1 Double-click on the **MPTS** icon.
 - 2 Click on the **Configure** push button.
 - 3 Select the **LAN adapters and protocols** radio button and click on the **Configure** push button.
 - 4 Record the Logical adapter number associated with the **IBM OS/2 NETBIOS** entry in the Current Configuration window.
 - 5 Click on the **Cancel** push button.

- 6 Click on the **Close** push button.
 - 7 Click on the **Exit** push button.
- For Windows 3.x
Record the Logical adapter number *0*. If you experience problems making your NetBIOS connection, refer to the *Troubleshooting Guide*.
 - For Windows 95:



There is no interface on the Windows 95 operating system that you can use to record the adapter number used for the NetBIOS connection. Complete the following steps to have the NetBIOS protocol default to use the adapter number *0*.

- 1 Click on the **Start** button and select **Settings->Control Panel**.
 - 2 Double-click on the **Network** icon.
 - 3 Select **NetBEUI** from The following Network components are installed window.
 - 4 Click on the **Properties** push button.
 - 5 Select the **Advanced** tab.
 - 6 Select the **Set this protocol to be the default** check box.
 - 7 Click on **OK** to exit this window.
 - 8 Click on **OK**.
 - 9 Record the value *0* as the Logical adapter number on your worksheet.
 - 10 Shut down and reboot your system for these changes to take effect.
- For Windows NT:



The Logical adapter number (*Adapter_number*) that you use *must* be associated with the **Nbf** Network Route for a native NetBIOS operation.

- 1 Click on the **Start** button and select **Settings->Control Panel**.
- 2 Double-click on the **Network** icon and select the **Services** tab.
- 3 Select the **NetBIOS Interface** option from the Network Services window and click on the **Properties** push button.
- 4 Scroll through the network routes until you find the logical adapter number associated with **Nbf** and record it on your worksheet.
- 5 Click on **OK**.

- 6 Click on the **Close** push button.

B. Update the Database Manager Configuration File

You must update the database manager configuration file with the *client's* workstation name (*nname*) parameter.

To update the database manager configuration file, perform the following steps:

- 1 Log on to the system as a user with System Administrative (SYSADM) authority.



If you have trouble logging on to the system, see "Logging on to the System" on page 313.

- 2 Update the database manager configuration file with the client's Workstation name (*nname*) parameter using the following commands in the command line processor:

```
update database manager configuration using nname nname
terminate
```

For example, if the client's workstation name (*nname*) is *client1*, use:

```
update database manager configuration using nname client1
terminate
```

C. Catalog the NetBIOS 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 remote *server's* Workstation name (*nname*), and the Logical adapter number (*Adapter_number*) that are to be used to access the remote DB2 server.

To catalog the NetBIOS node, perform the following steps:

- 1 Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.



If you have trouble logging on to the system, see "Logging on to the System" on page 313.



If you are configuring communications for a Windows 3.x client, you can use the Client Setup tool to complete this task. Go to “Using the Client Setup Tool to Configure a Windows 3.x Client” on page 307 to catalog a node using the Client Setup tool.

- 2 Catalog the node by issuing the following commands in the command line processor:

```
catalog netbios node Node_name remote nname adapter Adapter_number
terminate
```

For example, to catalog a remote database server *server1* on the node called *db2node*, using the Logical adapter number *0*, use:

```
catalog netbios node db2node remote server1 adapter 0
terminate
```



If you need to change values that were set with the **catalog node** command, first run the **uncatalog node** command in the command line processor as follows:

```
uncatalog node Node_name
```

Recatalog the node with the value that you want to use.

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.

- 1 Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.



If you have trouble logging on to the system, see “Logging on to the System” on page 313.

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

Table 36. Parameter Values for Cataloging Databases

Parameter	Description	Sample Value	Your Value
Database name (<i>Database_name</i>)	The Database alias (<i>Database_alias</i>) of the remote database. When you create a database, it is automatically cataloged on the server with the Database alias name (<i>Database_alias</i>) the same as the Database name (<i>Database_name</i>).	sample	
Database alias (<i>Database_alias</i>)	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 (<i>Database_name</i>). This is the name that you use when connecting to a database from a client.	tor1	
Node name (<i>Node_name</i>)	The name of the node directory entry that describes where the database resides. Use the same value for Node name (<i>Node_name</i>) that you used to catalog the node in the previous step.	db2node	



If you are configuring communications for a Windows 3.x client, you can use the Client Setup tool to complete this task. Go to “Using the Client Setup Tool to Configure a Windows 3.x Client” on page 307 to catalog a database node using the Client Setup tool.

3 Catalog the database by issuing the following commands in the command line processor:

```
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*, use:

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



If you need to change values that were set with the **catalog database** command, first run the **uncatalog database** command in the command line processor as follows:

```
uncatalog database Database_alias
```

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

Step 3. Test the Client-to-DB2 Connect Server Connection

When the configuration of the server and client is complete, use the following steps to verify that you can access data from a remote database:



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

- 1 Start the database manager by issuing the **db2start** command on the server (if it was not automatically started at boot time).
- 2 Issue the following command in the client's Command Center or command line processor 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. Authentication for connecting to host databases is set while configuring the DB2 Connect server. Refer to the *DB2 Connect User's Guide* for more information.

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 tablename from syscat.tables" (for UNIX-based platforms)
select tablename from syscat.tables (for other platforms)
```

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



You are ready to start using the DB2 server. See Chapter 35, "Getting Started with the DB2 Universal Database" on page 313 for details.

Troubleshooting the Client-to-Server Connection

If the connection fails, check the following items:

At the *server*:

- 1 The *DB2COMM* registry parameter includes the value *netbios*.



Check the settings for the *DB2COMM* registry value by issuing the **db2set DB2COMM** command. For more information, see Chapter 39, "Controlling Your DB2 Environment" on page 357.

- 2 The Logical adapter number is equal to 0 (or the *db2nbadapters* registry value was updated to override the default value).
- 3 The server's Workstation name (*nname*) parameter was updated correctly in the database manager configuration file (or the admin server configuration file, if you are setting up the Administration Server).
- 4 The network route associated with the Logical adapter number is **Nbf**-for Windows NT servers only.
- 5 The database was created and cataloged properly.
- 6 The database manager was stopped and started (issue the **db2stop** and **db2start** commands on the server).



If there are problems starting a protocol's connection managers, a warning message is displayed and the error messages are logged in the *db2diag.log* file. The location of this file depends on your operating system.

UNIX-based Platforms

\$HOME/sqllib/db2dump directory, where *\$HOME* is home directory of the instance owner.

Other Platforms

x:\sqlib\%db2instance% directory, where *x*: is the drive that the client is installed and *%db2instance%* represents the DB2 instance.

Refer to the *Troubleshooting Guide* for information on the *db2diag.log* file.

At the *client*:

- 1 The client's Workstation name (*nname*) parameter was updated correctly in the database manager configuration file
- 2 The node was cataloged with the correct *server's* Workstation name (*nname*) and Logical adapter number (*Adapter_number*)
- 3 The Node name (*Node_name*), specified in the database directory, points to the correct entry in the node directory.
- 4 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.

After you verify these items, refer to the *Troubleshooting Guide* if the connection still fails.

Configuring IPX/SPX on the Client

This section assumes that IPX/SPX is functional on the client and DB2 Connect server workstations. See “Software Requirements” on page 26 for the communication protocol requirements for your platform. See “Possible Client-to-DB2 Connect Gateway Connectivity Scenarios” on page 35 for the supported communication protocols for your particular client and server.

A client can access a DB2 Connect server via Direct Addressing or File Server Addressing. See Table 37 for a list of the available IPX/SPX clients and their supported addressing methods. For a description of Direct Addressing or File Server Addressing, see “Configuring IPX/SPX on the DB2 Connect Server” on page 232.



You need to know the IPX/SPX addressing method that was used to configure the server before you configure your DB2 client. If the DB2 Connect server was configured to use Direct Addressing, you must configure your client to use Direct Addressing to communicate with the server. If the DB2 Connect server was configured for File Server Addressing, you can choose to configure your client to use either Direct Addressing or File Server Addressing, provided that your client supports the method that you want to use. See Table 37 for a list of client specific IPX/SPX supported addressing methods.

Compare the IPX/SPX parameters in the database manager configuration file on the server machine, with those sample values in Table 38 on page 300, to determine which addressing method the server was configured to support.

Table 37. IPX/SPX Supported Communication Methods for a DB2 Client

Client Platform	Direct Addressing	File Server Addressing
Macintosh	no support	
OS/2	√	√
SCO OpenServer	√	
UNIX (except SCO OpenServer)	no support	
Windows 3.x	√	√
Windows 95	√	
Windows NT	√	

The following steps are required to set up a DB2 client to use IPX/SPX communications:

- 1 Identify and record parameter values.
- 2 Configure the client:

- a Catalog the IPX/SPX node.
 - b Catalog the database.
- 3 Test the connection between the client and server.

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.

<i>Table 38 (Page 1 of 2). IPX/SPX Values Required at the Client</i>			
Parameter	Description	Sample Value	Your Value
File server name (<i>FILESERVER</i>)	<p>Direct Addressing A * value indicates that you are using Direct Addressing.</p> <p>File Server Addressing The name of the NetWare file server where the database server instance is registered. This parameter must be entered in UPPERCASE.</p> <p>Locate this parameter in the database manager configuration file on the server.</p>	<p>Direct Addressing *</p> <p>File Server Addressing NETSRV</p>	

Table 38 (Page 2 of 2). IPX/SPX Values Required at the Client

Parameter	Description	Sample Value	Your Value
DB2 server object name (<i>OBJECTNAME</i>)	<p>Direct Addressing The DB2 Connect server's IPX/SPX internetwork address of the form: <i>netid (8 byte)</i>. <i>nodeid (12 byte)</i>. <i>socket # (4 byte)</i></p> <p>To resolve this parameter, issue the db2ipxad command at the server. See "A. Catalog the IPX/SPX Node" on page 301 for more information.</p> <p>File Server Addressing The database manager server instance, represented as the object <i>OBJECTNAME</i> on the NetWare file server. The server's IPX/SPX internetwork address is stored and retrieved from this object.</p> <p>This parameter must be entered in UPPERCASE and be unique on the NetWare file server system.</p> <p>Locate this parameter in the database manager configuration file on the server.</p>	<p>Direct Addressing 09212700.400011527745.879E</p> <p>File Server Addressing DB2INST1</p>	
Node name (<i>Node_name</i>)	<p>A local alias, or nickname, that describes the DB2 Connect server to the node where the database resides. You can choose any name you want, however, all Node name values within your local node directory must be unique.</p>	db2node	

Step 2. Configure the Client

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

A. Catalog the IPX/SPX 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 File server name (*FILESERVER*), and the DB2 server object name (*OBJECTNAME*) that are to be used to access the remote DB2 server.

To catalog the IPX/SPX node, perform the following steps:

- 1 Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.



If you have trouble logging on to the system, see "Logging on to the System" on page 313.



If you are configuring communications for a Windows 3.x client, you can use the Client Setup tool to complete this task. Go to "Using the Client Setup Tool to Configure a Windows 3.x Client" on page 307 to catalog a node using the Client Setup tool.

- 2 If you are using UNIX, set up the instance environment and invoke the DB2 command line processor as follows:

- a. Run `db2profile` or `db2cshrc` as follows:

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

where `INSTHOME` is the home directory of the instance

- b. Start the DB2 command line processor by issuing the `db2` command.

- 3 Catalog the node by issuing the following commands in the command line processor:

```
catalog ipxspx node Node_name remote FILESERVER server OBJECTNAME
terminate
```

Direct Addressing Example

You must assign a * to the `FILESERVER` parameter and specify the server's IPX/SPX internetwork address value as the `OBJECTNAME` parameter on the client.

To determine the value for the `OBJECTNAME` parameter, issue the `db2ipxad` command on the server. (This command is located in the `sqlib/misc/` directory for UNIX servers, and the `sqlib\misc\` directory for all other DB2 servers.)

Make note of the output that is generated, and use that value in place of the sample value (09212700.400011527745.879E) in the example that follows.

To catalog a remote node called `db2node`, using the IPX/SPX internetwork address `09212700.400011527745.879E` as the `OBJECTNAME`, use:

```
catalog ipxspx node db2node remote * server 09212700.400011527745.879E
terminate
```

File Server Addressing Example

To catalog a remote node called `db2node` at the file server `NETWSRV`, under a DB2 server object named `DB2INST1`, use:

```
catalog ipxspx node db2node remote NETWSRV server DB2INST1
terminate
```



If you need to change values that were set with the **catalog node** command, first run the **uncatalog node** command in the command line processor as follows:

```
uncatalog node Node_name
```

Recatalog the node with the value that you want to use.

B. 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.

- 1** Log on to the system as a user with System Administrative (SYSADM) or System Controller (SYSCTRL) authority.



If you have trouble logging on to the system, see “Logging on to the System” on page 313.

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

Table 39. Parameter Values for Cataloging Databases

Parameter	Description	Sample Value	Your Value
Database name (<i>Database_name</i>)	The Database alias (<i>Database_alias</i>) of the remote database. When you create a database, it is automatically cataloged on the server with the Database alias name (<i>Database_alias</i>) the same as the Database name (<i>Database_name</i>).	sample	
Database alias (<i>Database_alias</i>)	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 (<i>Database_name</i>). This is the name that you use when connecting to a database from a client.	tor1	
Node name (<i>Node_name</i>)	The name of the node directory entry that describes where the database resides. Use the same value for Node name (<i>Node_name</i>) that you used to catalog the node in the previous step.	db2node	



If you are configuring communications for a Windows 3.x client, you can use the Client Setup tool to complete this task. Go to “Using the Client Setup Tool to Configure a Windows 3.x Client” on page 307 to catalog a database node using the Client Setup tool.

- 3 If you are using UNIX, set up the instance environment and invoke the DB2 command line processor as follows:

- a. Run db2profile or db2cshrc as follows:

```
. INSTHOME/sql1lib/db2profile    (for Bourne or Korn shell)
source INSTHOME/sql1lib/db2cshrc (for C shell)
```

where INSTHOME is the home directory of the instance

- b. Start the DB2 command line processor by issuing the **db2** command.

- 4 Catalog the database by issuing the following commands in the command line processor:

```
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*, use:

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



If you need to change values that were set with the **catalog database** command, first run the **uncatalog database** command in the command line processor as follows:

```
uncatalog database Database_alias
```

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

Step 3. Test the Client-to-Server Connection

When the configuration of the server and client is complete, use the following steps to verify that you can access data from a remote database:



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

- 1 Start the database manager by issuing the **db2start** command on the server (if it was not automatically started at boot time).
- 2 Issue the following command in the client's Command Center or command line processor 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. Authentication for connecting to host databases is set while configuring the DB2 Connect server. Refer to the *DB2 Connect User's Guide* for more information.

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 tablename from syscat.tables" (for UNIX-based platforms)  
select tablename from syscat.tables (for other platforms)
```

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



You are ready to start using the DB2 server. See Chapter 35, "Getting Started with the DB2 Universal Database" on page 313 for details.

Troubleshooting the Client-to-Server Connection

If the connection fails, check the following items:

At the *server*:

- 1 The *DB2COMM* registry parameter includes the value *ipxspx*.



Check the settings for the *DB2COMM* registry value by issuing the **db2set DB2COMM** command. For more information, see Chapter 39, “Controlling Your DB2 Environment” on page 357.

- 2 The *FILESERVER*, *OBJECTNAME*, and *IPX_SOCKET* parameters were updated correctly in the database manager configuration file.
- 3 The database was created and cataloged properly.
- 4 If you are using File Server Addressing, ensure that the DB2 Connect server was registered at the NetWare file server *after* the database manager configuration file was updated with the required IPX/SPX parameters. For more information, see “Configuring IPX/SPX on the DB2 Connect Server” on page 232.
- 5 The database manager was stopped and started (issue the **db2stop** and **db2start** commands on the server).



If there are problems starting a protocol's connection managers, a warning message is displayed and the error messages are logged in the *db2diag.log* file. The location of this file depends on your operating system.

UNIX-based Platforms

\$HOME/sqlib/db2dump directory, where *\$HOME* is home directory of the instance owner.

Other Platforms

x:\sqlib\%db2instance% directory, where *x*: is the drive that the client is installed and *%db2instance%* represents the DB2 instance.

Refer to the *Troubleshooting Guide* for information on the *db2diag.log* file.

At the *client*:

- 1 If you are using Direct Addressing, check that the node was cataloged with a value of * for *FILESERVER*, and the correct IPX/SPX internetwork address value for the *OBJECTNAME* parameter.
- 2 If you are using File Serving Addressing, check that the *FILESERVER* and *OBJECTNAME* parameters, used to catalog the node, match those configured on the server.
- 3 The Node name (*Node_name*), specified in the database directory, points to the correct entry in the node directory.

- 4 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.

After you verify these items, refer to the *Troubleshooting Guide* if the connection still fails.

Configuring APPC on the Client

This section assumes that APPC is functional on the client and server workstations. See “Software Requirements” on page 26 for the communication protocol requirements for your platform. See “Possible Client-to-DB2 Connect Gateway Connectivity Scenarios” on page 35 for the supported communication protocols for your particular client and server.



Refer to the online *Installing and Configuring DB2 Clients* manual for information on how to configure clients to communicate with a DB2 Connect server using the APPC protocol.

Using the Client Setup Tool to Configure a Windows 3.x Client

The Client Setup tool provides you with a graphical interface that you can use to complete the catalog node and databases instructions in Chapter 33, “Configuring Client-to-Server Communications Using the Command Line Processor” on page 277. This section describes how to use the Client Setup tool to catalog a node or database for a Windows 3.x client.

Use the instructions in this section, along with the protocol-specific instructions in Chapter 33, “Configuring Client-to-Server Communications Using the Command Line Processor” on page 277, to configure your Windows 3.x client for communications with a DB2 Connect server.

To invoke the Client Setup tool, double-click on the **Client Setup** icon, located in the DB2 product folder for your particular platform.

Catalog the Node

- 1 Select **Node->NewNode**, the New Node window opens.
- 2 Fill in the Node name (*Node_name*) parameter in the **Node** field and optionally add a comment describing the node in the **Comment** field.
- 3 Select the **Protocol** radio button for the protocol that you want the Windows 3.x client to use to communicate with the server.
- 4 Fill in the required parameters in the **Protocol Settings** box to catalog the node for the protocol that you selected.
- 5 Click on **OK**.

Catalog the Database

- 1 Click on the **Databases** push button, the DB2 Client Setup - Databases window opens.
- 2 Select **Database->New**, the New Database window opens.
- 3 Fill in the **Name** (*Database_name*) and **Alias** (*Database_alias*) parameters and optionally add a comment in the **Comment** field describing the database.
- 4 Select the **Location** radio button that describes the location of the database that you are trying to connect to.
 - If the database resides on a remote server, select the **Other Node** radio button and select the name of the Node that represents the remote server from the **At Node** drop down box.
 - If the database resides locally, select the **This node** radio button and select the drive where the database is located from the **On** drop down box.
- 5 Select the **Authentication Type (DB2 1.x Database)** check box if you are configuring communications to a Version 1.x database.



After you have cataloged the node and database for the Windows 3.x client, and completed the other specific steps for the protocol that you are using in Chapter 33, "Configuring Client-to-Server Communications Using the Command Line Processor" on page 277, you can test the database connection by clicking on the **Test Database Connection** push button.

If the connection is not successful, see the "Troubleshooting the Client to DB2 Connect Gateway Connection", for the protocol that you trying to configure, for more information.

Part 6. Using DB2 Universal Database

Chapter 34. Sending Accounting Information to a DB2 for OS/390 Server

Many mainframe customers consider detailed accounting for resources used by different applications to be an important part of their operational procedures. DB2 for OS/390 provides extensive facilities for producing accounting reports that allow information systems departments to charge individual user departments for the mainframe resources they use. This is often called "charge-back accounting." DB2 Connect products allow for accurate accounting for the host resources used by the PC and UNIX applications using existing accounting reports and procedures.

DB2 Connect implements this feature in a flexible way by providing:

- A default accounting string for all usage generated by a particular DB2 Connect Enterprise Edition server.
- Two mechanisms for individual users or applications to specify the account to which their usage should be charged.

Setting the Accounting String

The default accounting string is set by the DB2 Connect workstation's `dft_account_str` configuration parameter. This default mechanism is useful for database clients that do not have the capability to forward an accounting string to DB2 Connect (for example, applications developed prior to Version 2 products). See the *DB2 Connect User's Guide* for additional information on accounting strings.

There are two ways for client applications to override the default accounting string set at the DB2 Connect server:

- Using the Set Accounting String API: **sqlesact()**

The `SQLESACT()` API is called before the application connects to a database. You should use this method because:

- Calling an API does not incur the cost of reading a registry value.
- You do not need to call this API again unless you want to use a new accounting string for future connect requests. If you are using the registry value, you need to end the application process, redefine `DB2ACCOUNT`, and then restart the process.

Refer to the *API Reference* for details on using this API.

- Using the `DB2ACCOUNT` registry value at the client workstation.

If the **sqlsact()** API is not called prior to the first database connect request, the DB2ACCOUNT registry value is read. The accounting string is used for all subsequent database connect requests. See Chapter 39, “Controlling Your DB2 Environment” on page 357 for information on setting registry values.

Note: When defining the accounting string, you should observe the following rules:

1. Use the characters A-Z, 0-9, or '_' (underscore).
2. Limit the accounting string to 199 bytes—longer strings are truncated.

Chapter 35. Getting Started with the DB2 Universal Database

This section describes how to use the DB2 Universal Database in a variety of ways.



Go to the section that gives instructions for the tasks that you want to perform.

- “Logging on to the System.”
- “Connecting to a Database” on page 314.
- “Changing Default Privileges for Users” on page 315.
- “Counting Concurrent Users” on page 317.
- “Upgrading from a Try-and-Buy License” on page 318.

Logging on to the System

To use DB2, log on with a valid user ID that has the appropriate authority level for the commands you want to execute. If the *SYSADM_GROUP* parameter is defined in the database manager configuration file, the user performing administration tasks (such as cataloging, starting the database manager, or creating the sample database) must belong to the System Administrative group. The *SYSADM_GROUP* parameter is not set when DB2 is first installed; therefore, the following criteria are used to determine SYSADM authority:

- OS/2** A valid DB2 user ID which belongs to the UPM Administrator or Local Administrator group.
- UNIX** A valid DB2 username that belongs to the primary group of the instance owner's user ID.
- Windows 95** Any Windows 95 user.
- Windows NT** A valid DB2 username which belongs to Administrators group.



You can override this default case by explicitly providing a group name for the *SYSADM_GROUP* parameter. If you do this, the only way to assign SYSADM authority is by membership to this group.

See “Changing Default Privileges for Users” on page 315 for more information

See Appendix D, “Naming Rules” on page 501 for a list of restrictions on valid user IDs.

To log in from OS/2 locally, use UPM.

Note: If you are using OS/2 Warp Version 4, OS/2 Warp Connect, or OS/2 Warp Server, an administrative user ID was created during installation. Use this user ID to perform the steps that require administrative authority or to create additional users with the correct authority. Previous versions of OS/2 are initially set up with a default user ID (USERID) and password (PASSWORD). Try logging on with the defaults if you are unsure of any other administrative user on your system.

As well as using the local operating system security to authenticate users, there is also the option of using DCE security. Refer to the *Administration Guide* for information on DCE security.

Connecting to a Database

You need to connect to the database before you can use SQL statements to query or update it. The CONNECT statement associates a database connection with a user ID.

A database is created in an instance using one of three different authentication types: CLIENT, SERVER, or DCS. If an authentication type is not specified when the instance is created, the default SERVER authentication is used. You connect to a database differently depending on the authentication type and where the database resides.

Connecting to a local database

To connect to a local database called SAMPLE, type the following command in the Command Center or the command line processor:

```
connect to sample
```

Connecting to a remote database

- To connect a client to a database called SAMPLE, using SERVER authentication, type the following command in the Command Center or the command line processor:

```
connect to sample user userid using password
```

(Be sure to choose values for *userid* and *password* that are valid on the server system.)

- To connect a client to a database called SAMPLE, using CLIENT authentication, type the following command in the Command Center or the command line processor:

```
connect to sample
```




If you are connecting to the database from an OS/2 system, and are not currently logged on, you will be prompted to log on using a user ID and password.

If you are connecting to a database, from a Windows NT client using CLIENT authentication and you are providing a user ID and password on the **CONNECT** command, you must start the DB2 for Windows NT Security Service on the system. The Security Service is installed by DB2 and set up as a Windows NT service; however, it is not started automatically.

To start the DB2 Security Service, double-click on the **Services** icon in the **Control Panel** folder. Select the **DB2 Security Server** option and click on the **Start** push button.

When a successful connection is made, a message similar to the following is displayed:

```
Database product      = DB2/NT 5.0.0
SQL authorization ID  = USERID
Local database alias  = SAMPLE
```

If you receive an error message, make sure that the SAMPLE database exists on the server and the database manager was started on the server.

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

Changing Default Privileges for Users

By default, System Administrative (SYSADM) privileges are granted to the following:

- OS/2** A valid DB2 user ID which belongs to the UPM Administrator or Local Administrator group.
- UNIX** A valid DB2 username that belongs to the primary group of the instance owner's user ID.
- Windows 95** Any Windows 95 user.
- Windows NT** A valid DB2 username which belongs to Administrators group.

You can change the users who have administrator privileges for each DB2 instance by changing the *SYSADM_GROUP* parameter; but before you do, ensure that the group exists. To check to see if this group exists, do the following:

- For Windows NT users: Use the Windows NT User Manager Administrative Tool.
- For OS/2 users: Use a UPM administrator user ID to create groups and assign membership. For information on using UPM, see Chapter 40, "Administering and Using OS/2 User Profile Management on OS/2 Systems" on page 369.

To use another group as the System Administrative group (SYSADM_GROUP), update the database manager configuration file.



The *SYSADM_GROUP* parameter is not used for the Windows 95 operating system.

- To change the System Administrative group (SYSADM_GROUP) on the server instance: (For OS/2 and Windows NT workstations.)
 - 1 Start the Control Center.
 - 2 Click on the **[+]** sign beside the **Systems** icon to list all the systems known to your workstation.
 - 3 Click on the **[+]** sign for the system that contains the instance you want to update.
 - 4 Select the instance that you want to change the *SYSADM_GROUP* parameter for and click on the right mouse button.
 - 5 Select the **Configure** option.
 - 6 Select the **Administration** tab.
 - 7 Select the System Administration Authority Group parameter and enter the name of an existing group that you want to assign this privilege to in the **Value** box.
 - 8 Click on **OK**.
 - 9 Stop and Start the database instance.
- To change the System Administrative group (SYSADM_GROUP) on the client instance: (For OS/2 and Windows NT workstations.)
 - 1 Start the Client Configuration Assistant (CCA).
 - 2 Click on the **Client Settings** push button.
 - 3 Select the **Administration** tab.
 - 4 Select the parameter you want to change and enter the name of an existing group that you want to assign this privilege to in the **Value** box.
 - 5 Click on **OK**.
 - 6 Stop all applications that are using DB2, including the CCA. When restarted they will be using the new value for SYSADM_GROUP.
- Using the command line processor:

To change the System Administrative group (SYSADM_GROUP) parameter to *dbadmin* on the server instance, use:

```
update dbm cfg using SYSADM_GROUP dbadmin
db2stop
db2start
```

To change the System Administrative group (SYSADM_GROUP) parameter to *dbadmin* on the client instance, use:

```
update dbm cfg using SYSADM_GROUP dbadmin
terminate
```

Stop all applications that are using DB2. When restarted they will be using the new value for SYSADM_GROUP.

Counting Concurrent Users

DB2 Connect Enterprise Edition is priced per user. If you need to support more users than currently entitled, you must acquire entitlements for additional users. An entitlement for additional users does not require a new license key. It is up to you, the purchaser of the product, to ensure that you have sufficient entitlements for the number of users.

To assist you in tracking the number of concurrent users connecting to your DB2 Connect Enterprise Edition server, DB2 uses the License Use Runtime client. It provides a way to monitor the number of concurrent users on your system, but it does not enforce the maximum limit; however, the runtime client will log an entry in the *db2diag.log* file each time the number of entitlements that you are licensed to is exceeded.

To update the number of concurrent users you are entitled to support on OS/2 or Windows NT systems, use the Nodelock Administration Tool (NAT) as follows:

- 1** Double-click on the **License Use Runtime - Client** folder on the desktop.
- 2** Double-click on the **Nodelock Administration Tool** icon.
- 3** Double-click on the product for which you want to monitor the number of concurrent users.
- 4** Select the **Concurrent** check box.
- 5** Update the **Licenses** field to reflect the number of concurrent users you are entitled to run.
- 6** Click on **OK**.

To update the number of concurrent users you are entitled to support on AIX systems, use the Nodelock Administration Tool (NAT):

- 1 Log in as root.
- 2 If you are using NAT Version 3.0, append directory `"/var/iform"` to the PATH environment variable:
For Bourne or Korn shell:

```
PATH=$PATH:/var/iform ; export PATH
```

For C shell:

```
setenv PATH "${PATH}:/var/iform"
```
- 3 Use the `/var/iform/i4net` command to invoke NAT.
- 4 Select the product that you want to monitor the number of concurrent users for.
- 5 Update the **Concurrent licenses** field.

Check the `db2diag.log` file (located in the `for OS/2` and `Windows NT` or, on `UNIX` systems, the `INSTHOME/sql/lib/db2dump` directory, where `INSTHOME` is the home directory of the instance) to see if you have exceeded the maximum number of concurrent users that you are entitled to support. For example, an entry in the `db2diag.log` file might look like this:

```
SQL8009W The number of concurrent users of the DB2 Server
product has exceeded the defined entitlement of
"5". Concurrent user count is "6".
```

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

To acquire additional entitlements, you must purchase additional licenses from IBM or an IBM dealer. After you acquire the additional entitlements, use the NAT tool to update the number of concurrent users allowed.

Upgrading from a Try-and-Buy License

To upgrade your DB2 product from a demonstration license to a product license, you simply need to copy the license file from the DB2 CD-ROM to the system where DB2 is installed; you do not need to reinstall the product.

Note: Your **Proof of Entitlement** and **License Information** booklets identify the products for which you are licensed.

The following steps describe how to upgrade the license:



If you have purchased a product, other than the one that you have installed from the Try-and-Buy CD-ROM, you must first uninstall this product and install the one you have purchased. The install program will automatically install the required license.

On OS/2 and Windows NT Systems:

- 1 Put the product CD-ROM in the CD-ROM drive.
- 2 Double-click on the **Nodelock Administration Tool** icon in the **License Use Runtime - Client** folder to start the Nodelock Administration Tool.
- 3 Select **Products->New** from the menu bar.
- 4 Click on the **Import** push button.
- 5 In the Import window, locate the db2\license directory on your CD-ROM. A list of files is shown.
- 6 Select the license file that corresponds to the specific product that you have purchased and installed on your system:
db2conne.lic DB2 Connect Enterprise Edition
- 7 Click on **OK**.

On UNIX Systems:

- 1 Log in as root.
- 2 Mount the CD-ROM, if required. See “Step 3. Mounting the CD-ROM” on page 58 for information on how to mount the CD-ROM.
- 3 Update your DB2 product license with the following command:

```
DB2DIR/cfg/db2licinst license_filename
```

where DB2DIR = /usr/lpp/db2_05_00 on AIX
 = /opt/IBMdbs2/V5.0 on HP-UX or Solaris

and `license_filename` is the license file that corresponds to the product you have purchased:

db2conne.lic DB2 Connect Enterprise Edition

Note: The DB2 product license key can be found in the **nodelock** file located as follows:

- For AIX:
 /usr/lib/netls/conf/nodelock
- For HP-UX:
 /usr/netls/nodelock
- For Solaris:
 /var/netls/nodelock

Chapter 36. Working with DB2 Instances

The information in this chapter describes DB2 server instances and how to work with them.

A DB2 instance is a logical database manager environment where you catalog databases and set configuration parameters. On UNIX systems, a user ID is used as a DB2 instance. Depending on your needs, you can create more than one instance. On UNIX systems, a separate user ID is needed for every DB2 instance. You can use multiple DB2 instances to do the following:

- Use one instance for a development environment and another instance for a production environment.
- Tune a database instance for a particular environment.
- Restrict access to sensitive information.
- Control the assignment of SYSADM, SYSCTRL, and SYSMANT authority for each instance.
- Optimize the database manager configuration for each database instance.
- Limit the impact of an instance crash. In the unlikely event of an instance crash, only one instance is impacted. The other instance may continue to function normally.

However, multiple instances have some minor disadvantages:

- Additional system resources (virtual memory and disk space) are required for each instance.
- More administration is required because you have additional instances to manage.

At Install Time

On OS/2, Windows 95, or Windows NT Systems:

A default instance (called DB2) is created when you install DB2. The instance name is used to set up the directory structure.

To support the immediate use of this instance, the following are set during installation:

- The environment variable DB2INSTANCE is set to DB2.
- The DB2 registry value DB2INSTDEF is set to DB2.

These settings establish DB2 as the default instance. You can change the instance that is used by default, but first you have to create an additional instance.

Creating Instances

On OS/2, Windows 95, or Windows NT Systems:

If you are a user that belongs to the Administrators group, you can create additional DB2 instances using the **db2icrt** command. Run the **db2icrt** command at a command prompt. The command syntax is:

```
db2icrt instance_name
```

where *instance_name* is a string up to eight alphanumeric characters long. Refer to the Appendix D, "Naming Rules" on page 501 for more information about valid names.



You can change the location of the instance directory from DB2PATH using the DB2INSTPROF environment variable. You require write-access for the instance directory. If you want the directories created in a path other than DB2PATH, you have to set DB2INSTPROF before entering the **db2icrt** command. See Chapter 39, "Controlling Your DB2 Environment" on page 357 for further information.

Note: On Windows 95 only, for each additional instance you need to assign a different memory location to which the system will allocate shared memory. The memory location assigned to the default instance, DB2, is 90000000.

Use the DB2DBMSADDR registry value to assign a different value from the range 80000000 to BFFFFFFF. So, if one instance were at 80000000, the next address must be at least 83000000.

For example:

```
db2set db2dbmsaddr=A0000000 -i instance_name
```

where *instance_name* is the name of the additional instance.

On UNIX Systems:

The user ID of the instance owner, and a group that is the system administration group are associated with every instance. These are assigned during the process of creating the instance. One user ID can be used for only one DB2 Instance. That user ID is also referred to as the instance owner.

Also, each instance owner must have a unique home directory. All of the files necessary to run the database instance are created in the home directory of the instance owner's user ID. If it becomes necessary to remove the instance owner's user

ID from the system, you could potentially lose files associated with the instance and lose access to your data stored in the instance. For this reason, it is recommended that you dedicate an instance owner user ID to be used exclusively to run DB2.

The primary group of the instance owner user ID is also important. The primary group of the instance owner user ID automatically becomes the system administration group for the database instance and gains administration authority. (Administration authority allows users to start, stop, or change the database instance.) Other user IDs, that are members of the primary group of the Instance user ID, also gain this level of authority. For this reason, you may want to assign the instance owner ID to a primary group that is reserved for the administration of database instances. (Also make sure that you assign a primary group to the instance owner user ID; otherwise, the system default primary group will be used.)

If you already have a group that you want to make the system administration group for the instance, you can simply assign this group as the primary group when you create the instance owner user ID. To give other users administration authority on the database instance, add them to the group that is assigned as the system administration group.

To separate *SYSADM* authority between instances, ensure that each instance owner user ID uses a different primary group. However, if you choose to have common *SYSADM* authority over multiple instances, you can use the same primary group for multiple instances.

You can use the **DB2 Installer** or the **db2icrt** command to create an instance. See “Installing Additional Products and Creating Additional Instances” on page 65 to create DB2 Instances using the **DB2 Installer**. The **DB2 Installer** is available for AIX, HP-UX and Solaris operating systems.

You can also create additional DB2 instances using the **db2icrt** command as follows:

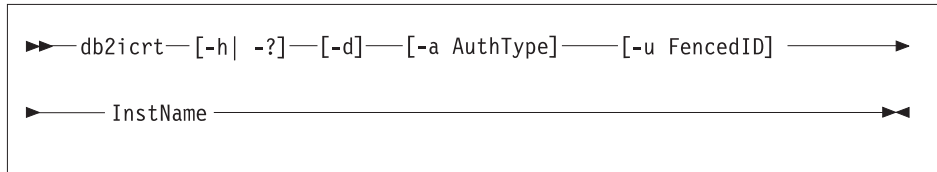
```
DB2DIR/instance/db2icrt -u FencedID InstName
```

where *Instname* is a string up to eight alphanumeric characters long (refer to the Appendix D, “Naming Rules” on page 501 for more information about naming rules) and

where	DB2DIR	= /usr/lpp/db2_05_00	on AIX
		= /opt/IBMDB2/V5.0	on HP-UX or Solaris

Note: To create instances on SINIX, SCO OpenServer and Silicon Graphics IRIX operating systems, see “Creating an Instance of the Product” on page 268.

The syntax of the **db2icrt** command is:



where:

- h | -?** display a help menu for this command.
- d** sets the debug mode that you can use for problem determination
- a *AuthType*** is an optional parameter that 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 server product is installed. Otherwise, the *AuthType* is set to CLIENT.

Notes:

1. The authentication type of the instance applies to all databases owned by the instance.
2. Authentication type, DCE, is valid. However, it is not valid to choose DCE as an *AuthType* for this command. To enable DCE authentication for a DB2 instance, refer to the *Administration Guide*.

- u *FencedID*** is the user under which the fenced UDFs and Stored Procedures will execute. This is not required if you install the DB2 Client Application Enabler or the DB2 Software Developer's Kit. For other products, this is an required parameter.

Note: *FencedID* may not be root or bin.

InstName is the login name of the instance owner.

If a server product is installed, the syntax is:

```
db2icrt -u FencedID InstName
```

Examples:

- If you install the DB2 Universal Database Workgroup Edition or the DB2 Universal Database Enterprise Edition, you can use the following command to create an instance:

```
db2icrt -u db2fenc1 db2inst1
```

- If you installed the DB2 Connect Enterprise Edition only, you can use the instance name as the Fenced ID also:

```
db2icrt -u db2inst1 db2inst1
```

- To create an instance for the DB2 client, you can use the following command:

```
db2icrt db2inst1
```

When an instance is created, its name is also added to the list of instances on the system.

The **db2icrt** command creates the *INSTHOME*/sqllib directory, where *INSTHOME* is the home of the instance owner.



You should not create files or directories under *INSTHOME*/sqllib directory other than those created by DB2 products. This avoids a potential loss of data if an instance is deleted. There is one exception. If your system supports fenced User Defined Functions and fenced Stored Procedures, put the fenced User Defined Functions and the fenced Stored Procedures applications in the *INSTHOME*/sqllib/function directory.

Listing Instances

On OS/2, Windows 95, or Windows NT Systems:

To get a list of all the database instances that are available on a system, run the **db2ilist** command.

On UNIX Systems:

The **db2ilist** command is located in:

```
DB2DIR/bin/db2ilist
```

where	DB2DIR	= /usr/lpp/db2_05_00	on AIX
		= /opt/IBMcdb2/V5.0	on HP-UX or Solaris
		= /usr/IBMcdb2/V2.1	on SCO OpenServer
		= /opt/IBMcdb2/V2.1	on SINIX or SGI

To determine which database instance applies in the current session, enter:

```
echo $DB2INSTANCE
```

Selecting an Instance on OS/2 or Windows NT Systems

On OS/2, Windows 95, or Windows NT Systems:

When starting or stopping a DB2 server instance, the one that is used is determined by the value of DB2INSTANCE. This is determined as follows:

- The current session's environment variables are examined to see if DB2INSTANCE is set. You can set it in a session by issuing the following command at a command prompt:

```
set db2instance=new_instance_name
```

- If DB2INSTANCE is not set in the current session, the system environment variables are examined to see if it is set.

On Windows NT, system environment variables are set in System Environment. On Windows 95, they are set in the autoexec.bat file. On OS/2, they are set in the config.sys file. See “DB2 Registry Values and Environment Variables” on page 363 for instructions on setting DB2INSTANCE on Windows 95 and Windows NT.

- If DB2INSTANCE is not set by either of the environment variables, then you must use the DB2 Profile Registry value, DB2INSTDEF. It is set at the global level of the registry. For more information on setting it at this level, see “DB2 Registry Values and Environment Variables” on page 363.

Note: The same search order is used when a client instance is activated by a DB2 call from an application.

To determine which database instance applies in the current session, enter:

```
db2set db2instance
```

On UNIX systems:

To use a specific DB2 instance, you will need to execute the **db2profile** or **db2cshrc** file for that instance. You can use the following command to execute **db2profile** or **db2cshrc**:

```
. INSTHOME/sqllib/db2profile    (in Bourne or Korn shell)
source INSTHOME/sqllib/db2cshrc (in C shell)
```

where INSTHOME is the home directory of the DB2 instance.



To ensure that you are using the correct instance, use the following command:

```
which db2
```

It will show you the full path name for the DB2 command. This path should include the home directory of the instance.

Auto-Starting Instances on UNIX Systems

On UNIX Systems:

To enable an instance to auto-start after each system reboot, perform the following steps:

- 1 Log in as the instance owner.
- 2 Set up the instance owner environment. See “Setting the Operating Environment for Each DB2 Instance User on UNIX Systems” for information on how to initialize the instance owner environment.
- 3 Turn on the auto-start flag in the instance's registry with the command:

```
db2set -i InstName DB2AUTOSTART=YES
```

where InstName is the login name of the instance.

For UNIX users: To prevent an instance from auto-starting after each system reboot, perform the following steps:

- 1 Log in as the instance owner.
- 2 Set up the instance owner environment. See “Setting the Operating Environment for Each DB2 Instance User on UNIX Systems” for information on how to initialize the instance owner environment.
- 3 Turn off the auto-start flag in the instance's registry with the command:

```
db2set -i InstName DB2AUTOSTART=
```

where InstName is the login name of the instance.

Setting the Operating Environment for Each DB2 Instance User on UNIX Systems

Before a user can use DB2, the database environment for each user must be updated so that it can access a DB2 instance and run the DB2 programs. This applies to all users (including administrative users).

Two sample scripts **db2profile** (for Bourne or Korn shell) and **db2cshrc** (for C shell) are provided to help you set the environment. These scripts are available in the `INSTHOME/sqlllib` directory. The scripts are copied and customized when an instance is created.

The instance owner (or any user that belongs to the same primary group as the instance owner) can customize the scripts for all users of an instance. Alternatively, these scripts can be copied and customized for each user.



The sample scripts contain statements to:

- Update a user's **PATH** by adding the following directories to the existing search path:

```
INSTHOME/sqllib/bin
INSTHOME/sqllib/adm
INSTHOME/sqllib/misc
```

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

- Set the **DB2INSTANCE** environment variable to the instance name.

The sample scripts can be invoked in two ways:

- Automatically. This sets the environment at logon time without requiring the users to type anything. The users can only access one instance.
- Manually. This requires the users to run the sample script for each instance that they want to use. In this way, the users can select which they want to use.

Setting the DB2 Environment Automatically

By default, the scripts affect the user environment for the duration of the current session only. You can change the `.profile` file to enable it to run the **db2profile** script automatically when the user logs on using the Bourne or Korn shell. For users of the C shell, you can change the `.login` file to enable it to run the **db2cshrc** script.

Add one of the following statements to the `.profile` or `.login` file.

- For users that share one version of the script, add:

```
. INSTHOME/sqllib/db2profile      (in Bourne or Korn Shell)
source INSTHOME/sqllib/db2cshrc  (in C Shell)
```

where **INSTHOME** is the home directory of the instance that you want to use.

- For users that have a customized version of the script in their home directory, add:

```
. $HOME/db2profile              (in Bourne or Korn Shell)
source $HOME/db2cshrc           (in C Shell)
```

where **\$HOME** is the home directory of user.

Setting the DB2 Environment Manually

To choose which instance that you want to use, type one of the following statements at a command prompt. The period (.) and the space are required.

- For users that share one version of the script, add:

```
. INSTHOME/sqllib/db2profile      (in Bourne or Korn Shell)
source INSTHOME/sqllib/db2cshrc  (in C Shell)
```

where INSTHOME is the home directory of the instance that you want to use.

- For users that have a customized version of the script in their home directory, add:

```
. $HOME/db2profile                (in Bourne or Korn Shell)
source $HOME/db2cshrc             (in C Shell)
```

where \$HOME is the home directory of user.

If you want to work with more than DB2 instance at the same time, run the script for each instance, that you want to use in, separate windows. For example, assume that you have two DB2 instances called test and prod, and their home directories are /u/test and /u/prod. In window 1, you would type:

```
. /u/test/sqllib/db2profile      (in Bourne or Korn Shell)
source /u/test/sqllib/db2cshrc  (in C Shell)
```

and in window 2, you would type:

```
. /u/prod/sqllib/db2profile      (in Bourne or Korn Shell)
source /u/prod/sqllib/db2cshrc  (in C Shell)
```

You would use window 1 to work with the test instance and window 2 for the prod instance.



To ensure that you are using the correct instance, use the following command:

```
which db2
```

It will show you the full path name for the DB2 command. This path should include the home directory of the instance.

Updating Instances on UNIX Systems

Existing instances are designed to be as independent as possible from the effects of subsequent installation and removal of products.

In most cases, existing instances will automatically inherit or lose access to the function of the product being installed or removed. However, if certain executables or

components are installed or removed, existing instances do not automatically inherit the new system configuration parameters or gain access to all the additional function. The instance must be updated.

If a DB2 product is updated by installing a PTF or a patch, all the existing DB2 instances should be updated using the **db2iupdt** command.

Running the **db2iupdt** script will update the specified instance by performing the following processing:

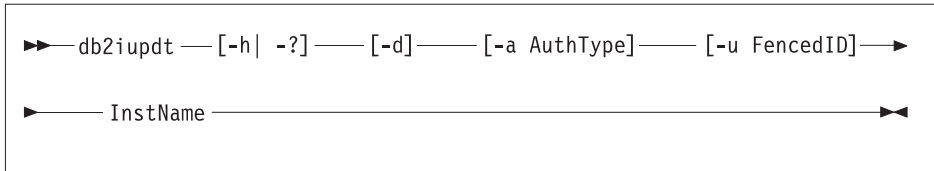
- 1 Replace the files in INSTHOME/sql1lib directory, where INSTHOME is the home directory of the instance.
- 2 If the node type is changed, then a new database manager configuration file is created. This is done by merging relevant values from the existing database manager configuration file with the default database manager configuration file for the new node type. If a new database manager configuration file is created the old file is backed up to:

INSTHOME/sql1lib/backup/db2system.old

The **db2iupdt** command is available in the DB2DIR/instance directory, where:

where	DB2DIR	= /usr/lpp/db2_05_00	on AIX
		= /opt/IBMd2/V5.0	on HP-UX or Solaris

The syntax of the **db2iupdt** command is:



where:

- h | -?** display a help menu for this command.
- d** sets the debug mode that you can use for problem determination
- a *AuthType*** is an optional parameter that 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 server product is installed. Otherwise, the *AuthType* is set to CLIENT.

Notes:

1. The authentication type of the instance applies to all databases owned by the instance.
2. Authentication type, DCE, is valid. However, it is not valid to choose DCE as an *AuthType* for this command. To enable DCE authentication for a DB2 instance, refer to the *Administration Guide*.

-u *FencedID* is the user under which the fenced UDFs and Stored Procedures will execute. This is not required if you install the DB2 Client Application Enabler. For other products, this is an required parameter.

Note: *FencedID* may not be root or bin.

InstName is the login name of the instance owner.

If a server product is installed, the syntax is:

```
db2iupdt -u FencedID InstName
```

Examples:

- If you installed the DB2 Connect Enterprise Edition after creating the instance, you can use following command to update that instance:

```
db2iupdt -u db2inst1 db2inst1
```

- To update all other instances, you can use the following command:

```
db2iupdt db2inst1
```

The **db2iupdt** command updates the files in the INSTHOME/sqllib directory, where INSTHOME is the home directory of the instance owner.

Removing Instances

On OS/2, Windows 95, or Windows NT Systems:

To remove a DB2 instance, perform the following steps:

- 1 End all applications that are currently using the instance.
- 2 Stop the Command Line Processor by issuing **db2 terminate** commands in each DB2 command window.
- 3 Stop the instance by issuing the **db2stop** command.
- 4 Back up files in the `sqllib\instance_name` directory, if needed. For example, you might want to save the database manager configuration file, `db2system`.

Note: If the DB2INSTPROF environment variable is set, these files will be in a different location than the one used in this example.

- 5 Execute the **db2idrop** command:

```
db2idrop instance_name
```

where *instance_name* is the name of the instance being dropped. This command removes the instance entry from the list of instances and removes the `sql1ib\instance_name` directory.

On UNIX Systems:

To remove a DB2 instance, perform the following steps:

- 1 Log in as the instance owner.
- 2 Back up files in the `INSTHOME/sql1ib` directory, if needed. For example, you might want to save the database manager configuration file, **db2system**, or user-defined function or fenced stored procedures applications in `INSTHOME/sql1ib/function`, where `INSTHOME` is the home directory of the instance owner.
- 3 Log out as the instance owner.
- 4 Log in as root.
- 5 Remove the DB2 instance by executing the **db2idrop** command:

```
DB2DIR/instance/db2idrop InstName
```

where	DB2DIR	= /usr/lpp/db2_05_00	on AIX
		= /opt/IBMd2/V5.0	on HP-UX or Solaris
		= /usr/IBMd2/V2.1	on SCO OpenServer
		= /opt/IBMd2/V2.1	on SINIX or SGI

and `InstName` is the login name of the instance.

- 6 As *root*, 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/sql1ib` directory.

Chapter 37. Running Your Own Applications

Various types of applications can access DB2 databases:

- Applications developed using the DB2 SDK that include embedded SQL, APIs, stored procedures, user-defined functions or calls to the DB2 CLI.
- ODBC applications such as Lotus Approach.
- JDBC applications and applets.
- Net.Data macros containing HTML and SQL.

An application on a DB2 client can access a remote database without knowing its physical location. The DB2 client determines the location of the database, manages the transmission of the requests to the database server, and returns the results.

In general, to run a database client application, use the following steps:

- 1 Ensure the server is configured and running.
Be sure that the database manager is started on the database server to which the application program is connecting. If it is not, you must issue the **db2start** command at the server before starting the application.
- 2 Ensure that you can connect to the database that the application uses.
- 3 Bind the utilities and the applications to the database. See Binding Database Utilities for information about binding the utilities.
- 4 Run the application program.

Binding Database Utilities

You must bind the database utilities (import, export, reorg, the command line processor, and DB2 CLI) to each database before they can be used with that database. In a network environment, if you are using multiple clients that run on different operating systems or are at different versions of DB2, you must bind the utilities once for each operating system/DB2-version combination.

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

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

Binding to Host Databases

To bind the utilities and applications to the DRDA server, connect to the DRDA server and use commands similar to the following:

```
connect to dbalias user userid using password
bind path@ddcsmvs.lst blocking all sqlerror continue
      messages mvs.msg grant public
connect reset
```

These commands are described in detail in the *DB2 Connect User's Guide*.

Binding to DB2 Universal Databases

How you bind the database utilities to a database depends on your workstation's operating system:

- On OS/2, Windows 95, and Windows NT operating systems, you can use the Client Configuration Assistant:
 - 1 Start the Client Configuration Assistant (CCA).
 - 2 Select the database to which you want to bind the utilities.
 - 3 Click on the **Bind** push button.
 - 4 Select the **Bind DB2 Utilities** radio button.
 - 5 Click on the **Continue** push button.
 - 6 Enter a user ID and password to connect to the database. The user ID must have the authority to bind new packages against the database.
 - 7 Select the utilities you want to bind and click on **OK**.
- On all operating systems, you can use the command line processor:
 - 1 Change to the bnd directory in the install path. For example:

For UNIX platforms	INSTHOME/sqllib/bnd
For all other platforms	x:\sqllib\bnd, where x: is the drive where you installed DB2
 - 2 Connect to the database using the command:

```
connect to database_alias
```

where *database_alias* is the name of the database to which you want to connect.

- 3 Issue the following commands in the Command Center or the command line processor:

```
"bind @db2ubind.lst messages bind.msg grant public"  
"bind @db2cli.lst messages clibind.msg grant public"
```

In this example, `bind.msg` and `clibind.msg` are the output message files, and EXECUTE and BIND privileges are granted to *public*.

- 4 Reset the connection to the database by issuing the following command:

```
connect reset
```

For more information on the **bind** command, refer to the *Command Reference*.

Notes:

1. The `db2ubind.lst` file contains the list of bind (`.bnd`) files required to create the packages for the database utilities. The `db2cli.lst` file contains the list of bind (`.bnd`) files required to create packages for the DB2 CLI and the DB2 ODBC driver.
2. Binding may take a few minutes to complete.



If the applications that you are using require binding to the database, you can use the Client Configuration Assistant's Bind facility, or the command line processor, to perform the bind action.

Running CLI/ODBC Programs

The DB2 Call Level Interface (CLI) run-time environment and the ODBC driver are included with the DB2 Client Application Enabler. This is contained on the DB2 Client Pack CD-ROM or can be downloaded from the Web page at <http://www.software.ibm.com/data/db2>.

This support enables applications developed using ODBC and DB2 CLI APIs to work with any DB2 server. DB2 CLI application development support is provided by the DB2 Software Developer's Kit (DB2 SDK) which is part of the separately orderable DB2 Application Development Kit product.

Before DB2 CLI or ODBC applications can access DB2, the DB2 CLI packages must be bound on the server. Although this will occur automatically on the first connection if the user has the required authority to bind the packages, it is recommended that the administrator do this first with each version of the client on each platform that will access the server. See "Binding Database Utilities" on page 333 for specific details.

The following general steps are required on the client system to give DB2 CLI and ODBC applications access to DB2 databases. These instructions assume that you have

successfully connected to DB2 using a valid user ID and password. Depending on the platform many of these steps are automatic. For complete details, see the section that deals specifically with your platform.

- 1 Use the CCA to add the remote system (if you have separate client and server machines) so that its instances and databases can be made known to the Control Center, then add the instances and databases for that system. (Your local system is represented by the icon labelled **Local**.) If you do not have access to this program you can use the **catalog** command in the command line processor.
- 2 On all platforms other than OS/2 and Windows 3.1, the DB2 CLI/ODBC driver is automatically installed when the DB2 Client Application Enabler is installed, and therefore nothing needs to be done. On OS/2 and Windows 3.1 you must use the **Install ODBC Driver** icon to install both the DB2 CLI/ODBC driver and the ODBC driver manager.
- 3 To access the DB2 database from ODBC:
 - a The Microsoft, Visigenic, or other ODBC Driver Manager must already be installed (this is done by default during the installation of DB2).
 - b The DB2 databases must be registered as ODBC data sources. The ODBC driver manager does not read the DB2 catalog information; instead it references its own list of data sources.
 - c If a DB2 table does not have a unique index then many ODBC applications will open it as read-only. Create a unique index for each DB2 table that is to be updated by an ODBC application. Refer to the **CREATE INDEX** statement in the *SQL Reference*. Using the Control Center you would alter the settings of the table, then click on the **Primary Key** tab and move one or more columns from the available columns list over to the primary key columns list. Any column you select as part of the primary key must be defined as NOT NULL.
- 4 Various CLI/ODBC Configuration Keywords can be set to modify the behavior of DB2 CLI/ODBC and the applications using it.
- 5 If you followed the above steps to install ODBC support, and added DB2 databases as ODBC data sources, your ODBC applications will now be able to access them.

After the platform specific instructions there are further details on the following topics:

- “How to Bind the DB2 CLI/ODBC Driver to the Database” on page 346
- “How to Set CLI/ODBC Configuration Keywords” on page 346
- “Configuring db2cli.ini” on page 347

Platform Specific Details for CLI/ODBC Access



The platform specific details on how to give DB2 CLI and ODBC applications access to DB2 are divided into the following categories:

- “Windows 3.1, Windows 95 and Windows NT Client Access to DB2 using CLI/ODBC”
- “OS/2 Client Access to DB2 using CLI/ODBC” on page 339
- “UNIX Client Access to DB2 using CLI/ODBC” on page 341

Windows 3.1, Windows 95 and Windows NT Client Access to DB2 using CLI/ODBC

Before DB2 CLI and ODBC applications can successfully access a DB2 database from a Windows 3.1, Windows 95, or Windows NT client, perform the following steps on the client system:

- 1** The DB2 database (and node if the database is remote) must be cataloged. To do so, use the CCA (or the command line processor). See “Configuring Database Connections” on page 439 for more details.

For more information refer to the on-line help in the CCA (or the **catalog** command in the *Command Reference*).

- 2** Verify that the Microsoft ODBC Driver Manager and the DB2 CLI/ODBC driver are installed. On Windows 95 and Windows NT they are both installed with DB2 unless the ODBC component is manually unselected during the install. On Windows 3.1 you must use the **Install ODBC Driver** icon to install the Microsoft ODBC Driver Manager and the DB2 CLI/ODBC driver.

To verify that they both exist on the machine:

- a** Run the Microsoft ODBC Administrator from the icon in the Control Panel, or issue the appropriate command from the command line: **odbcad32.exe** for Windows 95 or Windows NT operating systems, **odbcadm.exe** on Windows 3.1.
- b** Click on the **Drivers** push button, or the **ODBC Drivers** tab (depending on the platform).
- c** Verify that "IBM DB2 ODBC Driver" is shown in the list.

If either the Microsoft ODBC Driver Manager or the IBM DB2 CLI/ODBC driver is not installed, then rerun the DB2 install and select the ODBC component in Windows 95 or Windows NT, or double-click on the **Install ODBC Driver** icon in the DB2 program group in Windows 3.1.

- 3** Register the DB2 database with the ODBC driver manager as a *data source*. On Windows 95 and Windows NT you can make the data source available to all

users of the system (a system data source), or only the current user (a user data source). Use either of these methods to add the data source:

- Using the CCA:
 - a** Select the DB2 database alias that you want to add as a data source.
 - b** Click on the **Properties** push button. The Database Properties window opens.
 - c** Select the **Register this database for ODBC** check box.
 - d** On Windows 95 and Windows NT you can use the radio buttons to add the data source as either a user or system data source.
- Using the Microsoft **32bit ODBC Administration tool**, which you can access from the icon in the Control Panel or by running **odbcad32.exe** from the command line:
 - a** On Windows 95 and Windows NT the list of user data sources appears by default. If you want to add a system data source click on the **System DSN** button, or the **System DSN** tab (depending on the platform).
 - b** Click on the **Add** push button.
 - c** Double-click on the IBM DB2 ODBC Driver in the list.
 - d** Select the DB2 database to add and click on **OK**.
- On Windows 95 and Windows NT there is a command that can be issued in the command line processor to register the DB2 database with the ODBC driver manager as a data source. An administrator could create a command line processor script to register the required databases. This script could then be run on all of the machines that require access to the DB2 databases through ODBC.

See the

```
CATALOG [ user | system ] ODBC DATA SOURCE
```

command in the *Command Reference* for more information.

- 4** Optional: Configure the DB2 CLI/ODBC driver using the CCA:
- a** Select the DB2 database alias you want to configure.
 - b** Click on the **Properties** push button. The Database Properties window opens.
 - c** Click on the **Settings** push button. The CLI/ODBC Settings window opens.
 - d** Click on the **Advanced** push button. You can set the configuration keywords in the window that opens. These keywords are associated with the database *alias name*, and affect all DB2 CLI/ODBC applications that

access the database. The online help explains all of the keywords, as does an appendix in the *Installing and Configuring DB2 Clients* manual.

For information on manually editing this file (db2cli.ini), see “Configuring db2cli.ini” on page 347.

5 Optional: Using 16-bit ODBC applications:

Although not directly related to DB2, some users have experienced problems when running 16-bit ODBC applications on Windows 95 or Windows NT.

Both 16- and 32-bit applications use the same 32-bit IBM DB2 CLI/ODBC Driver. The Microsoft ODBC Driver Manager takes care of the conversion between the 16-bit application and the 32-bit ODBC driver.

Some 16-bit applications were shipped with an old set of 16-bit Driver Manager DLLs (that is, before 1995). These DLLs do not function well in the 32-bit environment. The following symptoms may occur when running the old DLLs:

- Traps occur in odbc.dll or other ODBC related DLLs.
- 16-bit applications do not see data sources cataloged using the 32-bit ODBC Administrator (from the Control Panel).

If (and only if) you are experiencing these problems you may want to update the Microsoft 16-bit ODBC Driver Manager DLLs. These files are provided with DB2 in the `SQLLIB\MSODBC16` subdirectory. Use these new DLLs to replace the older versions that are located in the system subdirectory of the Windows operating system directory.

6 If you have installed ODBC access (as described above), you can now access DB2 data using ODBC applications. Start the ODBC application and go to the Open window. Select the **ODBC databases** file type. The DB2 databases that you added as ODBC data sources will be selectable from the list. Many ODBC applications will open the table as read-only unless a unique index exists.



If you require additional information at this point you can refer to the following topics in “Detailed Configuration Information” on page 346:

- “How to Bind the DB2 CLI/ODBC Driver to the Database” on page 346
 - “How to Set CLI/ODBC Configuration Keywords” on page 346
 - “Configuring db2cli.ini” on page 347
-

OS/2 Client Access to DB2 using CLI/ODBC

Before DB2 CLI and ODBC applications can successfully access a DB2 database from an OS/2 client, perform the following steps on the client system:

1 The DB2 database (and node if the database is remote) must be cataloged. To do so, use the CCA (or the command line processor).

For more information see the on-line help in the CCA or “Configuring Database Connections” on page 439.

2 If you are using ODBC applications to access DB2 data, perform the following steps. (If you are using only CLI applications, skip this step and go to the next step.)

a Check that the ODBC Driver Manager (Visigenic or Intersolv) and the DB2 CLI/ODBC driver are installed:

1 Run the ODBC Administration tool in one of two ways:

- Double-click on the **Control Panel** icon from the **Main** Folder in WIN-OS/2 or the **ODBC** Folder in OS/2, and double-click on the **ODBC Administrator** icon.
- Run **odbcadm.exe** from the command line.

The Data Sources window opens.

2 Click on the **Drivers** push button. The Drivers window opens.

3 Verify that "IBM DB2 ODBC Driver" is shown in the list.

If either the ODBC Driver Manager or the IBM DB2 CLI/ODBC driver is not installed then double-click on the **Install ODBC Driver** icon in the DB2 folder to install both the DB2 CLI/ODBC driver and the ODBC driver manager.

b Register the DB2 database with the ODBC driver manager as a *data source* using either of these methods:

- Using the CCA:

1 Select the DB2 database alias that you want to add as a data source.

2 Click on the **Properties** push button.

3 Select the **Register this database for ODBC** check box.

- Using the Visigenic **ODBC Administration tool**, which you can access from the **ODBC** folder or by running **odbcadm.exe** from the command line:

1 Click on the **Add** push button from the Data Sources window. The Add Data Source Window opens.

2 Double-click on the IBM DB2 ODBC Driver in the list.

3 Select the DB2 database to add and click on **OK**.

3 Optional: Configure the DB2 CLI/ODBC driver using the CCA:

a Select the DB2 database alias you want to configure.

b Click on the **Properties** push button. The Database Properties window opens.

c Click on the **Settings** push button. The CLI/ODBC Settings window opens.

- If the Driver Manager was installed by another program, the file `.odbc.ini` (begins with a period) would be located in the root directory of the user ID that runs the ODBC application.
- b** The Driver Manager uses two initialization files:
- odbcinst.ini** ODBC Driver Manager's configuration file indicating which database drivers are installed. Each user that will use ODBC must have access to this file.
 - .odbc.ini** End-user's data source configuration. Each user has a separate copy of this file.

A sample template of these files are provided in the `sqllib/odbccli` subdirectory.

Setting up `odbcinst.ini`

The settings in this file impact all of the ODBC drivers on the machine.

Use an ASCII editor to update this file. It must have a stanza (section) called `[IBM DB2 ODBC DRIVER]`, with a line starting with "Driver" indicating the full path to the DB2 ODBC driver (`db2.o`). For example, if the home directory of your end user is `/u/thisuser/` and the `sqllib` directory is installed there, then the correct entry would be:

```
[IBM DB2 ODBC DRIVER]
Driver=/u/thisuser/sqllib/lib/db2.o
```

See the sample file in the `sqllib/odbccli` subdirectory for an example.

Setting up `odbc.ini`

The settings in this file are associated with a particular user on the machine; different users can have different `odbc.ini` files.

The `odbc.ini` file must be copied into the end user's home directory and called `.odbc.ini`. Update this file, using an ASCII editor, to reflect the appropriate data source configuration information. To register a DB2 database as an ODBC data source there must be one stanza (section) for each DB2 database.

The sample `odbc.ini` template shows:

- line 2 (part of the `[ODBC Data Source]` stanza):

```
SAMPLE=IBM DB2 ODBC DRIVER
```

Indicates that there is a data source called `SAMPLE` that used the `IBM DB2 ODBC DRIVER`.

- lines 4-6 (part of the `[SAMPLE]` stanza):

```
[SAMPLE]
Driver=/u/thisuser/sqllib/lib/db2.o
Description=Sample DB2 ODBC Database
```

Indicates that the `SAMPLE` database is part of the DB2 instance located in the directory `/u/thisuser`.

- line 11 (part of the [ODBC] stanza):

```
InstallDir=/u/thisuser/sqllib/odbccli
```

Indicates that /u/thisuser/sqllib/odbccli should be treated as the location where ODBC is installed.

Note: If your application specifically installed the ODBC components (such as the Driver Manager) elsewhere, you must update the line starting with InstallDir under the [ODBC] stanza to reflect this new location.

For example, if ODBC has been installed in /opt/odbc, the [ODBC] stanza would look like:

```
[ODBC]
Trace=0
TraceFile=odbctrace.out
InstallDir=/opt/odbc
```

See the sample file in the sqllib/odbccli subdirectory for an example. You can also see “How to Configure ODBC.INI” on page 347 for more detailed information.

Once the .ini files are set up you can run your ODBC application and access DB2 databases. Refer to the documentation that comes with your ODBC application for additional help and information.

4 Configure the DB2 CLI/ODBC driver (**optional**).

There are various keywords and values that can be used to modify the behavior of DB2 CLI/ODBC and the applications using it. The keywords are associated with the database *alias name*, and affect all DB2 CLI/ODBC applications that access the database.

For information on manually editing this file (db2cli.ini), see “Configuring db2cli.ini” on page 347. For information about the specific keywords see the *CLI Guide and Reference*.



If you require additional information at this point you can refer to the following topics in “Detailed Configuration Information” on page 346:

- “How to Bind the DB2 CLI/ODBC Driver to the Database” on page 346
 - “How to Set CLI/ODBC Configuration Keywords” on page 346
 - “Configuring db2cli.ini” on page 347
-

Macintosh Client Access to DB2 using CLI/ODBC

Before DB2 CLI and ODBC applications can successfully access a DB2 database from a Macintosh client, perform the following steps on the client system:

- 1 The DB2 database (and node if the database is remote) must be cataloged. To do so, use the command line processor.

For more information see "Configuring Database Connections" on page 439.

- 2 If you are using ODBC applications to access DB2 data, perform the following steps. (If you are using only CLI applications, skip to step #4.)
 - a An ODBC driver manager must be installed to handle the communications between the ODBC applications and the DB2 ODBC driver. DB2 does not supply a Macintosh ODBC driver manager, only the DB2 ODBC driver itself. If your ODBC application does not supply an ODBC driver manager then you can obtain the MacODBC driver manager directly from Apple.
 - b Register the DB2 database with the ODBC driver manager list of data sources (contained in the ODBC Preferences file) as a *data source* using either of these methods:
 - Running **ODBC Setup** (in a 68K environment) or **ODBC Setup PPC** (in a PowerMacintosh environment) from the Control Panel
 - Editing the initialization (ODBC Preferences or ODBC Preferences PPC) file directly; refer to the next step in this process for more information.

- 3 **Configuring ODBC Preferences or ODBC Preferences PPC:** The ODBC initialization file is used to record information such as the available drivers and data sources. See the documentation for your driver manager for procedures on updating this file.

The MacODBC driver manager uses the ODBC Preferences file or the ODBC Preferences PPC file to record information about the available drivers and data sources.

It is also possible to modify these files manually. Do not change any of the existing entries in the files.

- a Use an ASCII editor to edit the ODBC Preferences file or the ODBC Preferences PPC file.

68K Environment

The following is a sample ODBC Preferences file:

```
[ODBC Data Sources]
GLOBALDB=IBM ODBC DB2 for Macintosh
SAMPLE=IBM ODBC DB2 for Macintosh

[GLOBALDB]
Driver=app1:ODBC$DB2DriverFunctionSet
Description=My GLOBAL database

[SAMPLE]
Driver=app1:ODBC$DB2DriverFunctionSet
Description=My SAMPLE database
```

PowerMacintosh Environment

The following is a sample ODBC Preferences PPC:

```
[ODBC Data Sources]
SAMPLE=IBM ODBC DB2 for PPC
```

```
[SAMPLE]
Driver=DB2ODBCDriverPPC
Description=My SAMPLE database
```

- b** The [ODBC Data Source] section lists the name of each available data source and the description of the associated driver.

For each data source listed in the [ODBC Data Source] section, there is a section that lists additional information about that data source. These are called the *Data Source Specification* sections.

Under the [ODBC DATA SOURCE] entry, add the following line:

68K Environment

```
database_alias=IBM ODBC DB2 for Macintosh
```

PowerMacintosh Environment

```
database_alias=IBM ODBC DB2 for PPC
```

Where *database_alias* is the alias of the database cataloged in the database directory (the database name used by the Command Line Processor CONNECT TO statement).

- c** Add a new entry in the Data Source Specification section to associate the data source with the driver:

68K Environment

```
[database_alias]
Driver=app1:ODBC$DB2DriverFunctionSet
```

PowerMacintosh Environment

```
[database_alias]
Driver=DB2ODBCDriverPPC
```

Where *database_alias* is the alias of the database cataloged in the database directory, and listed under the Data Source Specification section.

- 4** The DB2 CLI/ODBC driver can be configured further by editing the db2cli.ini file. This file contains various keywords and values that can be used to modify the behavior of DB2 CLI and the applications using it. The keywords are associated with the database *alias name*, and affect all DB2 CLI applications that access the database. For a complete description of all the keywords and their usage, refer to an appendix in the *Installing and Configuring DB2 Clients* manual.
- 5** If you have installed ODBC access (as described above), you can now access DB2 data using ODBC applications. Start the ODBC application and go to the Open window. Select the **ODBC databases** file type. The DB2 databases that you added as ODBC data sources will be selectable from the list. Many ODBC applications will open the table as read-only unless a unique index exists.

Detailed Configuration Information

The section “Platform Specific Details for CLI/ODBC Access” on page 337 should provide you with all of the information you require. The following additional information is useful where DB2 tool support is not available, and for administrators who require more detailed information.



The following topics are covered in this section:

- “How to Bind the DB2 CLI/ODBC Driver to the Database”
 - “How to Set CLI/ODBC Configuration Keywords”
 - “Configuring db2cli.ini” on page 347
-

How to Bind the DB2 CLI/ODBC Driver to the Database

The CLI/ODBC driver will autobind on the first connection to the database, provided the user has the appropriate privilege or authorization. The administrator may want to perform the first connect or explicitly bind the required files.

See “Binding Database Utilities” on page 333 for more information.

How to Set CLI/ODBC Configuration Keywords

DB2 CLI can be configured further by using either the CCA or the DB2 Client Setup administration tool, whichever is applicable for your platform, or by manually editing the db2cli.ini file.

This file contains various keywords and values that can be used to modify the behavior of DB2 CLI and the applications using it. The keywords are associated with the database *alias name*, and affect all DB2 CLI and ODBC applications that access the database.

By default, the location of the CLI/ODBC configuration keyword file is as follows:

Platform:	Location:
OS/2	sqllib directory
Windows NT	sqllib directory
Windows 95	sqllib directory
Windows 3.1	sqllib\win directory

UNIX sqllib/cfg directory of the database instance running the CLI/ODBC applications

The environment variable DB2CLIINIPATH can also be used to override the default and specify a different location for the file.

The configuration keywords enable you to:

- Configure general features such as data source name, user name, and password.
- Set options that will affect performance.
- Indicate query parameters such as wild card characters.
- Set patches or work-arounds for various ODBC applications.
- Set other, more specific features associated with the connection, such as code pages and IBM Graphic data types.

For a complete description of all the keywords and their usage, refer to the *Installing and Configuring DB2 Clients*.

Configuring db2cli.ini: The db2cli.ini initialization file is an ASCII file which stores values for the DB2 CLI configuration options. A sample file is shipped to help you get started. Refer to the *CLI Guide and Reference* for information on each keyword.

See “Platform Specific Details for CLI/ODBC Access” on page 337 for more information on how to modify this file on your platform.

How to Configure ODBC.INI

Microsoft's 16-bit ODBC Driver Manager and Visigenic's ODBC Driver Manager use the odbc.ini file to record information about the available drivers and data sources.

Visigenic's ODBC Driver Manager also uses the odbcinst.ini file on UNIX platforms. Although the necessary files are updated automatically by the tools on most platforms, users of ODBC on UNIX platforms will have to edit them manually. The file odbc.ini (and odbcinst.ini where required) are located:

Platform: **Location:**

Windows *drive*:\windows (where *drive* is the drive where Windows is installed)

Win-OS/2 *drive*:\os2\mdos\winos2 (where *drive* is the drive where OS/2 is installed)

UNIX Home directory of user ID running ODBC application

It is also possible to modify this file manually. Do not change any of the existing entries in the file.

- 1 Use an ASCII editor to edit the odbc.ini file.

The following is an example odbc.ini file:

```
[ODBC Data Sources]
MS Access Databases=Access Data (*.mdb)
```

```
[MS Access Databases]
Driver=D:\WINDOWS\SYSTEM\simba.dll
FileType=RedISAM
SingleUser=False
UseSystemDB=False
```

The [ODBC Data Sources] section lists the name of each available data source and the description of the associated driver.

For each data source listed in the [ODBC Data Sources] section, there is a section that lists additional information about that data source. These are called the *Data Source Specification* sections.

- 2 Under the [ODBC DATA SOURCE] entry, add the following line:

```
database_alias=IBM DB2 ODBC DRIVER
```

where *database_alias* is the alias of the database cataloged in the database directory (the database name used by the command line processor CONNECT TO statement).

- 3 Add a new entry in the Data Source Specification section to associate the data source with the driver:

```
[database_alias]
Driver=drive:\windows\system\db2cliw.dll
```

Where:

- *database_alias* is the alias of the database cataloged in the database directory, and listed under the Data Source Specification section.
- *drive* is the drive where Windows is installed.

The following shows the example file with the IBM data source entries added:

```
[ODBC Data Sources]
MS Access Databases=Access Data (*.mdb)
SAMPLE=IBM DB2 ODBC DRIVER
```

```
[MS Access Databases]
Driver=D:\WINDOWS\SYSTEM\simba.dll
FileType=RedISAM
SingleUser=False
UseSystemDB=False
```

```
[SAMPLE]
Driver=D:\WINDOWS\SYSTEM\db2cliw.dll
Description=Sample DB2 Client/Server database
```

Note: If you are running the ODBC application under WIN-OS/2, specify the equivalent path \OS2\MDOS\WINOS2\SYSTEM in place of the \WINDOWS\SYSTEM path.

UNIX Configuration of .ini files

The section “UNIX Client Access to DB2 using CLI/ODBC” on page 341 contains detailed steps on how to update both the `odbc.ini` and `odbcinst.ini` files.

Running Java Programs

You can use DB2 Java Database Connectivity (JDBC) support to run the following types of Java programs:

- Java applications, which rely on the DB2 Client Application Enabler to connect to DB2.
- Java applets, that do not require any other DB2 component code on the client.

Java can also be used on the server to write user-defined functions, stored procedures, and table functions.

For further information on developing Java applications that access DB2 databases refer to the Web page located at <http://www.software.ibm.com/data/db2/java/> and the *Road Map to DB2 Programming*.

Configuring the Environment

The following environment variables must be set to run Java programs:

OS/2, Windows 95 and Windows NT

- CLASSPATH includes "." and the file `sqllib\java\db2java.zip`
- PATH includes the directory `sqllib\bin`
- LIBPATH includes the directory `sqllib\dll` (OS/2 only)

UNIX (AIX, Solaris and HP-UX)

In the following settings *instance_name* is the home directory of the DB2 instance owner.

- CLASSPATH includes "." and the file `instance_name/sqllib/java/db2java.zip`
- PATH includes the directory `instance_name/sqllib/bin`
- LD_LIBRARY_PATH includes the directory `instance_name/sqllib/lib`
- SHLIB_PATH include the the directory `instance_name/sqllib/lib` (HP-UX only)

Java Applications

Start your application from the desktop or command line, like any other application. The DB2 JDBC driver handles the JDBC API calls from your application and uses the DB2 Client Application Enabler to communicate the requests to the server and receive the results.

Java Applets

Because Java applets are delivered over the Web, you treat them a bit differently than Java applications. You must install DB2 (server or client) on the same machine as your Web server, then install the Java Development Kit (JDK) Version 1.1 from Sun Microsystems on the server as well (refer to <http://www.software.ibm.com/data/db2/java> for details).

To run your applet, you need only a Java-enabled Web browser on the client machine. When you load your HTML page, the applet tag downloads the Java applet to your machine, which then downloads the Java class files, including the COM.ibm.db2.java.sql and COM.ibm.db2.jdbc.net classes and DB2's JDBC driver. When your applet calls the JDBC API to connect to DB2, the JDBC driver establishes separate communications with the DB2 database through the JDBC applet server residing on the DB2 server.

To run your applets, do the following:

- 1 Start the DB2 JDBC applet server on your Web server by entering:

```
db2jstrt portno
```

where *portno* is the number of the unused TCP/IP port that you specified in the DB2Appl.java file.
- 2 On your client system, start your Web browser and load the HTML file that imbeds your applet.

Chapter 38. Entering DB2 Commands and SQL Statements

You can use the Command Center to enter DB2 commands and SQL statements if you are working with DB2 on an OS/2, Windows 95, or Windows NT workstation. Otherwise, you can issue commands in the command line processor or a system command prompt.

Task: Entering DB2 commands, SQL statements, and operating system commands	
Operating System	Tools
OS/2	<ul style="list-style-type: none">• Command Center• command line processor• command prompt
Windows 95 or Windows NT	<ul style="list-style-type: none">• Command Center• command line processor• Command Window
Windows 3.1	<ul style="list-style-type: none">• command line processor
UNIX	<ul style="list-style-type: none">• command line processor• command-line prompt
Macintosh	<ul style="list-style-type: none">• command line processor

Using the Command Center

On OS/2, Windows 95 and Windows NT operating systems, the Command Center provides an interactive window that allows you to:

- Run SQL statements, DB2 commands, and operating system commands.
- See the execution result of one or many SQL statements and DB2 commands in a result 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 such as the Control Center and the Journal from the main tool bar.
- Display all the command scripts known to the system through the Script Center, with summary information listed for each.

To invoke the Command Center on OS/2 operating systems:

- 1 Double-click the **DB2 for OS/2** folder.
- 2 Double-click on the **Command Center** icon.

To invoke the Command Center on Windows 95 and Windows NT:

- 1 Click on **Start**.
- 2 Select **Programs->DB2 for Windows->Command Center**.

The Command Center contains a large input area in which you type your commands. To start a command on a new line use the Enter key. To run the commands you have entered, select the **Start or stop execution** icon from the menu bar, or use CTRL+Enter.

Do not type the commands with a db2 prefix; instead, enter the command as follows:

```
list node directory;
```

If you want to run multiple commands, you must end each command with a semicolon, then press Enter to start the next command on a new line.

Note: The semicolon is optional at the end of a single quick command, and at the end of the final command in a series.

After you run a command, the Command Center displays the Results window, which informs you how the commands are proceeding.

To recall commands that you have typed in interactive mode, click on the arrow beside the narrow input window. To save commands entered in interactive mode as scripts, select **Script->Save as** from the menu bar.



If you want to store commonly used SQL statements or DB2 commands as scripts, select the **Script** icon from the main tool bar.

Using the Command Line Processor

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

Interactive Input Mode	You can enter DB2 commands or SQL statements and view their output.
Command Line Mode	The DB2 command line processor behaves like a command window from your operating system. You can enter DB2 commands or SQL statements and view their output.
File Input Mode	Refer to the <i>Command Reference</i> for information on the file input mode.

Interactive Input Mode

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

- On OS/2:
 - 1 Double-click the **DB2 for OS/2** folder.
 - 2 Double-click on the **Command Line Processor** icon.
- On Windows 95 and Windows NT operating systems:
 - 1 Click on **Start**.
 - 2 Select **Programs->DB2 for Windows->Command Line Processor**.
- On Windows 3.1, use one of the following methods:
 - From a DOS full screen, enter the **win db2clpw** command.
 - From Windows:
 - 1 Double-click the **DB2** folder.
 - 2 Double-click on the **Command Line Processor** icon.
- On Macintosh:
 - 1 Double-click the **DB2** folder.
 - 2 Double-click on the **Command Line Processor** icon.

You can also invoke the command line processor in interactive input mode, by entering the following command at a command prompt:

- On OS/2 and UNIX, enter **db2**.

- On Windows 95 and Windows NT, enter **db2cmd**, then enter **db2**.

In interactive input mode, the prompt looks like this:

```
db2 =>
```

This prompt indicates that you do not type DB2 commands with a db2 prefix; instead, you just type the DB2 command. For example:

```
list node directory
```

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

```
!dir db2*.log
```

Note: Windows 3.1x does not support this method of running operating-system commands.

If you need to enter a long command that does not fit on one line, use the line continuation character, \. For example:

```
db2 => select firstname, lastname, dateofbirth, from \  
db2 (cont.) => staff where height=123, order by \  
db2 (cont.) => lastname
```

Note: You do not need to use a line continuation character when entering long commands in interactive input mode on Windows 3.1 workstations.

To end interactive input mode, type **terminate**.

Command Line Mode

On OS/2 and UNIX, you can issue DB2 commands from a command prompt. You must include the db2 prefix. For example:

```
db2 list node directory
```

To invoke the command line processor in command line mode on Windows 95 and Windows NT operating systems, use one of the following methods:

- Click on **Start** and select **Programs->DB2 for Windows->Command Window**.
- Enter the **db2cmd** command at a command prompt.

After you invoke the DB2 command environment, you can enter DB2 commands at the command prompt. You must include the db2 prefix.

Notes:

1. If the DB2 command contains characters that have special meanings 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 will successfully retrieve all information from the *employee* table, even if the * character has a special meaning on the operating system:

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

2. Command line mode is not available on Windows 3.1x systems.



For further information on using the command line processor, refer to the *Command Reference*.

Chapter 39. Controlling Your DB2 Environment

Registry values, environment variables, and configuration parameters control your database environment.



- To set registry values through the DB2 profile registry, see “Controlling the DB2 Profile Registry” on page 358.
 - To set DB2 environment variables, see:
 - “Setting Your Environment on OS/2” on page 359.
 - “Setting Your Environment on Windows 95 and Windows NT” on page 360.
 - “Setting Your Environment on UNIX Systems” on page 361.
 - “Setting Your Environment on Windows 3.1” on page 362.
 - To set database manager configuration parameters on a client instance, see “Configuration Parameters” on page 367.
-

Prior to the introduction of the DB2 profile registry in Version 5, changing your DB2 environment on OS/2, Windows 95 or Windows NT workstations required you to change your system's environment variables and reboot. On UNIX platforms, changing your DB2 environment required you to change the `sqllib/db2profile` file or the `sqllib/db2cshrc` file in the home directory of the instance.

With Version 5, almost all of the environment variables have been moved to the DB2 profile registry. Users with system administrative (SYSADM) authority for a given instance can update registry values for that instance. Use the **db2set** command to update DB2 registry values without rebooting your system. The DB2 registry applies the updated information to DB2 server instances and DB2 applications started after the changes are made.

Note: The concept of the DB2 profile registry is not supported on Windows 3.1. See “Setting Your Environment on Windows 3.1” on page 362 for more information.

DB2 configures its operating parameters by checking for variable values according to the following search order:

- The environment variable settings.
- Profile registry values set with the **db2set** command in the instance-level profile.
- Profile registry values set with the **db2set** command in the global-level profile.

See “DB2 Registry Values and Environment Variables” on page 363 for descriptions of the subset of registry values and environment variables that you may want to adjust to get DB2 up and running. For more detailed information about all registry values and environment variables, refer to the *Administration Guide*.

Controlling the DB2 Profile Registry

The DB2 profile registry stores DB2 registry values. The "levels" of registry values are as follows:

DB2 instance-level profile:

This profile contains instance level variable settings and overrides. Values defined in this level will override their settings in the global level.

DB2 global-level profile:

This profile contains system-wide variable settings. Any variable not defined in the node or instance levels will be evaluated at this level.

To modify registry variable values, use the **db2set** command. The syntax of the **db2set** command is as follows:

- To set a parameter for the current instance, type:

```
db2set parameter=value
```

- To set a parameter's value for a specific instance, type:

```
db2set parameter=value -i instance-name
```

- To set a parameter at the global profile level, type:

```
db2set parameter=value -g
```

Notes:

1. Some parameters will always default to the global level profile. They cannot be set at the instance or node level profiles. Examples of this are DB2SYSTEM and DB2INSTDEF.
 2. On UNIX, you must have system administrative (SYSADM) authority to change registry values for an instance. Only users with root authority can change parameters in global-level registries.
- To delete a parameter's value at a specified level, you can use the same command syntax to set the parameter but specify nothing for the parameter value. For example, to delete the parameter's setting at the node level, type:

```
db2set parameter= -i instance-name node-number
```

- To explicitly unset a parameter's value at a specified level and prevent evaluating the parameter at the next level, use the `-null` option. To use the parameter's setting at the instance level, type:

```
db2set parameter= -null -i instance-name
```

The `-null` option allows you to set the value of a parameter globally, but unset the value for a specific instance. For example, you can set *DB2COMM* to *TCP/IP* at the global level, and if you have four instances on your system, you can set three of the instances to default to the global setting, but use the `-null` option to unset *DB2COMM* on the fourth instance.

- To evaluate the current session's parameter's value, type:
`db2set parameter`
- To evaluate the parameter's value at all levels, type:
`db2set parameter -all`
- To view a list of all values defined in the profile registry, type:
`db2set -all`

For more information on the **db2set** command and remote administering of the DB2 profile registry, refer to the *Command Reference*.

Setting Your Environment on OS/2

It is strongly recommended that all DB2 specific registry values be defined in the DB2 profile registry. If DB2 variables are set outside of the registry, remote administration of those variables will not be possible, and the workstation will have to be rebooted in order for the variable values to take effect.

On OS/2 operating systems there are three system environment variables, DB2INSTANCE, DB2PATH, and DB2INSTPROF, that are not stored in the DB2 profile registry. DB2INSTANCE and DB2PATH are set when DB2 is installed; DB2INSTPROF can be set after installation. On OS/2, the environment variable DB2PATH must be set; normally it is set during install and you should not modify it. Setting DB2INSTANCE and DB2INSTPROF is optional. Because the system environment variables are not set in the profile registry, you will need to reboot if you change their settings.

To change the setting of an environment variable, enter the following command:

```
set parameter = value
```

To determine the setting of an environment variable, enter:

```
echo %variable-name%
```

To modify system environment variables you must edit the config.sys file, then reboot to make the changes take effect.

Setting Your Environment on Windows 95 and Windows NT

It is strongly recommended that all DB2 specific registry values be defined in the DB2 profile registry. If DB2 variables are set outside of the registry, remote administration of those variables will not be possible, and the workstation will have to be rebooted in order for the variable values to take effect.

Windows 95 and Windows NT have one system environment variable, DB2INSTANCE, that can only be set outside the profile registry. However, you are not required to set DB2INSTANCE; the DB2 profile registry variable *db2instdef* may be set in the global level profile to specify the instance name to use if DB2INSTANCE is not defined.

To determine the setting of an environment variable, enter:

```
echo %variable-name%
```

To set system environment variables, do the following:

On Windows 95:

Edit the autoexec.bat file and reboot to make the change take effect.

On Windows NT:

Set environment variables as follows:

- 1 Click on **Start** and select **Settings->Control Panel**.
- 2 Double-click on the **System** icon.
- 3 In the **System Properties** panel, select the **Environment** tab and do the following:
 - a If the variable does not exist:
 - 1 Select any environment variable in the System Variables window.
 - 2 Change the name in the **Variable** field to the name of the environment variable you want to set, for example DB2INSTANCE.
 - 3 Change the **Value** field to the instance name, for example, db2inst.
 - b If the variable already exists in the System Variables window, you can set a new value:
 - 1 Select the environment variable you want to append, for example DB2INSTANCE.
 - 2 Change the **Value** field to the instance name, for example, db2inst.
 - c Click on the **Set** push button.

d Click on **OK**.

e You may have to reboot your system for these changes to take effect.

Note: The environment variable `DB2INSTANCE` can also be set at the session (process) level. For example, if you want to start a second DB2 instance called `TEST`, issue the following commands in a command window.

```
set db2instance=TEST
db2start
```

Setting Your Environment on UNIX Systems

It is strongly recommended that all DB2 specific registry values be defined in the DB2 profile registry. If DB2 variables are set outside of the registry, remote administration of those variables will not be possible.

On UNIX, you must set the system environment variable `DB2INSTANCE`.

The scripts **db2profile** (for Bourne shell or Korn shell) and **db2cshrc** (for C shell) are provided as examples to help you set up the database environment. You can find these files in `INSTHOME/sqllib`, where `INSTHOME` is the home directory of the instance owner.

Note: Except for `PATH` and `DB2INSTANCE`, all other DB2-supported variables must be set in the DB2 profile registry. To set variables that are not supported by DB2, define them in your `db2profile` or `db2cshrc` file.

An instance owner or `SYSADM` user may customize these scripts for all users of an instance. Alternatively, you can copy and customize a script, then invoke a script directly or add it to your `.profile` or `.login` file.

To work with another instance for the current session, execute the **db2profile** (for Bourne shell or Korn shell) or the **db2cshrc** (for C shell) in the `sqllib` directory of the instance's home directory.

Note: To ensure that your search path has been set up correctly, execute the following command:

```
which db2
```

This command returns the absolute path of the DB2 CLP executable. Verify that it is located under the instance's `sqllib` directory.

Setting Your Environment on Windows 3.1

The DB2 environment on Windows 3.1 is not controlled by profile registries. Instead, Windows 3.1 clients define environment keywords in the file db2.ini (typically found in c:\windows directory).



On Windows 3.1, the parameters that control the DB2 environment are called environment keywords. However, because many Windows 3.1 keywords are also used on operating systems that use the DB2 profile registries, environment keywords may also be referred to as registry values in this manual.

The db2.ini initialization file is an ASCII file that stores values for the Windows 3.1 client environment keywords. Within the file, there is just one section header titled [DB2 Client Application Enabler].

The parameters are set by specifying a keyword with its associated keyword value in the form:

Keyword=*keywordValue*

Notes:

1. All the keywords and their associated values must be located below the section header.
2. The keywords are not case sensitive; however, their values can be if the values are character based.
3. Comment lines use a semi-colon in the first position of a new line.
4. Blank lines are permitted. If duplicate entries for a keyword exist, the first entry is used (and no warning is given).

The following is a sample db2.ini file:

```
[DB2 Client Application Enabler]
DB2PATH=C:\SQLLIB\WIN
DB2INSTANCE=DB2
DB2INSTPROF=C:\SQLLIB
DB2TRACEON=N
```

This file is located in the Windows product directory. For example, it would typically be found in c:\windows directory in a native Windows environment.

On Windows 3.1, Client Application Enabler for DB2 Version 2.1 and Version 5 must set this information *only* in the db2.ini file.

DB2 Registry Values and Environment Variables

The following subset of the DB2 registry values and environment variables are those that you may need to know about to get up and running. Each has a brief description; some may not apply to your environment.

You can view a list of all supported variables for your platform. On all operating systems except Windows 3.1, enter the following db2set command:

```
db2set -lr
```

Note: Windows 3.1 clients define environment variables in the file db2.ini. See “Setting Your Environment on Windows 3.1” on page 362 for details.

Parameter	Operating System	Values	Description
General			
DB2ACCOUNT	All	Default: (not set)	The accounting string that is sent to the remote host. Refer to the <i>DB2 Connect User's Guide</i> for details.
DB2CODEPAGE	All	Default: derived from the language ID, as specified by the operating system.	Specifies the code page of the data presented to DB2 for database client application. The user should not set <i>db2codepage</i> unless explicitly stated in DB2 documents, or asked to do so by DB2 service. Setting <i>db2codepage</i> to a value not supported by the operating system can produce unexpected results. Normally, you do not need to set <i>db2codepage</i> because DB2 automatically derives the code page information from the operating system.
DB2COUNTRY	All	Default: derived from the language ID, as specified by the operating system.	Specifies the country code of the client application, which influences date and time formats.
DB2DBDFT	All	Default: (not set)	Specifies the database alias name of the database that will be implicitly connected to when applications are started and no implicit connect has been done. This keyword is ignored if it is set.
DB2DISCOVERYTIME	OS/2, Windows 95, and Windows NT	Default=40 seconds, minimum=20 seconds	Specifies the amount of time that SEARCH discovery will search for DB2 systems.

Parameter	Operating System	Values	Description
DB2INCLUDE	All	Default=current directory	Specifies a path to be used during the processing of the SQL INCLUDE text-file statement during DB2 PREP processing. It provides a list of directories where the INCLUDE file might be found. Refer to the <i>Embedded SQL Programming Guide</i> for descriptions of how <i>db2include</i> is used in the different precompiled languages.
DB2INSTDEF	OS/2, Windows 95 and Windows NT	Default=DB2 (on OS/2, Windows 95 and Windows NT)	Sets the value to be used if <i>DB2INSTANCE</i> is not defined.
DB2OPTIONS	All except Windows 3.1 and Macintosh	Default=null	Sets command line processor options.
DB2SLOGON	Windows 3.1	Default: NO	Enables a secure logon in DB2 for Windows 3.1. If <i>db2slogon=YES</i> DB2 does not write user IDs and passwords to a file, but instead uses a segment of memory to maintain them. When <i>db2slogon</i> is enabled, the user must logon each time Windows 3.1 is started.
DB2TIMEOUT	Windows 3.1 and Macintosh	Default: (not set)	Used to control the timeout period for Windows 3.1 and Macintosh clients during long SQL queries. After the timeout period has expired a dialog box pops up asking if the query should be interrupted or allowed to continue. The minimum value for this variable is 30 seconds. If <i>db2timeout</i> is set to a value between 1 and 30, the default minimum value will be used. If <i>db2timeout</i> is set to a value of 0, or a negative value, the timeout feature is disabled. This feature is disabled by default.
DB2TRACENAME	Windows 3.1 and Macintosh	Default=DB2WIN.TRC	On Windows 3.1 and Macintosh, specifies the name of the file where trace information is stored. The default is <i>db2tracename=DB2WIN.TRC</i> , and is saved in your current instance directory (for example, \sqllib\db2). We strongly recommend that you specify the full path name when naming the trace file.

Parameter	Operating System	Values	Description
DB2TRACEON	Windows 3.1 and Macintosh	Default=N, values: Y, N	On Windows 3.1 and Macintosh, turns trace on to provide information to IBM in case of a problem. (It is not recommended that you turn trace on unless you encounter a problem you cannot resolve.) Refer to the <i>Troubleshooting Guide</i> for information on using the trace facility with DB2 Client Application Enabler.
DB2TRCFLUSH	Windows 3.1 and Macintosh	Default=N, values: Y, N	On Windows 3.1 and Macintosh, <i>db2trcflush</i> can be used in conjunction with <i>db2traceon</i> = Y. <i>db2trcflush</i> = Y will cause each trace record to be written immediately into the trace file. Setting this will slow down your DB2 system considerably, so the default setting is <i>db2trcflush</i> = N. This setting is useful in cases where an application hangs the system and therefore needs to be rebooted. Setting this keyword guarantees that the trace file and trace entries are not lost by the reboot.
DB2TRCSYSERR		Default=1, values: 1 - 32767	Specifies the number of system errors to trace before the client turns off tracing. The default value traces one system error, after which, trace is turned off.
DB2YIELD	Windows 3.1	Default=N, values: Y, N	Specifies the behavior of the Windows 3.1 client while communicating with a remote server. When N is set, the client will not yield the CPU to other Windows 3.1 applications, and the Windows environment is halted while the client application is communicating with the remote server. You must wait for the communications operation to complete before you can resume any other tasks. When set to Y, your system functions as normal. It is recommended that you try to run your application with <i>db2yield</i> =YES. If your system crashes, you will need to set <i>db2yield</i> =N0. For application development, ensure your application is written to accept and handle Windows messages while waiting for a communications operation to complete.
System Environment			
DB2INSTANCE	All	Default= <i>db2instdef</i> on OS/2, Windows 95, and Windows NT	The environment variable used to specify the instance that is active by default. On UNIX, users must set the environment variable <i>DB2INSTANCE</i> .

Parameter	Operating System	Values	Description
DB2INSTPROF	OS/2, Windows 95, and Windows NT		The environment variable used to specify the location of the instance directory on OS/2, Windows 95 and Windows NT operating systems, if different than <i>DB2PATH</i> .
DB2PATH	OS/2, Windows 95 and Windows NT		The environment variable used to specify the directory where the product is installed on OS/2, Windows 95 and Windows NT operating systems. By default it is set to x:\sqlib\win on Windows 95 and Windows NT.
Communications			
DB2COMM	All, server only	Default= null, values: any combination of APPC,IPXSPX, NETBIOS, NPIPE,TCPIP	Specifies the communication managers that are started when the database manager is started. If this is not set, no DB2 communications managers are started at the server.
DCE Directories			
DB2DIRPATHNAME	OS/2 and UNIX		Specifies a temporary override of the DIR_PATH_NAME parameter value in the database manager configuration file. If a directory server is used and the target of a CONNECT statement or ATTACH command is not explicitly cataloged, then the target is concatenated with DB2DIRPATHNAME (if specified) to form the fully qualified DCE name. Note: The <i>db2dirpathname</i> value has no effect on the instance's global name, which is always identified by the database manager configuration parameters DIR_PATH_NAME and DIR_OBJ_NAME.
DB2CLIENTCOMM	OS/2 and UNIX		Specifies a temporary override of the DFT_CLIENT_COMM parameter value in the database manager configuration file. If both DFT_CLIENT_COMM and <i>db2clientcomm</i> are not specified, then the first protocol found in the object is used. If either one or both of them are specified, then only the first matching protocol will be used. In either case, no retry is attempted if the first connect fails.

Parameter	Operating System	Values	Description
DB2CLIENTADPT	OS/2	Default= null, range: 0-15	Specifies the client adapter number for NETBIOS protocol on OS/2 operating systems. The <i>db2clientadpt</i> value overrides the DFT_CLIENT_ADPT parameter value in the database manager configuration file.
DB2ROUTE	OS/2 and UNIX	Default	Specifies the name of the Routing Information Object the client uses when it connects to a database with a different database protocol. The <i>db2route</i> value overrides the ROUTE_OBJ_NAME parameter value in the database manager configuration file.

Note: There are three registry values that are related to ADSM:

- *DSMI_CONFIG*
- *DSMI_DIR*
- *DSMI_LOG*

Refer to the *Administration Guide* for information about ADSM and these values.

Configuration Parameters

Configuration parameters are values that affect the operating characteristics of a database or database management system.

Database management configuration parameters exist on servers and clients. However, only certain database management configuration parameters can be set on the client. These parameters are a subset of the database management configuration parameters that can be set on the server.

Database configuration parameters can be set only on the server.



For information on setting server database or database management configuration parameters, refer to the *Administration Guide*.

Setting Database Manager Configuration Parameters on a Client Instance

To control database management configuration parameters on a client instance on OS/2, Windows 95, or Windows NT, use the Client Configuration Assistant (CCA).

- On OS/2:
 - 1 Double-click on the **Client Configuration Assistant** icon in the **DB2 for OS/2** folder.
 - 2 Click on the **Client Settings** push button.
- On Windows 95 and Windows NT:
 - 1 Click on **Start** and select **Programs->DB2 for Windows->Client Configuration Assistant**. The Client Configuration window opens.
 - 2 Click on the **Client Settings** push button.

Follow the hints and online help to modify configuration parameter values.

To control database management configuration parameters on a client instance on UNIX, use the command line processor.



- For information on using Client Configuration Assistant, see Chapter 46, “Administering Clients Using the CCA” on page 439.
 - For information on using the command line processor, see “Using the Command Line Processor” on page 353.
-

Chapter 40. Administering and Using OS/2 User Profile Management on OS/2 Systems

User Profile Management (UPM) provides access control to workstation resources through a set of user ID validation and user and group ID management functions. UPM is installed with the DB2 products.

Three icons appear in the **UPM Services** folder:

- **Logoff**
- **Logon**
- **User Account Management**

Special Note for Users of Warp Connect and Warp Server

DB2 for OS/2 Version 5 includes UPM Version 4.0. Peer Services ships as a part of OS/2 Warp Connect and Warp Server includes a later version of UPM.

If DB2 for OS/2 detects that UPM is already installed it does not attempt to re-install it. Note that Version 4.06 of UPM does not include default user ID USERID with password PASSWORD defined. For DB2 for OS/2 Version 5 local logon, either:

- Use your Peer Services user ID, or
- Create a new user ID called USERID with password PASSWORD in UPM when logged on with your Peer Services user ID, which is an Administrator by default.

Using UPM for the First Time

The first time you use UPM, you have to use a default user ID. Your first task is to establish a permanent user ID and delete the default ID:

- 1** Make a backup copy of the net.acc file. This is stored on your workstation as c:\muglib\accounts\net.acc and contains the UPM defaults.

Note: If IBMLAN is also installed, you will find net.acc under
x:\ibmlan\accounts.

You may use the backacc.exe and restacc.exe commands to backup and restore the net.acc file. Refer to your operating system or LAN documentation for further information.

- 2 Log on to UPM, following the procedure in “Logging on to UPM” on page 371. Use the default user ID, USERID, and the default password, PASSWORD.
- 3 Establish a permanent user ID, following the procedures in “Adding a New User ID and Password” on page 372. Select the:
 - **Administrator** radio button in the **User type** box
 - **Allowed** radio button in the **Logon** box
 - **Password Required** radio button in the **Options** box.

Note: Use a password that is not trivial.
- 4 Log off from UPM, following the procedures in “Logging Off” on page 374.
- 5 Log on to UPM again. Use the user ID you established in step 3.
- 6 Delete the default user ID, USERID, following the procedure in “Changing or Deleting a User ID” on page 373. This is a safeguard against unauthorized use of your workstation.
- 7 Do other work in UPM, as required.
- 8 When you are finished, log off from UPM.

Using UPM Every Day



This section covers everyday usage of UPM.

- “Logging on to UPM” on page 371
 - “Logging On at the Command Prompt” on page 371
 - “Adding a New User ID and Password” on page 372
 - “Changing or Deleting a User ID” on page 373
 - “Logging Off” on page 374
 - “Managing UPM Groups” on page 374
-

Logging on to UPM

To log on to UPM, follow these steps:

- 1 Double-click on the **UPM Services** folder on the desktop.
- 2 Double-click on the **Logon** icon.
- 3 In the Logon window, type your user ID and password. (The password does not display.)
- 4 Click on **OK**.

Logging on to UPM with Multiple IDs

You can log on to UPM with multiple user IDs. You can use this feature to start several application programs under different user IDs. There are two ways to enable multiple logons at your workstation (and control selective logoffs). Use either of these methods:

- Type LOGON /O=MULTI at the OS/2 prompt and press Enter. As each application starts, the UPM logon window appears.
- Embed UPM logon and logoff commands in each application program you want to start with its own user ID. UPM provides two application programming interfaces (APIs), one for logon and one for logoff.

Logging On at the Command Prompt

You may also log on at the command prompt using the following syntax:

```
►►—logon—userid—/P:—password—/N:—node—/D:—domain—/L:—►►
```

<i>userid</i>	Identifies the user logging on. If <i>userid</i> is not specified, the Logon window is displayed so you can enter the user ID.
<i>/P:password</i>	Allows you to specify a password. If you enter a password, UPM tries to log on using the <i>password</i> specified. If no <i>password</i> is specified, UPM tries to log on without a password. If a password is required, the Logon window is displayed so you can enter it. <i>/P</i> is ignored if <i>userid</i> was not specified.
<i>/N:node</i>	Specifies the node to be used the next time a node must be accessed. If you use <i>/N</i> , the user ID and password are not validated until the program attempts to connect to the node. If no <i>node</i> is specified, the Logon window for Remote Node Access is displayed so you can enter the node name.

If only /N is specified, the Logon window for Remote Node Access is displayed so you can enter the user ID, password, and node name.

/D:domain

Specifies the domain on which a logon is to be attempted. An attempt to start a LAN requester is issued and, if successful, the domain logon completes.

If a LAN requester cannot be started, then a local logon is attempted.

If only /D is specified, the Logon window for a domain logon is displayed. If the workstation is a server, the default domain name is displayed on the domain logon window and you cannot change this domain name. If the workstation is a requester, the default domain name is displayed and you can use the default domain name or type a new domain name.

If you do not specify any parameters with the LOGON command, domain logon is the default if you are not already logged on to a domain. If you are already logged on to a domain, and you want to log on to another domain, specify the logon command, user ID, and password with the new domain name. You are logged off the old domain and logged on to the new domain without windows being displayed.

/L

Forces a local logon. If you issue the LOGON command with no parameters, a domain logon is automatically attempted. To force a local logon, you must use the /L parameter.

Adding a New User ID and Password

To add a new UPM user ID and password, follow these steps:

- 1 Double-click on the **User Account Management** icon in the **UPM Services** folder. You must logon to UPM with a user ID that has *Administrator* authority.

If you are currently logged on to a domain and want to *Manage Users* locally, to use a local logon you must:

- Click on **Actions** in the **User Profile** window.
- Select **Use domain** from the pulldown menu.
- Select the **Local** radio button.
- Click on **OK**.

- 2 Select **Manage-> Manage Users** from the menu bar.
- 3 Select **—NEW—** from the list.
- 4 Select **Actions-> Add a new user ID** from the menu bar.
- 5 Type a new user ID and an optional comment. The user ID can be 1-8 characters and must comply with the guidelines in “Naming Rules” on page 375.

- 6** Select the values you want for **User type** and **Logon**. For most users, use the defaults, **User** and **Allowed**.
- 7** In the **Confirmation** box, type a password in the first **Type password twice** field, and type the password again in the second field for verification. The password must comply with the guidelines in “Naming Rules” on page 375.
- 8** Select the value you want for **Options**. For most users, use the default, **Required**.
- 9** Click **OK**. You are returned to the User Profile Management—User Management window.

Changing or Deleting a User ID

To change or delete a UPM user ID, follow these steps:

- 1** Log on to UPM.
- 2** Double-click on the **User Account Management** icon in the **UPM Services** folder.
- 3** Select **Manage-> Manage Users** from the menu bar.
- 4** Select the user ID you want from the list.
- 5** Select **Actions** from the menu bar; then select one of the following:
 - Update user information**
To change a user's attributes, such as authorization level and password
 - View user profile...**
To see a user's profile information
 - Select groups for user ID...**
To add a user to, or remove the user ID from, groups
 - Erase user ID...**
To delete a user ID
 - Add/Change user logon profile...**
To add a new logon profile for a user, change an existing logon profile, or delete a logon profile
 - Erase user logon profile...**
To delete a user's logon profile
- 6** When you return to the User Profile Management - User Management window, select **Exit-> Exit user management** from the menu bar.

Logging Off

To log off from UPM, follow these steps:

- 1 Display the User Profile Services window, either by exiting the UPM window in which you are working or by selecting **User Profile Management** from the desktop.
- 2 Double-click on the **UPM Services** folder.
- 3 Double-click on the **Logoff** icon.
- 4 Select a user ID from the list; then click on the **Logoff** push button. To log off all the user IDs from UPM, click on the **Logoff all** push button.

Managing UPM Groups

With administrator authority, you can put user IDs into groups and perform the following tasks:

- Create a new group
- Add or delete users in a group
- Delete a group.

All of the procedures below begin at the User Profile Management - Group Management window. To get there, follow these steps:

- Double-click on the **User Account Management** icon in the **UPM Services** folder.
- Select **Manage-> Manage Groups** from the menu bar.

Creating a New Group

To create a new group, follow these steps:

- 1 Select **—NEW—** from the list in the window.
- 2 Select **Actions-> Add a new group** from the menu bar.
- 3 In the **Group ID** field, type the name of the new group. Group IDs follow the same naming conventions as user IDs (see “Naming Rules” on page 375).
- 4 Type an optional comment in the **Group comment** field.
- 5 In the **User ID** list, select the user IDs for membership in the group.
- 6 Click on **OK**.

Adding and Deleting Users in a Group

To add or delete users in a group, follow these steps:

- 1** Select the group ID you want from the list in the window.
- 2** Select **Actions-> Update group** from the menu bar.
- 3** Update the **Group comment** field by typing new text.
- 4** Select the user IDs you want to add to the group.
- 5** Deselect the user IDs you want to delete from the group.
- 6** Click on **OK**.

Deleting a Group

To delete a group, follow these steps:

- 1** Select the group ID you want from the list in the window.
- 2** Select **Actions-> Erase group** from the menu bar.
- 3** Click on *Erase ID* push button to confirm the request.

Naming Rules

The user ID must conform to the following rules:

- Cannot start with a digit (0 to 9) or end with a dollar sign (\$).
- Can be 1 to 8 characters long and may contain the following characters:
 - Upper or lower case letters A to Z
 - Special characters #, @, or \$
 - Digits 0 to 9.
- Cannot be PUBLIC, USERS, ADMIN, LOCAL, or GUESTS, or a name that starts with IBM, SYS, or SQL.

User Profile Management Passwords

UPM provides default values for user ID and password; some countries have translated these values as shown in Table 40.

Table 40. Default UPM User IDs and Passwords

Country	USERID	Password
<default>	USERID	PASSWORD
Denmark	BRUGERID	KODEORD
Finland	OMATUNN	TUNNSANA
France	IDUTIL	MOTDEPAS
Germany	BENUTZER	KENNWORT
Italy	ID	CHIAVE
Norway	BRUKER	PASSORD
Portugal	IDUTIL	PASSE
Spain	IDUSUAR	CONTRASE

Note: If your country does not appear in the list, assume USERID and PASSWORD are used. If this fails, see the README file.

Part 7. Advanced Installation and Configuration

Chapter 41. Unattended DB2 Installation on OS/2 Workstations

During a regular installation, you interact with the install program, filling in a series of panels to set up and configure the DB2 product.

In an unattended installation, these tasks run automatically without any intervention by you. The setup and configuration data is supplied by response files you set in place beforehand.

You can use this feature to install DB2 products on OS/2 operating systems:

- Locally, from a CD-ROM (refer to "Installing DB2 Products from a Code Server Hard Disk or CD-ROM").
- Remotely, across a network connection from a code server hard disk/CD-ROM (refer to "Installing DB2 Products from a Code Server Hard Disk or CD-ROM").
- Remotely, using SystemView LAN if it is installed on your system (refer to "Installing DB2 Products Remotely Using SystemView LAN" on page 386).



If you need to install the same DB2 product on several machines, you can use unattended installation's "response file" feature to create a customized configuration, save the customized response file, then reuse it as a template for each installation.

Installing DB2 Products from a Code Server Hard Disk or CD-ROM

To install DB2 products for OS/2, from a code server hard disk or CD-ROM, on local or remote workstations, perform the steps in the following sections:

- "Step 1. Make DB2 Files Available for Installation" on page 380
- "Step 2. Create a Response File for Unattended Installation" on page 380
- "Step 3. Run the CMD File from the Remote Workstation" on page 383



You can also use the following procedure to *remove* all DB2 products from a target workstation. Simply follow the instructions below, but when editing the command file, specify D (Delete) instead of I (Install).

Step 1. Make DB2 Files Available for Installation

In this section, you make the DB2 install files accessible to the client machine where DB2 will be installed.

- If performing *remote* installs directly from the CD-ROM:
 - 1 Insert the appropriate CD-ROM into the drive.
 - 2 Ensure that the CD-ROM will remain in the drive for as long as it is needed for the install. If the drive is often used for other tasks as well, consider installing from the code server hard disk instead.
- If installing from a code server hard disk, you must copy the required files from the CD-ROM directories to the code server's hard disk. At the command prompt, use the **xcopy** command with the **/s** option.

- The syntax for the two commands required is:

```
xcopy x:\db2\os2\language e:\clients\language /s
xcopy x:\db2\os2\common e:\clients\common /s
```

where:

- *x* is the letter that designates the CD-ROM drive
- *e* is the letter that designates the code server's hard disk
- *language* is the two-character code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.

If performing a remote installation, you must enable your network clients to access the DB2 install files.

Grant *shared access* authority to the directory that you just created, or to the CD-ROM drive if installing directly from CD-ROM.

Step 2. Create a Response File for Unattended Installation

During an interactive installation, you provide the information needed to install DB2 and configure its environment. During an unattended installation, this information is provided as keywords and values in a response file. DB2's install package includes a ready-to-use sample response file, with default entries already in place.



If you intend to use the sample response file provided, without making any changes to its values, you can skip this step and go to "Step 3. Run the CMD File from the Remote Workstation" on page 383.

To edit the sample response file:

1 Find the correct sample response files for the product you want to install.

If installing directly from the CD-ROM, substitute x:\os2 for e:\clients in the directory names below.

- Edit one of:
 - e:\clients*language*\db2conen.rsp for DB2 Connect Enterprise Edition
 - e:\clients*language*\db2cae.rsp for DB2 Client Application Enabler

where *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.

2 The response file contains:

- Keywords unique to installation
- Environment variable settings
- Configuration parameter settings.



For more information on:

- DB2 environment variables, see “DB2 Registry Values and Environment Variables” on page 363, or refer to the *Administration Guide*.
- Configuration parameters, refer to the *Administration Guide*.

3 To activate an item in the response file, remove the asterisk (*) to the left of the keyword/registry value, erase the current setting to the right of the value and type in a new setting. The possible settings are listed to the right of the current setting.

An example section of a response file appears below:

```
...  
FILE           = c:\sqllib  
COMP          = Client Application Enabler  
...  
*DB2ACCOUNT   = BLANK or char(199)  
*DB2BQTIME    = BLANK or 1 - MAX  
...
```

Keywords unique to installation are parameters that are only specified in a response file during an unattended installation. The following is a list of keywords unique to OS/2 and Windows 3.1 unattended installation:

- *FILE*

Specifies the destination directory for DB2. If you do not change this value, it defaults to x:\sqllib where x is the drive on which your operating system is installed.



- Install DB2 products only on a drive which is local to the target workstation. Installing on a non-local drive can cause performance and availability problems.

- *COMP*

Specifies the components you want installed. By default, all components of the DB2 product are installed. If you do not want to install a component, add an asterisk (*) to the left of the *COMP* line for that component in the response file.

- *OVERWRITE*

Specifies whether to automatically overwrite files during installation. Valid values for this keyword are YES and NO.

- *CFGUPDATE*

Specifies whether the CONFIG.SYS file is automatically updated. Valid values for this keyword are:

- AUTO

Automatically updates CONFIG.SYS.

- MANUAL

Does not update CONFIG.SYS.

- *SAVEBACKUP*

Specifies whether to save a backup version of the product when it is updated. Valid values for this keyword are YES and NO.

- *DB2SYSTEM*

On OS/2, specifies a name for the system which is unique within a network.

Note: This parameter must be specified.

- *AUTO_CTRL_CENTER*

On OS/2, specifies whether or not to automatically start the Control Center each time the system is rebooted.

Note: By default the Control Center will be automatically started unless this parameter is set to NO.

- *DB2.AUTOSTART*

On OS/2, specifies whether or not to automatically start the DB2 instance each time the system is rebooted.

Note: By default the DB2 instance will be automatically started unless this parameter is set to NO.

- *ADMIN.USERID* and *ADMIN.PASSWORD*

On OS/2, specifies the user ID and password that will be used to log on and start the Administration Server each time your system is started. If UPM already exists on your system, the user ID and password you provide must exist and have one of the following:

- UPM administrator authority on your system.
- UPM local administrator authority on your system.

If UPM is not on your system, it will be installed as part of the DB2 installation and the user ID and password you provide will be set up with the appropriate authority.

- 4 Exit the file. If you have made any changes, save the file under a new file name to preserve the original sample response file.

If you are installing directly from the CD-ROM, you must store the renamed response file on another drive.

Step 3. Run the CMD File from the Remote Workstation

A command (CMD) file contains the commands which will start the installation program. You must edit this file before running the installation.

- 1 Find and open the correct CMD file.

If installing directly from the CD-ROM, substitute x:\os2 for e:\clients in the directory names below.

- The CMD files are available in the e:\clients*language* directory where *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language. For example:

- db2conen.cmd for DB2 Connect Enterprise Edition
- db2cae.cmd for DB2 Client Application Enabler

2 Edit the command in the file, to fill in the information needed for the installation.

- For OS/2:
 - a** In the command file, you must specify the location of the install files. Use the following command:

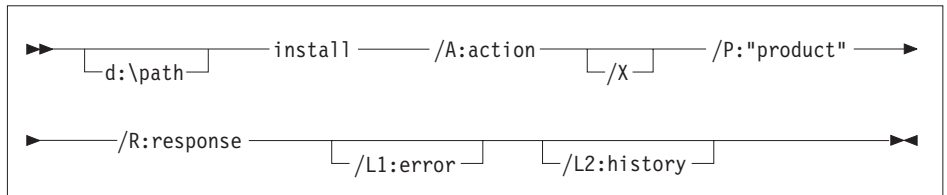
```
set beginlibpath=drive:\db2path
```

For example, if you are installing from the code server's hard drive, specify the directory created in Step 1:

```
set beginlibpath=x:\clients\language\install
```

where *x* is the letter that designates the CD-ROM drive and *language* is the two-character country code that represents your language (for example, EN for English). See Table 47 on page 484

- b** You must also specify the complete install command. A complete command requires the following syntax:



The following is an example of a complete command in the sample command files:

```
e:\clients\language\install\install /A:I /X
/P:"IBM DB2 Client Application Enabler"
/R:e:\clients\language\db2cae.rsp /L1:d:\error.log
/L2:d:\history.log
```

where:

/d:\path Specifies the location of the install files. If installing from the code server's hard drive, specify the directory created in Step 1.

/A Specifies the action to be performed.

I Specifies install.

Note: If you want to *remove* all DB2 products from a target workstation, specify D (Delete) instead of I (Install).

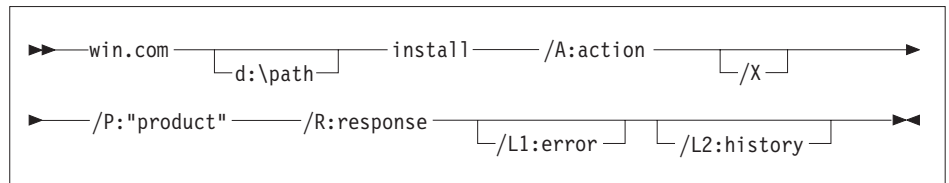
/X Specifies that the installation will run in unattended mode.

/P Specifies the name of the product you want to install.

- /R** Specifies the fully qualified response file name. If you changed and renamed the sample response file provided, make sure this parameter matches the new name.
- /L1** Specifies the fully qualified log file name, where setup information and any errors occurring during setup are logged.
- /L2** Specifies the fully qualified history log name, where all the files processed by the installation program are listed.

- On Windows 3.1:

A complete command requires the following syntax:



The following is an example of a complete command in the sample command files:

```
win e:\ins\install\install /A:I /X
/P:"IBM Client Application Enabler for Windows 3.1 V5
/R:e:\ins\db2caew.rsp /L1:d:\L1 /L2:\L2
```

where:

- /d:\path** Specifies the location of the install files. If installing from the code server's hard drive, specify the directory created in Step 1.
- /R** Specifies the fully qualified response file name. If you changed and renamed the sample response file provided, make sure this parameter matches the new name.
- /A** Specifies the action to be performed.
 - I** Specifies install.
 - Note:** If you want to *remove* all DB2 products from a target workstation, specify D (Delete) instead of I (Install).
- /X** Specifies that the installation will run in unattended mode.
- /P** Specifies the name of the product you want to install.
- /L1** Specifies the fully qualified log file name, where setup information and any errors occurring during setup are logged.
- /L2** Specifies the fully qualified history log name, where all the files processed by the installation program are listed.

3 Save and exit the CMD file.

If you are installing directly from the CD-ROM, you must rename the CMD file, store it on another drive, and use that file name in the next step.

- 4 Start the installation by typing the CMD file's name on the command line.
- 5 When installation is complete, check the error and history logs for any errors or problems.



To configure your DB2 Connect workstation to access remote hosts, go to the Chapter 11, “Configuring Communications to Host and AS/400 Databases Manually” on page 81 manual. To configure your client to access remote DB2 Connect workstations or DB2 servers, go to Chapter 32, “Configuring Client to DB2 Connect Server Communications Using the CCA” on page 273.

Installing DB2 Products Remotely Using SystemView LAN

To install a DB2 product in a TME10 SystemView LAN environment, perform the steps in the following sections:

- “Step 1. Copy the DB2 Install Files to the Code Server”
- “Step 2. Add the DB2 Product to the Software Library” on page 387
- “Step 3. Configure the DB2 Product” on page 388
- “Step 4. Install DB2 Products on the Remote Workstation” on page 388

Note: SystemView LAN cannot be used for Windows 3.x workstations.

Step 1. Copy the DB2 Install Files to the Code Server

- 1 Insert the appropriate CD-ROM into the drive.
- 2 Copy the required files from the CD-ROM directories to the code server's hard drive. At the command prompt, use the **xcopy** command with the **/s** option.

The syntax for the two commands required is:

```
xcopy x:\db2\os2\language e:\cid\img\language /s
xcopy x:\db2\os2\common e:\cid\img\common /s
```

where

- *x* is the letter that designates the CD-ROM drive

- *language* is the two-character code that represents your language (for example, EN for English. Table 47 on page 484 lists the code for each available language.
 - *e* is the letter that designates the code server's hard disk
- 3 Leave the CD-ROM in the drive; it is required for the next step.

Step 2. Add the DB2 Product to the Software Library



Once you have added a particular DB2 product to the software library, you can omit this step for later installations of that product.

To add a DB2 product to the software library:

- 1 Start SystemView LAN.
- 2 Double-click on the **SystemView LAN Service Manager** icon.
- 3 Double-click on the **CID Software Preparation** icon.
- 4 Double-click on the **Software Library** icon.
- 5 Select **Software->New** from the menu bar on the Software Library window.
- 6 Enter the name of the product you are adding.
- 7 Select the **Find** push button.
- 8 In the Find definition file window, select:
 - The CD-ROM drive letter in the **Drive** list
 - en\install*.adf in the **Directory** list
 - The appropriate .adf file name in the **File** list:
 - db2conen.adf for DB2 Connect Enterprise Edition
 - db2cae.adf for DB2 Client Application Enabler
- 9 Click on **OK**.
- 10 Select the **Add** push button to associate the application definition file with DB2.
This copies the remote installation files (.adf, .var, .cmd and .mrf) from the CD-ROM to the subdirectory where SystemView LAN resides (\sysview2).

An icon is created in the **Software Library** folder, representing the DB2 product you have just added.

Step 3. Configure the DB2 Product

In this step, you configure the DB2 product for the target workstation, just as you would during a standard interactive installation. To perform this task:

- 1 Double-click on the **DB2** product icon in the Software Library window.
- 2 Select **Configuration->New**.
The Settings notebook opens.
- 3 Enter a unique identifier to define this configuration.
- 4 On each page of the notebook, select each of the items in the **Variables** list and choose the setting. A description of each variable is displayed in the **Explanation** field of the notebook page.
- 5 When you have completed all of the pages of the notebook, click on **OK**.
- 6 When the message Do you want to catalog the database? appears, click on the **Yes** push button.

The values entered in the notebook are used to create a response file which will supply the information needed to run the installation.

Step 4. Install DB2 Products on the Remote Workstation

To install DB2 products on the remote workstation, you can use either the Event Scheduler or the Remote System Manager. For information on how to use these tools, refer to the SystemView LAN documentation.

After installation, you must reboot the workstation before using DB2.



To configure your DB2 Connect workstation to access remote hosts, go to Chapter 11, "Configuring Communications to Host and AS/400 Databases Manually" on page 81. To configure your client to access remote DB2 Connect workstations or DB2 servers, go to Chapter 46, "Administering Clients Using the CCA" on page 439.

Chapter 42. Unattended DB2 Installation on Windows 95 or Windows NT Workstations

During a regular installation, you interact with the install program, filling in a series of panels to set up and configure the DB2 product.

In an unattended installation, these tasks run automatically without any intervention by you. The setup and configuration data is supplied by response files you set in place beforehand.

You can use this feature to install DB2 products on Windows 95 or Windows NT operating systems:

- Locally, from a CD-ROM (refer to “Installing DB2 Products from a Code Server Hard Disk or CD-ROM”)
- Remotely, across a network connection from a code server hard disk or CD-ROM (refer to “Installing DB2 Products from a Code Server Hard Disk or CD-ROM”)
- Remotely, across a network connection to target workstations, using Microsoft Systems Management Server (SMS) if it is installed on your Windows NT system (refer to “Installing DB2 Products Remotely Using SMS” on page 399).



If you need to install the same DB2 product on several machines, you can use unattended installation's "response file" feature to create a customized configuration, save the customized response file, then reuse it as a template for each installation.

Installing DB2 Products from a Code Server Hard Disk or CD-ROM

To install DB2 products for Windows 95 or Windows NT, from a code server hard disk or CD-ROM to local or remote workstations, perform the steps in the following sections:

- “Step 1. Make DB2 Files Available for Installation” on page 391
- “Step 2. Create a Response File for Unattended Installation” on page 392
- “Step 3. Run Setup from the Workstation” on page 397

You can also use this procedure to perform an *interactive* remote install instead of an unattended remote one. Follow the instructions below.

Before You Begin

Read and perform the steps in this section before you begin the installation to ensure that you have the required items and information you will need.

Creating Usernames for DB2 Installation and Operation

This section describes usernames required to install the DB2 product and its components.

Creating a Username for Installing DB2 Products:

Windows 95 The username must be a valid DB2 username.

A valid DB2 username is eight characters or less, and complies with DB2's naming rules. For more information on DB2's naming rules, see Appendix D, "Naming Rules" on page 501.

Windows NT You need to have a username that will be used to install DB2. The username must belong to the Administrators group, and also be a valid DB2 username or have the *"Act as part of the operating system"* advanced user right.

A valid DB2 username is eight characters or less, and complies with DB2's naming rules. For more information on DB2's naming rules, see Appendix D, "Naming Rules" on page 501.

If this username does not comply with DB2's naming rules, but has the *"Act as part of the operating system"* advanced user right, the setup program will create the username *DB2ADMIN* to perform the installation.



On servers, this username will be removed from the system when the installation is complete, unless it will be used by the Administration Server. See "Determining the Username for the Administration Server When Using a Response File:" for more information.

On clients, this username will be removed from the system when the installation is complete.

Determining the Username for the Administration Server When Using a Response File:

Note: This section only applies to Windows NT.

During installation, you will be asked to provide a username and password that will be used by the Administration Server to log on to the system and to start itself as a service.

By default, for installs using a response file, the setup program will set the parameters *ADMIN.USERID* to DB2ADMIN and *ADMIN.PASSWORD* to DB2ADMIN. *ADMIN.USERID* is used to specify the username for Windows NT. You can accept these default values, or provide your own. If you provide your own *ADMIN.USERID*, you must ensure that it is eight characters or less, and complies with DB2's naming rules. For more information, see Appendix D, "Naming Rules" on page 501.

The setup program will check to see if the username specified for the Administration Server exists; if it does not, it will be created. If it does exist, the setup program will:

- Verify that the username is a member of the Administrators group.
- Verify that the password is valid; provided that the username used to install DB2 has the "Act as part of the operating system" advanced user right.



If you use the default username *db2admin*, and did not change the default password for this username, you should change this password immediately following the installation.

When the setup program creates the *db2admin* username, it also makes it a member of the Administrators group. Since its password is well known, you should do the following:

- 1 Change the password for *db2admin*, using the User Manager function of Administration Tools.
- 2 Change the password for the *DB2-DB2DAS00* service to match the new password that you specified for the *db2admin* username.

Step 1. Make DB2 Files Available for Installation

To make the DB2 install files accessible to the machine where DB2 will be installed:

- If performing *remote* installs directly from the CD-ROM:
 - 1 Insert the appropriate CD-ROM into the drive.
 - 2 Ensure that the CD-ROM will remain in the drive for as long as it is needed for the install. If the drive is often used for other tasks as well, consider installing from the code server hard disk instead.
- If installing from a code server, you must copy the required files from the CD-ROM directories to the code server's hard disk:
 - 1 Insert the appropriate CD-ROM into the drive.
 - 2 Create a directory on the code server, for example, `q:\db2prods`.
 - 3 At the command prompt, use the **cpyssetup.bat** command to copy the files necessary for a particular language install to a code server.

The command syntax is:

```
- x:\db2\winnt95\common\cpyssetup.bat q:\db2prods language
```

for:

- DB2 Client Application Enabler
- DB2 Connect Enterprise Edition

where:

- *x* is the letter that designates your CD-ROM drive
- *q* is the letter that designates the code server's disk.
- *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484

If performing a remote installation, you must enable your network clients to access the DB2 install files.

Grant *shared access* to the directory that you just created, or to the CD-ROM drive.

To set up a share:

- 1** Click on **Start** and select **Programs->Windows Explorer**.
- 2** Select the directory that you want to share, for example `q:\db2prods`.
- 3** Select **Files->Properties** from the menu bar. The properties window for the directory will open. Click on the **Sharing** tab.
- 4** Select the **Shared As** radio button.
- 5** In the **Share Name** field type a share name. For example, type `db2nt`.
- 6** To specify read access for everyone on Windows NT:
 - a** Select the **Permissions** push button. The Access Through Share Permissions window opens.
 - b** In the **Name** box, make sure that **Everyone** is selected.
 - c** In the **Type of Access** box, select **Read**.
 - d** Click on **OK**.

On Windows 95, you do not need to specify type of access when you set up a share. By default, everyone is allowed read access.

In our example scenario, `q:\db2prods` uses a share name of `db2nt`. We will use this value in the examples that follow.

Step 2. Create a Response File for Unattended Installation

During an interactive installation, you provide the information needed to install DB2 and configure its environment. During an unattended installation, this information is provided

as keywords and values in a response file. DB2's install package includes a number of ready-to-use sample response files, with default entries already in place.

The sample response files are located

- `x:\db2\winnt95\common`
for:
 - DB2 Client Application Enabler
 - DB2 Connect Enterprise Edition

where *x* is the letter that designates the CD-ROM drive. There is a different response file for each product on the CD, so that the user has a valid list of parameters for each product.



If you intend to use the sample response file provided, without making any changes to its values, you can skip this step and go to "Step 3. Run Setup from the Workstation" on page 397.

Edit the sample response file using your favorite editor. For example, you can use Notepad or WordPad.

- 1** Open the sample response file for the package you want to install.
 - `db2cae.rsp` for DB2 Client Application Enabler
 - `db2conen.rsp` for DB2 Connect Enterprise Edition
- 2** The response file contains:
 - Keywords unique to installation
 - Registry value/environment variable settings
 - Database manager configuration parameter settings.



For more information on:

- DB2 environment variables and registry values, see "DB2 Registry Values and Environment Variables" on page 363, or refer to the *Administration Guide*.
- Database manager configuration parameters, refer to the *Administration Guide*.

- 3** To activate an item in the response file, remove the asterisk (*) to the left of the keyword/registry value, erase the current setting to the right of the value and type in a new setting. The possible settings are listed to the right of the current setting.

An example section of a response file appears below:

```
...
FILE             = c:\sql11b
REBOOT          = No
*COMP           = Control Center
...
```

Keywords unique to installation are parameters that are only specified in a response file during an unattended installation. The following is a list of keywords unique to installation for Windows 95 and Windows NT unattended installation:

- *FILE*

Specifies the destination directory for DB2.

Note: Check the value for the *FILE* keyword. *FILE* specifies where to install the product. If you do not change this value, it defaults to *x:\sql11b* where *x* is the drive on which your operating system is installed.

- *REBOOT*

Specifies whether to reboot the system following installation.

- *TYPE*

Specifies the type of install. The options are:

- 0=Compact
- 1=Typical (default)
- 2=Custom

For 0 and 1 (compact and typical), any *COMP* value will be ignored.

For all types, default communication values will be used where applicable, as follows:

a DB2.DB2COMM and ADMIN.DB2COMM will be set for the protocols detected on your system.

b If a protocol is detected on the system, or if you have specified values for DB2.DB2COMM or ADMIN.DB2COMM, values for its parameters will be generated so that the protocol will be enabled for DB2's use at the end of the install. Checks are made to ensure that the generated values are not duplicates, and that they conform to the protocols set up on your system. Default values will be generated for the following:

– For NetBIOS:

DB2.DB2NBADAPTERS	ADMIN.DB2NBADAPTERS
DB2.NNAME	ADMIN.NNAME

– For TCP/IP:

DB2.PORTNUMBER	ADMIN.PORTNUMBER
DB2.SVCENAME	ADMIN.SVCENAME

- For IPX/SPX:

DB2.FILESERVER	ADMIN.FILESERVER
DB2.OBJECTNAME	ADMIN.OBJECTNAME
DB2.IPX_SOCKET	ADMIN.IPX_SOCKET
- For APPC:

DB2.TPNAME	ADMIN.TPNAME
------------	--------------

Note: You may override these values; however, if the associated protocol has not been detected or specified, the values will not be used.

- *PROD*

Specifies the product you want installed. The options are:

- DB2_CAE for DB2 Client Application Enabler
- CONNECT_ENTERPRISE for DB2 Connect Enterprise Edition

Note: This parameter can be used more than once.

- *COMP*

Specifies the components you want installed. Components required for a product are installed automatically. Components that are not available are ignored.

Note: Component selections have no effect unless you specify a custom installation.

The following table lists *COMP* keywords and the components they represent.

<i>Table 41 (Page 1 of 2). Component Keywords for Windows 95 and Windows NT Unattended Install</i>	
Keyword	Component
Product Components	
GRAPHICAL_TOOLS	Graphical Tools
CLIENT_CONFIGURATION_ASSISTANT	Client Configuration Assistant
CONTROL_CENTER	Control Center
PERFORMANCE_MONITOR	Performance Monitor
VISUAL_EXPLAIN	Visual Explain
ODBC-DRIVER	DB2 ODBC Driver
SAMPLE_APPLICATIONS	Sample Applications
CONNECT_SUPPORT	Connect Support
SNA_SUPPORT	Integrated SNA Support
JAPANESE_CONVERSION	Japanese Conversion Support
KOREAN_CONVERSION	Korean Conversion Support
T_CHINESE_CONVERSION	Traditional Chinese Conversion Support

Table 41 (Page 2 of 2). Component Keywords for Windows 95 and Windows NT Unattended Install

Keyword	Component
S_CHINESE_CONVERSION	Simplified Chinese Conversion Support
DB2 Books	
API_REFERENCE	API Reference
ADMINISTRATION_GUIDE	Administration Guide
ADMINISTRATION_GETTING_STARTED	Administration Getting Started
DB2_PROGRAMMING_GETTING_STARTED	Road Map to DB2 Programming
BUILDING_OS2_WIN_APPLICATIONS	Building Applications for Windows and OS/2 Environments
CLI_GUIDE_REFERENCE	CLI Guide and Reference
COMMAND_REFERENCE	Command Reference
CONNECT_PERSONAL_QUICK	DB2 Connect Personal Edition Quick Beginnings
CONNECT_USERS_GUIDE	DB2 Connect User's Guide
UNIVERSAL_DB_QUICK	DB2 Universal Database Quick Beginnings
SQL_PROGRAMMING_GUIDE	Embedded SQL Programming Guide
GLOSSARY	Glossary
MASTER_INDEX	Master Index
MESSAGES_REFERENCE	Message Reference
SQL_GETTING_STARTED	SQL Getting Started
SQL_REFERENCE	SQL Reference
SYSTEM_MONITOR_GUIDE	System Monitor Guide and Reference
CONNECT_ENTERPRISE_QUICK	DB2 Connect Enterprise Edition Quick Beginnings
TROUBLE_SHOOTING_GUIDE	Troubleshooting Guide
CONNECTIVITY_SUPPLEMENT	DB2 Connectivity Supplement
UNIVERSAL_DB_PERSONAL_QUICK	DB2 Universal Database Personal Edition Quick Beginnings
REPLICATION-GUIDE	Replication Guide and Reference
INSTALLING_CONFIGURING_CLIENTS	Installing and Configuring DB2 Clients

- **AUTO_CTRL_CENTER**

Specifies whether or not to automatically start the Control Center each time the system is rebooted.

Note: By default the Control Center will be automatically started unless this parameter is set to NO.

- *DB2.AUTOSTART*

Specifies whether or not to automatically start the DB2 instance each time the system is rebooted.

Note: By default the DB2 instance will be automatically started unless this parameter is set to NO.

- *AUTOSTART_CCA*

Specifies whether or not to automatically start the Client Configuration Assistant each time the system is rebooted.

Note: By default the Client Configuration Assistant will be automatically started unless this parameter is set to NO.

- *ADMIN.USERID*

Specifies the username that the DB2 Administration Server will use to log on to the system. If *ADMIN.USERID* is not activated, the account DB2ADMIN/DB2ADMIN will be created and used, if applicable. See "Determining the Username for the Administration Server When Using a Response File:" on page 390

- *ADMIN.PASSWORD*

Specifies the password for the DB2 Administration Server.



- Install DB2 products only on a drive which is local to the target workstation. Installing on a non-local drive can cause performance and availability problems.
- By default, the name of the response file will be used to determine the products to be installed. You can override this setting by providing one or more **PROD** parameter values in the response file.

- 4 Exit the file. If you have made any changes, save the file under a new file name to preserve the original sample response file.

If you are installing directly from the CD-ROM, you must store the renamed response file on another drive.

Step 3. Run Setup from the Workstation

To perform the installation:

- 1 At the workstation where DB2 will be installed, logon as a username that meets the requirements for installing DB2. See "Creating Usernames for DB2 Installation and Operation" on page 390 for more information.
- 2 If performing a remote install, connect to the shared directory of the code server hard disk, or to the CD-ROM drive, using a command similar to the following:

```
net use e: \\machine\directory
```

where:

- *e* is the drive letter used to connect to the shared directory on the server's hard disk or CD-ROM drive.
- *machine* is the machine name of the code server.
- *directory* is the share name of the code server or CD-ROM drive.

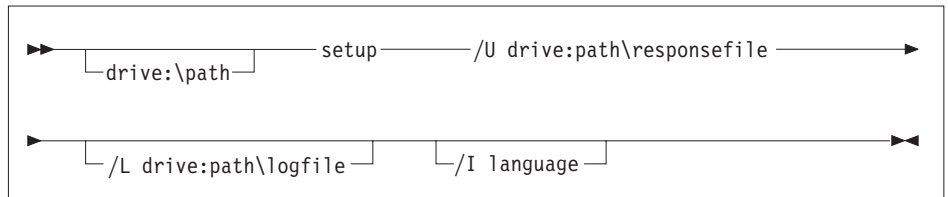
For example, type:

```
net use e: \\codeserv\db2nt
```

Based on the example set up in previous steps, this points to q:\db2prods on the code server.

3 Run the setup program:

- Click on **Start** and select **Run**.
- In the Open Window, type the path to the setup program. The path accepts the following command line arguments:



Specify the fully qualified path to invoke the program. For example:

```
e:\setup /U d:\db2\common\db2setup.rsp /L db2log.log /I language
```

where:

- Specifies the fully qualified response file name. If you changed and renamed the sample response file provided, make sure this parameter matches the new name.
- Specifies the fully qualified log file name, where setup information and any errors occurring during setup are logged.

If you do not specify the log file's name, DB2 names it `db2.log`, and stores it in a directory called `db2log`, on the drive on which your operating system is installed.
- Specifies the two-character country code that represents your language (for example, `EN` for English). Table 47 on page 484 lists the code for each available language.

If you do not specify the language, setup will determine the system language, and launch the appropriate DB2 install for that language.

- Click on **OK** to start the setup program.
- The installation proceeds without further action on your part.

4 Check the messages in the log file when the installation finishes.



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

5 Following installation, you must reboot the workstation before using DB2.

Note: If you specified *REBOOT=yes* in your response file, the workstation will reboot automatically.



If you are installing a server and used the default username DB2ADMIN, remember to change the default password for this username. You should change this password immediately following installation.



To configure your DB2 Connect workstation to access remote hosts, go to Chapter 11, “Configuring Communications to Host and AS/400 Databases Manually” on page 81. To configure your client to access remote DB2 Connect workstations or DB2 servers, go to Chapter 46, “Administering Clients Using the CCA” on page 439.

Installing DB2 Products Remotely Using SMS

With Microsoft Systems Management Server (SMS), you can install DB2 products across a network onto remote Windows NT systems, setting up the installation from a central location.



You can also use SMS to *remove* all DB2 products from a target workstation. Simply follow the instructions below, but when creating the SMS package, select **Uninstall DB2 Products** instead of selecting the packages to be installed.

To install DB2 products via SMS, perform the steps in the following sections:

- “Step 1. Make DB2 Files Available for Installation” on page 402
- “Step 2. Create a Response File for Unattended Installation” on page 403
- “Step 3. Import the DB2 Install Files into SMS” on page 408
- “Step 4. Distribute the DB2 Installation Package Using SMS” on page 408
- “Step 5. Run the Installation on the SMS Client” on page 409

Before You Begin

Read and perform the steps in this section before you begin the installation to ensure that you have the required items and information you will need.

Creating Usernames for DB2 Installation and Operation

This section describes usernames required to install the DB2 product and its components.

Creating a Username for Installing DB2 Products:

Windows 95 The username must be a valid DB2 username.

A valid DB2 username is eight characters or less, and complies with DB2's naming rules. For more information on DB2's naming rules, see Appendix D, "Naming Rules" on page 501.

Windows NT You need to have a username that will be used to install DB2. The username must belong to the Administrators group, and also be a valid DB2 username or have the *"Act as part of the operating system"* advanced user right.

A valid DB2 username is eight characters or less, and complies with DB2's naming rules. For more information on DB2's naming rules, see Appendix D, "Naming Rules" on page 501.

If this username does not comply with DB2's naming rules, but has the *"Act as part of the operating system"* advanced user right, the setup program will create the username *DB2ADMIN* to perform the installation.



On servers, this username will be removed from the system when the installation is complete, unless it will be used by the Administration Server. See "Determining the Username for the Administration Server When Using a Response File:" for more information.

On clients, this username will be removed from the system when the installation is complete.

Determining the Username for the Administration Server When Using a Response File:

Note: This section only applies to Windows NT.

During installation, you will be asked to provide a username and password that will be used by the Administration Server to log on to the system and to start itself as a service.

By default, for installs using a response file, the setup program will set the parameters *ADMIN.USERID* to DB2ADMIN and *ADMIN.PASSWORD* to DB2ADMIN. *ADMIN.USERID* is used to specify the username for Windows NT. You can accept these default values, or provide your own. If you provide your own *ADMIN.USERID*, you must ensure that it is eight characters or less, and complies with DB2's naming rules. For more information, see Appendix D, "Naming Rules" on page 501.

The setup program will check to see if the username specified for the Administration Server exists; if it does not, it will be created. If it does exist, the setup program will:

- Verify that the username is a member of the Administrators group.
- Verify that the password is valid; provided that the username used to install DB2 has the "Act as part of the operating system" advanced user right.



If you use the default username *db2admin*, and did not change the default password for this username, you should change this password immediately following the installation.

When the setup program creates the *db2admin* username, it also makes it a member of the Administrators group. Since its password is well known, you should do the following:

- 1** Change the password for *db2admin*, using the User Manager function of Administration Tools.
- 2** Change the password for the *DB2-DB2DAS00* service to match the new password that you specified for the *db2admin* username.

SMS Requirements

SMS must already be installed and configured on your network. Refer to *Microsoft's Systems Management Server for Windows NT Administrator's Guide* for information on how to:

- Set up SMS (including setting up primary and secondary sites).
- Add clients to the SMS system.
- Set up inventory collection for clients.



To create an SMS package that copies the required files directly from the CD-ROM, insert the appropriate CD-ROM into the drive and go to "Step 2. Create a Response File for Unattended Installation" on page 403.

Step 1. Make DB2 Files Available for Installation

To make the DB2 install files accessible to the machine where DB2 will be installed:

- If performing *remote* installs directly from the CD-ROM:
 - 1 Insert the appropriate CD-ROM into the drive.
 - 2 Ensure that the CD-ROM will remain in the drive for as long as it is needed for the install. If the drive is often used for other tasks as well, consider installing from the code server hard disk instead.
- If installing from a code server, you must copy the required files from the CD-ROM directories to the code server's hard disk:
 - 1 Insert the appropriate CD-ROM into the drive.
 - 2 Create a directory on the code server, for example, q:\db2prods.
 - 3 At the command prompt, use the **cpyssetup.bat** command to copy the files necessary for a particular language install to a code server.

The command syntax is:

- x:\db2\winnt95\common\cpyssetup.bat q:\db2prods *language*
- for:
- DB2 Client Application Enabler
 - DB2 Connect Enterprise Edition

where:

- x is the letter that designates your CD-ROM drive
- q is the letter that designates the code server's disk.
- *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484

If performing a remote installation, you must enable your network clients to access the DB2 install files.

Grant *shared access* to the directory that you just created, or to the CD-ROM drive.

To set up a share:

- 1 Click on **Start** and select **Programs->Windows Explorer**.
- 2 Select the directory that you want to share, for example q:\db2prods.
- 3 Select **Files->Properties** from the menu bar. The properties window for the directory will open. Click on the **Sharing** tab.
- 4 Select the **Shared As** radio button.
- 5 In the **Share Name** field type a share name. For example, type db2nt.

- 6** To specify read access for everyone on Windows NT:
 - a** Select the **Permissions** push button. The Access Through Share Permissions window opens.
 - b** In the **Name** box, make sure that **Everyone** is selected.
 - c** In the **Type of Access** box, select **Read**.
 - d** Click on **OK**.

On Windows 95, you do not need to specify type of access when you set up a share. By default, everyone is allowed read access.

In our example scenario, q:\db2prods uses a share name of db2nt. We will use this value in the examples that follow.

Step 2. Create a Response File for Unattended Installation

During an interactive installation, you provide the information needed to install the DB2 product and configure its environment. During an unattended installation, this information is provided as keywords and values in a response file. DB2's install package includes a number of ready-to-use sample response files, with default entries already in place.

The sample response files are located in:

- x:\db2\winnt95\common
- for:
- DB2 Client Application Enabler
 - DB2 Connect Enterprise Edition

where x is the letter that designates the CD-ROM drive. There is a different response file for each product on the CD, so that the user has a valid list of parameters for each product.



If you intend to use the sample response file provided, without making any changes to its values, you can skip this step and go to "Step 4. Distribute the DB2 Installation Package Using SMS" on page 408.

Edit the sample response file using your favorite editor. For example, you can use Notepad or WordPad.

- 1** Open the sample response file for the package you want to install.
 - db2cae.rsp for DB2 Client Application Enabler
 - db2conen.rsp for DB2 Connect Enterprise Edition

2 The response file contains:

- Keywords unique to installation
- Environment variable/registry value settings
- Database manager configuration parameter settings.



For more information on:

- DB2 environment variables and registry values, see “DB2 Registry Values and Environment Variables” on page 363, or refer to the *Administration Guide*.
- Database manager configuration parameters, refer to the *Administration Guide*.

3 To activate an item in the response file, remove the asterisk (*) to the left of the keyword/registry value, erase the current setting to the right of the value and type in a new setting. The possible settings are listed to the right of the current setting.

An example section of a response file appears below:

```
...
FILE           = c:\sqllib
REBOOT        = No
*COMP         = Control Center
...
```

Keywords unique to installation are parameters that are only specified in a response file during an unattended installation. The following is a list of keywords unique to installation for Windows 95 and Windows NT unattended installation:

- *FILE*

Specifies the destination directory for DB2.

Note: Check the value for the *FILE* keyword. *FILE* specifies where to install the product. If you do not change this value, it defaults to x:\sqllib where x is the drive on which your operating system is installed.

- *REBOOT*

Specifies whether to reboot the system following installation.

- *TYPE*

Specifies the type of install. The options are:

```
0=Compact
1=Typical (default)
2=Custom
```

For 0 and 1 (compact and typical), any COMP value will be ignored.

For all types, default communication values will be used where applicable, as follows:

- a DB2.DB2COMM and ADMIN.DB2COMM will be set for the protocols detected on your system.
- b If a protocol is detected on the system, or if you have specified values for DB2.DB2COMM or ADMIN.DB2COMM, values for its parameters will be generated so that the protocol will be enabled for DB2's use at the end of the install. Checks are made to ensure that the generated values are not duplicates, and that they conform to the protocols set up on your system. Default values will be generated for the following:

- For NetBIOS:

DB2.DB2NBADAPTERS	ADMIN.DB2NBADAPTERS
DB2.NNAME	ADMIN.NNAME

- For TCP/IP:

DB2.PORTNUMBER	ADMIN.PORTNUMBER
DB2.SVCENAME	ADMIN.SVCENAME

- For IPX/SPX:

DB2.FILESERVER	ADMIN.FILESERVER
DB2.OBJECTNAME	ADMIN.OBJECTNAME
DB2.IPX_SOCKET	ADMIN.IPX_SOCKET

- For APPC:

DB2.TPNAME	ADMIN.TPNAME
------------	--------------

Note: You may override these values; however, if the associated protocol has not been detected or specified, the values will not be used.

- *PROD*

Specifies the product you want installed. The options are:

- DB2_CAE for DB2 Client Application Enabler
- CONNECT_ENTERPRISE for DB2 Connect Enterprise Edition

Note: This parameter can be used more than once.

- *COMP*

Specifies the components you want installed. Components required for a product are installed automatically. Components that are not available are ignored.

Note: Component selections have no effect unless you specify a custom installation.

The following table lists *COMP* keywords and the components they represent.

Table 42 (Page 1 of 2). Component Keywords for Windows 95 and Windows NT Unattended Install

Keyword	Component
Product Components	
GRAPHICAL_TOOLS	Graphical Tools
CLIENT_CONFIGURATION_ASSISTANT	Client Configuration Assistant
CONTROL_CENTER	Control Center
PERFORMANCE_MONITOR	Performance Monitor
VISUAL_EXPLAIN	Visual Explain
ODBC-DRIVER	DB2 ODBC Driver
SAMPLE_APPLICATIONS	Sample Applications
CONNECT_SUPPORT	Connect Support
SNA_SUPPORT	Integrated SNA Support
JAPANESE_CONVERSION	Japanese Conversion Support
KOREAN_CONVERSION	Korean Conversion Support
T_CHINESE_CONVERSION	Traditional Chinese Conversion Support
S_CHINESE_CONVERSION	Simplified Chinese Conversion Support
DB2 Books	
API_REFERENCE	API Reference
ADMINISTRATION_GUIDE	Administration Guide
ADMINISTRATION_GETTING_STARTED	Administration Getting Started
DB2_PROGRAMMING_GETTING_STARTED	Road Map to DB2 Programming
BUILDING_OS2_WIN_APPLICATIONS	Building Applications for Windows and OS/2 Environments
CLI_GUIDE_REFERENCE	CLI Guide and Reference
COMMAND_REFERENCE	Command Reference
CONNECT_PERSONAL_QUICK	DB2 Connect Personal Edition Quick Beginnings
CONNECT_USERS_GUIDE	DB2 Connect User's Guide
UNIVERSAL_DB_QUICK	DB2 Universal Database Quick Beginnings
SQL_PROGRAMMING_GUIDE	Embedded SQL Programming Guide
GLOSSARY	Glossary
MASTER_INDEX	Master Index
MESSAGES_REFERENCE	Message Reference
SQL_GETTING_STARTED	SQL Getting Started
SQL_REFERENCE	SQL Reference
SYSTEM_MONITOR_GUIDE	System Monitor Guide and Reference

Table 42 (Page 2 of 2). Component Keywords for Windows 95 and Windows NT Unattended Install

Keyword	Component
CONNECT_ENTERPRISE_QUICK	DB2 Connect Enterprise Edition Quick Beginnings
TROUBLE_SHOOTING_GUIDE	Troubleshooting Guide
CONNECTIVITY_SUPPLEMENT	DB2 Connectivity Supplement
UNIVERSAL_DB_PERSONAL_QUICK	DB2 Universal Database Personal Edition Quick Beginnings
REPLICATION-GUIDE	Replication Guide and Reference
INSTALLING_CONFIGURING_CLIENTS	Installing and Configuring DB2 Clients

- *AUTO_CTRL_CENTER*

Specifies whether or not to automatically start the Control Center each time the system is rebooted.

Note: By default the Control Center will be automatically started unless this parameter is set to NO.

- *DB2.AUTOSTART*

Specifies whether or not to automatically start the DB2 instance each time the system is rebooted.

Note: By default the DB2 instance will be automatically started unless this parameter is set to NO.

- *AUTOSTART_CCA*

Specifies whether or not to automatically start the Client Configuration Assistant each time the system is rebooted.

Note: By default the Client Configuration Assistant will be automatically started unless this parameter is set to NO.

- *ADMIN.USERID*

Specifies the username that the DB2 Administration Server will use to log on to the system. If *ADMIN.USERID* is not activated, the account DB2ADMIN/DB2ADMIN will be created and used, if applicable. See "Determining the Username for the Administration Server When Using a Response File:" on page 400

- *ADMIN.PASSWORD*

Specifies the password for the DB2 Administration Server.



- Install DB2 products only on a drive which is local to the target workstation. Installing on a non-local drive can cause performance and availability problems.
- By default, the name of the response file will be used to determine the products to be installed. You can override this setting by providing one or more **PROD** parameter values in the response file.

- 4 Exit the file. If you have made any changes, save the file under a new file name to preserve the original sample response file.

If you are installing directly from the CD-ROM, you must store the renamed response file on another drive.

Step 3. Import the DB2 Install Files into SMS

To import the DB2 install files into SMS:

- 1 Insert the appropriate CD-ROM into the drive.
- 2 Double-click on the **Systems Management Server** folder.
- 3 Double-click on the **SMS Administrator** icon. The SMS Administrator window opens.
- 4 Select **File->New** from the menu bar. The Package Properties window opens.
- 5 Click on the **Import** push button. The **File Browser** opens.
- 6 In the **File Name** field, select the db2.pdf file located in:
 - x:\db2\winnt95\commonfor:
 - DB2 Client Application Enabler
 - DB2 Connect Enterprise Edition

where x is the letter that designates your CD-ROM drive.

Step 4. Distribute the DB2 Installation Package Using SMS

In this step, you create an SMS package and send it to the SMS client where you want to install DB2.

To create the SMS package:

- 1 From the Package Properties window, click on the **Workstations** push button. The Setup Package For Workstations window opens, showing a list of predefined DB2 installation packages that you can use.

- 2** In the **Source Directory** field, type the name of the parent directory where you put the copied DB2 files (q:\db2prods in the example above).
- 3** Select the name of the product to install from the **Workstation Command Lines** list.
- 4** If you changed and renamed the sample response file, click on the **Properties** push button and change the value of the parameter to match the new response file name.

If you do not specify the language, setup will determine the system language, and launch the appropriate DB2 install for that language. If want to install a different language, use the *//* parameter to specifies the two-character code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.

- 5** Click on the **Close** push button.
- 6** Click on **OK** to close the opened windows.
The Packages window shows the name of the new SMS package.
- 7** Specify where to run the package:
 - a** Open the Sites and Packages windows.
 - b** In the Packages window, select the appropriate package and drag it onto the target client in the Sites window. The Job Details window opens.
 - c** Select the **Run Workstation Command** check box and select the installation package that you want to use for the Run Command on Workstation job. For more information about completing the Job Details window, refer to *Microsoft's Systems Management Server for Windows NT Administrator's Guide*.
 - d** When the job specifications are complete, click on **OK** to close the opened windows.

The job is created and sent to the SMS client.

Step 5. Run the Installation on the SMS Client

Now that the remote installation package has been prepared and sent, the SMS client on the target machine can run the installation.

- 1** On the SMS client where DB2 will be installed, logon as a username that meets the requirements for installing DB2. See "Creating Usernames for DB2 Installation and Operation" on page 400 for more information.
- 2** Double-click on the **SMS Client** folder.

- 3 Double-click on the **Package Command Manager** icon. The Package Command Manager window opens.
- 4 When packages are sent from the SMS server, they are listed in the window. Select the DB2 package, then click on the **Execute** push button. The installation runs automatically.
- 5 Following installation, you must reboot the SMS client before using DB2.

Note: If you specified *REBOOT=yes* in your response file the SMS client will reboot automatically.



If you are installing a server and used the default username DB2ADMIN, remember to change the default password for this username. You should change this password immediately following installation.



To configure your DB2 Connect workstation to access remote hosts, go to Chapter 11, “Configuring Communications to Host and AS/400 Databases Manually” on page 81. To configure your client to access remote DB2 Connect workstations or DB2 servers, go to Chapter 46, “Administering Clients Using the CCA” on page 439.

Chapter 43. Other Methods to Install DB2 Connect for AIX

This chapter describes the other methods you can use to install DB2 Universal Database products. Some of the advanced methods to install DB2 are detailed in this chapter. The DB2 Installer can perform all of the steps described in this section.

We recommend that you use the DB2 Installer when installing DB2, but if you prefer not to use the DB2 Installer, you can use any one of the methods described in this chapter. See Chapter 7, "Installing DB2 Connect on UNIX Systems" on page 51 for information on how to use the DB2 Installer to install the DB2 product. See Chapter 26, "Installing DB2 Clients" on page 243 for information on how to install the DB2 clients.

Installation Steps

To install the DB2 products, perform the following steps:

- 1** Install DB2 products. As part of this installation step, the following installation activities are optional:
 - a** Install on-line documentation.
 - b** Install translated messages.
- 2** Create or assign groups and user IDs.
- 3** Create a DB2 instance.
- 4** Create the Administration Server.
- 5** Create links for DB2 files (optional).

You can install the DB2 products on Version 4.1.4 or later of the AIX operating system using any of the following methods.

- SMIT interface with *Software bundles* contains a list of software products that are suited for a particular use. Installation is easier with software bundles. Refer to "Installing Software Bundles Using SMIT" on page 412.
- SMIT also allows you to install a subset of products and filesets in software bundle. If you prefer to install only a selected set of DB2 products and filesets, see "Installing Products or Filesets Using SMIT" on page 412.

- If you prefer to use the **installp** command, you must first mount the DB2 product CD-ROM. You also need to mount the CD-ROM if you want to view the CD-ROM readme file or print the Postscript manuals prior to installation.

Step 1. Installing DB2 Products

This step describes how to install the DB2 products on Version 4.1.4 or later versions of the AIX operating system using the **SMIT** interface, and *software bundles*.

Note: This CD-ROM contains several products. Select the products you are licensed to install. **Your Proof of Entitlement** and **License Information** booklet identify the products for which you are licensed.

Installing Software Bundles Using SMIT

The following procedure shows how to install the DB2 products on Version 4.1.4 or later versions of the AIX operating system, using the **software bundles** feature. A software bundle is a collection of products and filesets. When you install a software bundle, every product and fileset in that bundle is installed.

- 1 Log in as root.
- 2 Insert the DB2 CD-ROM in the drive.
- 3 Enter: `smit easy_install_bundle` to proceed directly to the automatic bundle processing application.
- 4 Specify the installation device or directory for the installation media by pressing F4 to display a list. Select the CD-ROM drive in which you placed the DB2 CD-ROM, then press Enter.
- 5 From the displayed menu, select the DB2-Connect-Enterprise software bundle.
- 6 Press Enter to start the installation.

Messages will appear to indicate the status of the installation. Press Enter to continue, or F3 if you want to cancel.

Installing Products or Filesets Using SMIT

To install the DB2 Universal Database products on AIX Version 4.1.4 or later versions of the AIX operating system using SMIT, perform the following steps:

- 1 Log in as root.

- 2 Insert the DB2 CD-ROM in the drive.
- 3 Enter: `smit install_latest`. The Software Installation and Maintenance menu appears.
- 4 Specify the INPUT device/directory for software and press Enter. For example, if `/cdrom` is the CD-ROM mount directory, enter the following as the INPUT device:
`/cdrom/db2`
- 5 Press F4 to display a list of the software to install.
Note: For a detailed description of the software packages, refer to Appendix C, "Contents of the DB2 Products" on page 495 for more information.
- 6 Press F7 to mark one or more packages and filesets for installation.
- 7 Press Enter to install the software.
- 8 Press F10 to exit when the command displays **OK**.

After the installation is complete, the DB2 products will be installed in the `/usr/lpp/db2_05_00` directory.

Installing the DB2 Product Library (Optional)

When you install DB2 products using the SMIT, the DB2 Product Library (HTML) is not automatically installed.

To install the DB2 Product Library, do the following:

- 1 From the Install/Update Selectable Software (Custom Install) menu, select **Install/Update From All Available Software**.
- 2 Enter the directory, where you want to install the DB2 Product Library, for the **INPUT device/directory for software** For example, if `/cdrom` is the CD-ROM mount directory, enter the following as the INPUT device:
`/cdrom/db2`
- 3 Select the DB2 Product Library (HTML) - locale option.



The DB2 Product Library (HTML) option is listed as follows:

DB2 Product Library (HTML) - *locale*

where *locale* is the desired locale; for example, `locale=Fr_FR` for French in France with the IBM-850 code set.

- 4 Run the following command to uncompress and un-tar the HTML files:
`/usr/lpp/db2_05_00/doc/db2insthtml locale`
 where *locale* is the desired locale; for example, `locale=en_US` for English.

- 5 From your Web browser, open the following URL to view DB2 online manuals:

`file:/usr/lpp/db2_05_00/doc/en_US/html/index.htm`

To recover some disk space, you may want to remove the compressed-tar files for DB2 books in HTML format. It is recommended that you do not just remove the compressed-tar HTML files. Instead, you should remove the fileset for the DB2 Product Library.

After the fileset is removed, only compressed-tar files will be removed. You will still be able to view the online DB2 books.

Installing DB2 Product Messages (Optional)

When you install DB2 products using the SMIT, DB2 Product messages for locales, other than En_US (English or United States code page IBM-850) are not automatically installed.

To install messages for non-English locales, do the following:

- 1 From the Install/Update Selectable Software (Custom Install) menu, select **Install/Update From All Available Software**.
- 2 Enter the directory, where you want to install the translated messages, for the **INPUT device/directory for software** For example, if /cdrom is the CD-ROM mount directory, enter the following as the INPUT device:
`/cdrom/db2`
- 3 List the software products to be installed using the **SOFTWARE to install** option.
- 4 Select the messages options for the locales you want to install.



The message options are listed as follows:

DB2 Product Messages - *locale*

where *locale* is the desired local; for example, locale=Fr_FR for French in France with the IBM-850 code set.

Step 2. Creating or Assigning Groups and User IDs



If you want to use an existing user or group ID, you do not need to create new ones at this time. Instead, you can proceed to the next step.

You must perform this step as **root**.

- 1 Create a system administration (SYSADM) group that will be the primary group of the user ID for the instance owner. Any user of the instance owner that belongs to the SYSADM group will have system administrator authority for a given instance.

Next, create a user ID that will be the instance owner. This user ID will be the name of the instance. Make this user's primary group the SYSADM group created above. In our examples, the instance user ID is `db2inst1` and the SYSADM group is `dbadmin1`.



Dedicate the instance owner user ID to that instance's use only. This allows for easier error recovery if a system error occurs.

- 2 Use **mkgroup** to create groups, and **mkuser** to create users. For example, to create a user ID called `db2inst1` which will use `dbadmin1` as its primary group and use `/home/db2inst1` as its home directory:

```
mkgroup dbadmin1
mkuser pgrp=dbadmin1 groups=dbadmin1 home=/home/db2inst1 db2inst1
passwd db2inst1
```

For security reasons, we recommend that you do not use the instance name as the FencedID. However, if you are not planning to use fenced User Defined Functions or Stored Procedures, you can set the FencedID to the instance name instead of creating another user for the FencedID.

Notes:

1. If you are planning to create the Administration Server, you have to repeat Steps 1 and 2 above to create a user name and group name for the Administration Server. However, for security reasons, we recommend that you do not use the DB2 Instance user name as the user name for the Administration Server.
2. If existing users and groups have been identified for these purposes, you do not have to create new ones.

3. In addition to the rules imposed by the operating system for login names and groups, you must also adhere to the rules described in Appendix D, “Naming Rules” on page 501.

Step 3. Creating a DB2 Instance

A DB2 instance is an environment where you store data and run applications. Use the **db2icrt** command to create an instance of the product. If you are not familiar with the concepts of a database instance, see Chapter 36, “Working with DB2 Instances” on page 321.

The **db2icrt** command is located in the DB2DIR/instance directory, where DB2DIR is /usr/lpp/db2_05_00.

The syntax of the **db2icrt** command is:

```
▶▶ db2icrt [-h | -?] [-d] [-a AuthType] [-u FencedID] ▶▶
▶▶ InstName ▶▶▶▶
```

where:

- h | -?** display a help menu for this command.
- d** sets the debug mode that you can use for problem determination
- a AuthType** is an optional parameter that 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 server product is installed. Otherwise, the *AuthType* is set to CLIENT.

Notes:

1. The authentication type of the instance applies to all databases owned by the instance.
2. Authentication type, DCE, is valid. However, it is not valid to choose DCE as an *AuthType* for this command. To enable DCE authentication for a DB2 instance, refer to the *Administration Guide*.

- u FencedID** is the user under which the fenced UDFs and Stored Procedures will execute. This is not required if you install the DB2 Client Application Enabler or the DB2 Software Developer's Kit. For other products, this is an required parameter.

Note: *FencedID* may not be root or bin.

InstName is the login name of the instance owner.

If a server product is installed, the syntax is:

```
db2icrt -u FencedID InstName
```

Examples:

- If you install the DB2 Universal Database Workgroup Edition or the DB2 Universal Database Enterprise Edition, you can use the following command to create an instance:

```
db2icrt -u db2fenc1 db2inst1
```

- If you installed the DB2 Connect Enterprise Edition only, you can use the instance name as the Fenced ID also:

```
db2icrt -u db2inst1 db2inst1
```

- To create an instance for the DB2 client, you can use the following command:

```
db2icrt db2inst1
```

When an instance is created, its name is also added to the list of instances on the system.

The **db2icrt** command creates the *INSTHOME*/sqllib directory, where *INSTHOME* is the home of the instance owner.



You should not create files or directories under *INSTHOME*/sqllib directory other than those created by DB2 products. This avoids a potential loss of data if an instance is deleted. There is one exception. If your system supports fenced User Defined Functions and fenced Stored Procedures, put the fenced User Defined Functions and the fenced Stored Procedures applications in the *INSTHOME*/sqllib/function directory.

Step 4. Creating an Administration Server

The Administration Server provides services to support client tools that:

- Automate the configuration of connections to DB2 databases.
- Administer DB2 from your server system or a remote client using the Control Center.

Step 5. Creating Links for DB2 Files (Optional)

This step is optional and can be used to create links for DB2 files to `/usr/lib`, and for include files to `/usr/include` for a particular version and release level of the product.

You may want to create these links if you are developing or running applications and want to avoid having to specify the full path to the product libraries and include files.

You invoke the **db2ln** command as follows:

```
/usr/lpp/db2_05_00/cfg/db2ln
```

If there are existing links to `/usr/lib` and `/usr/include` from previous versions of DB2 products, they will automatically be removed by executing **db2ln** to create links for this version of DB2. If you want to reestablish the links to the libraries or previous versions, then you must execute the **db2rmln** command from Version 5 before you execute the **db2ln** command from the previous version.



Links can be established for only one version of DB2 on a given system.



Now that you have installed DB2 Universal Database, see Chapter 25, “Using the Command Line Processor to Configure the DB2 Connect Server to Accept Clients” on page 221 for information on how to set up your server to accept in-bound client connections.

Chapter 44. Other Methods to Install DB2 Connect for HP-UX

This chapter describes the other methods you can use to install DB2 Universal Database products. Some of the advanced methods to install DB2 are detailed in this chapter. The DB2 Installer can perform all of the steps described in this section.

We recommend that you use the DB2 Installer when installing DB2, but if you prefer not to use the DB2 Installer, you can use any one of the methods described in this chapter. See Chapter 7, "Installing DB2 Connect on UNIX Systems" on page 51 for information on how to use the DB2 Installer to install the DB2 product. See Chapter 26, "Installing DB2 Clients" on page 243 for information on how to install the DB2 clients.

Installation Steps

To install DB2 for HP-UX products, perform the following steps:

- 1** Install the product from the CD-ROM to the target machine. As part of this installation step, the following installation activities are optional:
 - a** Install DB2 product messages.
 - b** Install translated messages.
- 2** Update the kernel configuration parameters and reboot the system.
- 3** Create or assign groups and user IDs.
- 4** Create a DB2 instance.
- 5** Create an Administration Server.
- 6** Create links for DB2 files (optional).

Step 1. Installing DB2 Products

Use the **swinstall** program to install DB2 for HP-UX. To install, perform the following steps:

- 1 Log in as root.
- 2 Insert the DB2 CD-ROM into the CD-ROM drive and mount it. For example:

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

where /cdrom is the CD-ROM mount directory.
- 3 Run the **swinstall** program using the following command:

```
swinstall -x autoselect_dependencies=true
```

This opens the Software Selection window and the Specify Source window.
- 4 If necessary, change the **Source Host Name** in the Specify Source window.
- 5 Enter /cdrom/db2 as the value for the **Source Depot Path** field, where /cdrom is the CD-ROM mount directory.
- 6 To return to the Software Selection window, select the **OK** button.
- 7 On the Software Selection window, highlight DB2V5CONN.
- 8 Select **Mark for Install** from the **Actions** menu to choose the product to be installed.

Note: Ignore the error message similar to the following:

```
The software "DB2V5CAE r=5.0.0,a=HP-UX_B.10.10_700/800,v=IBM" was
successfully marked, but it depends on the following software items
which could not be found in the source. However, these items may
already be in the target. This will be checked during the Analysis
Phase: OS-Core.CMDS-AUX,r>=B.10.10,a=HP-UX_?.10.??_7800,v=HP
OS-Core.CMDS-MIN,r>=B.10.10,a=HP-UX_?.10.??_7800,v=HP
SOE.SOE,r>=B.10.10,a=HP-UX_?.10.??_7800,v=HP
```
- 9 Select **OK** when the following message appears:

In addition to the software you just marked, other software was automatically marked to resolve dependencies. This message will not appear again.
- 10 Select **Install (analysis)** from the **Actions** menu to begin product installation and to open the Install Analysis window.
- 11 Select **OK** in the Install Analysis window when the **Status** field displays a Ready message.

- 12 Select the **Yes** button in the Confirmation window windows to confirm that you want to install the HP-UX software products.

View the Install window to read processing data while the software is being installed, until the **Status** field indicates Ready and the Note Window opens. The **swinstall** program loads the fileset, and runs the control scripts for the fileset.

- 13 Select **Exit** from the **File** menu to exit out of **swinstall**.

The HP-UX operating system provides detailed help for **swinstall**. For help, type:

```
man swinstall
```

Installing the DB2 Product Library (Optional)

To view DB2 product documents on-line, HTML versions of these documents are provided for installation. These documents are translated into several languages. However, not every manual in the DB2 product library is translated into multiple languages. The English version of every manual is available in HTML format.

The DB2V5HTML product includes filesets for all the DB2 product documentation. A separate fileset exists for each language. For example, the fileset name for the DB2 product library in English is DB2V5HTML.en_US. For a complete list of filesets in the DB2V5HTML product, see Appendix C, "Contents of the DB2 Products" on page 495.

To install the DB2 Product Library (HTML) filesets, do the following:

- 1 Log in as root and mount the DB2 product CD-ROM as described in "Step 1. Installing DB2 Products" on page 420.

- 2 Run the **swinstall** command as follows:

```
swinstall -s /cdrom/db2
```

where /cdrom is the CD-ROM mount directory.

- 3 From the list of products displayed, highlight the **DB2V5HTML** product and press Enter.

This will display a list of all the filesets in the **DB2V5HTML** product.

- 4 Highlight one or more filesets that you want to install and select **Mark for Install** from the Actions menu.

For example, to install the DB2 product Library in English, highlight the following fileset:

```
en_US      DB2 Product Library (HTML) - English
```

- 5 Follow the remaining installation procedure, starting at Step 9 on page 420 in "Step 1. Installing DB2 Products" on page 420.

This will install the **compressed-tar** files for the DB2 documents in the `/opt/IBMDB2/V5.0/doc/<lang>/html` directory, where `<lang>` is the language/locale identifier.

- 6 Run the following command to uncompress and un-tar the HTML files:

```
/opt/IBMDB2/V5.0/doc/db2insthtml lang
```

where `lang` is the language/locale identified. For example, `lang=en_US` for English. For valid language/locale identifiers, see Table 51 on page 497.

- 7 From your Web browser, open the following URL to view DB2 online manuals:

```
file:/opt/IBMDB2/V5.0/doc/en_US/html/index.htm
```

To recover some disk space, you may want to remove the compressed-tar files for DB2 books in HTML format. It is recommended that you do not just remove the compressed-tar HTML files. Instead, you should remove the fileset for the DB2 Product Library.

After the fileset is removed, only compressed-tar files will be removed. You will still be able to view the online DB2 books.

Installing DB2 Product Messages (Optional)

While DB2 Product Message documents are translated into several languages, the English language DB2 Product Messages are always installed. To install the DB2 Product Messages in other locales, you have to install one or more filesets in the DB2V5MSG product.

The DB2V5MSG product includes a separate fileset for every locale in which DB2 Product Messages are available. There is no fileset for the English (`en_US.iso88591` or `en_US.roman8`) locale since these messages are installed with the base product. For example, to install the DB2 Product messages in the `fr_FR.iso88591` locale, you need to install the fileset `DB2V5MSG.fr_FR`. For a complete list of filesets in the DB2V5MSG product, see Appendix C, "Contents of the DB2 Products" on page 495.

To install DB2 Product Message filesets, do the following:

- 1 Log in as root and mount the DB2 product CD-ROM as described in "Installation Steps" on page 419.

- 2 Run the **swinstall** command as follows:

```
swinstall -s /cdrom/db2
```

where `/cdrom` is the CD-ROM mount directory.

- 3 From the list of products displayed, highlight the **DB2V5MSG** product and press Enter.

This will display a list of all the filesets in the **DB2V5MSG** product.

- 4 Highlight one or more filesets that you want to install and select **Mark for Install** from the Actions menu.

For example, to install the DB2 Product Library in the fr_FR.iso88591 locale, highlight the following fileset:

```
fr_FR    DB2 Product Library (HTML) - fr_FR
```

- 5 Follow the remaining installation procedure, starting at Step 9 on page 420 in “Step 1. Installing DB2 Products” on page 420.

Step 2. Updating HP-UX Kernel Configuration Parameters

To run DB2 for HP-UX, you may have to update some kernel configuration parameters; the following values are recommended:

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	16384	32768
msgmnb	65535 (1)	65535 (1)	65535 (1)
msgmax	65535 (1)	65535 (1)	65535 (1)
msgtql	128	256	256
msgmap	130	258	258
msgmni	128	256	256
msgssz	16	16	16
semnmi	128	256	512
semmap	130	258	514
semnms	256	512	1024
semnmu	256	512	1024
shmmax	67108864	134217728 (2)	268435456 (2)
shmseg	16	16	16
shmmni	300	300	300

Notes:

1. Parameters *msgmnb* and *msgmax* must be set to 65535.
2. To maintain the interdependency among kernel parameters, change parameters in the same sequence in which they appear in the preceding table.
3. 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 184968806 ($176*1024*1024$).

To change the values, do the following:

- 1 Use **SAM** and select **Kernel Configuration**.
- 2 Select **Configurable Parameters**.
- 3 Highlight the parameter to be changed.
- 4 Select **Modify Configurable Parameter** from the **Actions** menu and make the appropriate changes.
- 5 Repeat the previous two steps for every kernel parameter which needs to be updated.
- 6 Create a new kernel by selecting **Create a New Kernel** from the **Actions** menu.
- 7 Reboot the system so that the changes can take effect.

Step 3. Creating or Assigning Groups and User IDs



If you want to use an existing user or group ID, you do not need to create new ones at this time. Instead, you can proceed to the next step.

You must perform the following as **root**.

- 1 Create a system administration (SYSADM) group that will be the primary group of the user ID for the instance owner. Any user of the instance owner that belongs to the SYSADM group will have system administrator authority for a given instance.

Next, create a user ID that will be the instance owner. This user ID will be the name of the instance. Make this user's primary group the SYSADM group created above. In our examples, the instance user ID is `db2inst1` and the SYSADM group is `dbadmin1`.



Dedicate the instance owner user ID to that instance's use only. This allows for easier error recovery if a system error occurs.

- 2** Use **SAM** or **groupadd** to create groups, and **SAM** or **useradd** to create users. For example:

```
groupadd dbadmin1
useradd -g dbadmin1 -d /home/inst1 -m db2inst1
passwd db2inst1
```

For security reasons, we recommend that you do not use the instance name as the FencedID. However, if you are not planning to use fenced User Defined Functions or Stored Procedures, you can set the FencedID to the instance name instead of creating another user for the FencedID.

Notes:

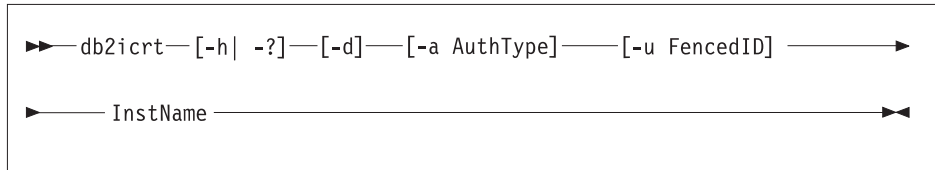
1. If you are planning to create the Administration Server, you have to repeat Steps 1 and 2 above to create a user name and group name for the Administration Server. However, for security reasons, we recommend that you do not use the DB2 Instance user name as the user name for the Administration Server.
2. If existing users and groups have been identified for these purposes, you do not have to create new ones.
3. In addition to the rules imposed by the operating system for login names and groups, you must also adhere to the rules described in Appendix D, "Naming Rules" on page 501.

Step 4. Creating a DB2 Instance

A DB2 instance is an environment where you store data and run applications. Use the **db2icrt** command to create an instance of the product. If you are not familiar with the concepts of a database instance, see Chapter 36, "Working with DB2 Instances" on page 321.

The **db2icrt** command is located in the DB2DIR/instance directory, where DB2DIR is /opt/IBMdb2/V5.0.

The syntax of the **db2icrt** command is:



where:

- h | -?** display a help menu for this command.
- d** sets the debug mode that you can use for problem determination
- a *AuthType*** is an optional parameter that 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 server product is installed. Otherwise, the *AuthType* is set to CLIENT.

Notes:

1. The authentication type of the instance applies to all databases owned by the instance.
2. Authentication type, DCE, is valid. However, it is not valid to choose DCE as an *AuthType* for this command. To enable DCE authentication for a DB2 instance, refer to the *Administration Guide*.

- u *FencedID*** is the user under which the fenced UDFs and Stored Procedures will execute. This is not required if you install the DB2 Client Application Enabler or the DB2 Software Developer's Kit. For other products, this is an required parameter.

Note: *FencedID* may not be root or bin.

InstName is the login name of the instance owner.

If a server product is installed, the syntax is:

```
db2icrt -u FencedID InstName
```

Examples:

- If you install the DB2 Universal Database Workgroup Edition or the DB2 Universal Database Enterprise Edition, you can use the following command to create an instance:

```
db2icrt -u db2fenc1 db2inst1
```

- If you installed the DB2 Connect Enterprise Edition only, you can use the instance name as the Fenced ID also:

```
db2icrt -u db2inst1 db2inst1
```

- To create an instance for the DB2 client, you can use the following command:

```
db2icrt db2inst1
```


When an instance is created, its name is also added to the list of instances on the system.

The **db2icrt** command creates the *INSTHOME*/sqllib directory, where *INSTHOME* is the home of the instance owner.



You should not create files or directories under *INSTHOME*/sqllib directory other than those created by DB2 products. This avoids a potential loss of data if an instance is deleted. There is one exception. If your system supports fenced User Defined Functions and fenced Stored Procedures, put the fenced User Defined Functions and the fenced Stored Procedures applications in the *INSTHOME*/sqllib/function directory.

Step 5. Creating an Administration Server

The Administration Server provides services to support client tools that:

- Automate the configuration of connections to DB2 databases.
- Administer DB2 from your server system or a remote client using the Control Center.

Step 6. Creating Links for DB2 Files (Optional)

This step is optional and can be used to create links for DB2 files to */usr/lib*, and for include files to */usr/include* for a particular version and release level of the product.

You may want to create these links if you are developing or running applications and want to avoid having to specify the full path to the product libraries and include files.

You invoke the **db2ln** command as follows:

```
/opt/IBMDB2/V5.0/db2ln
```

If there are existing links to */usr/lib* and */usr/include* from previous versions of DB2 products, they will automatically be removed by executing **db2ln** to create links for this version of DB2. If you want to reestablish the links to the libraries or previous versions, then you must execute the **db2rmln** command from Version 5 before you execute the **db2ln** command from the previous version.



Links can be established for only one version of DB2 on a given system.



Now that you have installed DB2 Universal Database, see Chapter 25, “Using the Command Line Processor to Configure the DB2 Connect Server to Accept Clients” on page 221 for information on how to set up your server to accept in-bound client connections.

Chapter 45. Other Methods to Install DB2 Connect for Solaris

This chapter describes the other methods you can use to install DB2 Universal Database products. Some of the advanced methods to install DB2 are detailed in this chapter. The DB2 Installer can perform all of the steps described in this section.

We recommend that you use the DB2 Installer when installing DB2, but if you prefer not to use the DB2 Installer, you can use any one of the methods described in this chapter. See Chapter 7, "Installing DB2 Connect on UNIX Systems" on page 51 for information on how to use the DB2 Installer to install the DB2 product. See Chapter 26, "Installing DB2 Clients" on page 243 for information on how to install the DB2 clients.

Installation Steps

To install DB2 for Solaris products, perform the following steps:

- 1** Install the product from the CD-ROM to the target machine. As part of this installation step, the following installation activities are optional:
 - a** Install DB2 product messages.
 - b** Install translated messages.
- 2** Update the kernel configuration parameters and reboot the system.
- 3** Create or assign groups and user IDs.
- 4** Create a DB2 instance.
- 5** Create an Administration Server.
- 6** Create links for DB2 files (optional).

Step 1. Installing DB2 Products

Use the **db2_install** command, that is available on the DB2 CD-ROM to install DB2 products. If your system does not have a local CD-ROM drive, you can mount the CD-ROM on a different system and NFS mount on the current system.

To install DB2 for Solaris and its prerequisites from the DB2 CD-ROM, you will perform the following steps:

- 1 Log in as root.
- 2 Insert the DB2 CD-ROM into the CD-ROM drive.
- 3 If the Volume Manager (vold) is installed on your system, the CD-ROM is automatically mounted as:

```
/cdrom/unnamed_cdrom
```

If the Volume Manager is not installed on your system, enter the commands to mount the CD-ROM, as shown in the following example:

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

where `/cdrom/unnamed_cdrom` is the CD-ROM mount directory.



If you are mounting the CD-ROM drive from a remote system using NFS, the file system must be exported with the **root** access.

- 4 Run the **db2_install** command:

```
/cdrom/unnamed_cdrom/db2/db2_install
```

The **db2_install** command prompts you for the product to be installed and for the base directory where the product files are to be installed. Select **DB2.CONN** to install DB2 Connect Enterprise Edition.

Note: The command displays the following prompt:

```
Specify one or more of the keywords followed  
by spaces.
```

- 5 Type the keyword of the product to be installed when prompted.
Note: This CD-ROM contains several DB2 products. Select the products you are licensed to install. Your **Proof of Entitlement** and **License Information** booklet identify the products for which you are licensed.
- 6 Type the name of the base directory when prompted. The default base directory is `/opt`.

If the default base directory is used, all files will be installed in the /opt/IBMdb2/V5.0 directory.

- 7 Enter **Yes** to start the DB2 product installation.

Installing the DB2 Product Library (Optional)

To view DB2 product documents on-line, HTML version of these documents are provided for installation. These documents are translated into several languages. However, not every manual in the DB2 product library is translated into multiple languages. The English version of every manual is available in HTML format.

A separate package exists for every language in which DB2 product documents are translated. Packages for DB2 product documentation are given names such as db2ht%L50, where %L represents two letters for the language name. For example, the package name for the DB2 Product Library in English is db2hten50. For a complete list of packages for the DB2 Product Library, see Appendix C, "Contents of the DB2 Products" on page 495.

To install the DB2 Product Library (HTML) package, do the following:

- 1 Log in as root and mount the DB2 product CD-ROM as described in "Step 1. Installing DB2 Products" on page 430.

- 2 Run the **pkgadd** command as follows:

```
pkgadd -d <cdrom-dir>/db2/db2 <pkgname>
```

where <cdrom> is the CD-ROM mount directory and <pkgname> is the package name. For example to install DB2 product documentation in English, you can enter the following command:

```
pkgadd -d /cdrom/unnamed_cdrom/db2/db2 db2hten50
```

This command installs the compressed-tar files for the DB2 documents in the /opt/IBMdb2/V5.0/doc/<lang>/html directory, where <lang> is the language/locale identifier.

- 3 From your Web browser, open the following URL to view the DB2 manuals:

```
file:/opt/IBMdb2/V5.0/doc/en_US/html/index.htm
```

To recover some disk space, you may want to remove the compressed-tar files for DB2 books in HTML format. It is recommended that you do not just remove the compressed-tar HTML files. Instead, you should remove the fileset for the DB2 Product Library.

After the fileset is removed, only compressed-tar files will be removed. You will still be able to view the online DB2 books.

Installing DB2 Product Messages (Optional)

A separate package exists for every locale in which DB2 Product Messages are translated. Packages for DB2 Product Messages are given names such as `db2ms%L50`, where %L represents two letters for the language name. For example, the package name for the DB2 Product Messages in the de (German) locale is `db2msde50`. For a complete list of DB2 Product Messages, see Appendix C, “Contents of the DB2 Products” on page 495.

To install DB2 Product Message packages, do the following:

- 1 Log in as root and mount the DB2 product CD-ROM as described in “Step 1. Installing DB2 Products” on page 430.

- 2 Run the **pkgadd** command as follows:

```
pkgadd -d <cdrom-dir>/db2/db2 <pkgname>
```

where `<cdrom-dir>` is the CD-ROM mount directory and `<pkgname>` is the package name.

For example, to install the DB2 Product Messages in the de (German) locale, enter the following command:

```
pkgadd -d /cdrom/unnamed_cdrom/db2/db2 db2msde50
```

Step 2. Updating Solaris Kernel Configuration Parameters

To run DB2 for Solaris, you may have to update some kernel configuration parameters; the following minimum values are recommended:

Table 44. Solaris Kernel Configuration Parameters (Recommended Values)

Kernel Parameter	Physical Memory		
	64MB - 128MB	128MB - 256MB	256MB+
<code>msgsys:msginfo_msgmax</code>	65535 (1)	65535 (1)	65535 (1)
<code>msgsys:msginfo_msgmnb</code>	65535 (1)	65535 (1)	65535 (1)
<code>msgsys:msginfo_msgmap</code>	130	258	258
<code>msgsys:msginfo_msgmni</code>	128	256	256
<code>msgsys:msginfo_msgssz</code>	16	16	16
<code>msgsys:msginfo_msgtql</code>	128	256	256
<code>msgsys:msginfo_msgseg</code>	8192	16384	32768
<code>shmsys:shminfo_shmmax</code>	67108864	134217728 (2)	268435456 (2)
<code>shmsys:shminfo_shmseg</code>	16	16	16
<code>shmsys:shminfo_shmmni</code>	300	300	300
<code>semsys:seminfo_semmni</code>	128	256	512
<code>semsys:seminfo_semmap</code>	130	258	514
<code>semsys:seminfo_semmns</code>	256	512	1024
<code>semsys:seminfo_semmnu</code>	256	512	1024

Notes:

1. Parameters `msgsys:msginfo_msgmnb` and `msgsys:msginfo_msgmax` must be set to 65535.
2. Parameters `shmsys:shminfo_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 the `shmsys:shminfo_shmmax` 184968806 (176*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 parameter `msgsys:msginfo_msgmax`, 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/V5.0/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 more than 256MB 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 `shmsys:shminfo_shmmax` as described in Note 2 above.

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

Step 3. Creating or Assigning Groups and User IDs



If you want to use an existing user or group ID, you do not need to create new ones at this time. Instead, you can proceed to the next step.

You must perform the following as **root**:

- 1 Create a system administration (SYSADM) group that will be the primary group of the user ID for the instance owner. Any user of the instance owner that belongs to the SYSADM group will have system administrator authority for a given instance.

Next, create a user ID that will be the instance owner. This user ID will be the name of the instance. Make this user's primary group the SYSADM group created above. In our examples, the instance user ID is `db2inst1` and the SYSADM group is `dbadmin1`.



Dedicate the instance owner user ID to that instance's use only. This allows for easier error recovery if a system error occurs.

- 2 Use **admintool** or **groupadd** to create groups, and **admintool** or **useradd** to create users. For example:

```
groupadd dbadmin1
useradd -g dbadmin1 -d /export/home/db2inst1 -m db2inst1
passwd db2inst1
```

For security reasons, we recommend that you do not use the instance name as the FencedID. However, if you are not planning to use fenced User Defined Functions or Stored Procedures, you can set the FencedID to the instance name instead of creating another user for the FencedID.

Notes:

1. If you are planning to create the Administration Server, you have to repeat Steps 1 and 2 above to create a user name and group name for the Administration Server. However, for security reasons, we recommend that you do not use the DB2 Instance user name as the user name for the Administration Server.
2. If existing users and groups have been identified for these purposes, you do not have to create new ones.

3. In addition to the rules imposed by the operating system for login names and groups, you must also adhere to the rules described in Appendix D, “Naming Rules” on page 501.

Step 4. Creating a DB2 Instance

A DB2 instance is an environment where you store data and run applications. Use the **db2icrt** command to create an instance of the product. If you are not familiar with the concepts of a database instance, see Chapter 36, “Working with DB2 Instances” on page 321.

The syntax of the **db2icrt** command is:

```
db2icrt [-h | -?] [-d] [-a AuthType] [-u FencedID] InstName
```

where:

- h | -?** display a help menu for this command.
- d** sets the debug mode that you can use for problem determination
- a *AuthType*** is an optional parameter that 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 server product is installed. Otherwise, the *AuthType* is set to CLIENT.

Notes:

1. The authentication type of the instance applies to all databases owned by the instance.
2. Authentication type, DCE, is valid. However, it is not valid to choose DCE as an *AuthType* for this command. To enable DCE authentication for a DB2 instance, refer to the *Administration Guide*.

- u *FencedID*** is the user under which the fenced UDFs and Stored Procedures will execute. This is not required if you install the DB2 Client Application Enabler or the DB2 Software Developer's Kit. For other products, this is an required parameter.

Note: *FencedID* may not be root or bin.

- InstName*** is the login name of the instance owner.

If a server product is installed, the syntax is:

```
db2icrt -u FencedID InstName
```

Examples:

- If you install the DB2 Universal Database Workgroup Edition or the DB2 Universal Database Enterprise Edition, you can use the following command to create an instance:

```
db2icrt -u db2fenc1 db2inst1
```

- If you installed the DB2 Connect Enterprise Edition only, you can use the instance name as the Fenced ID also:

```
db2icrt -u db2inst1 db2inst1
```

- To create an instance for the DB2 client, you can use the following command:

```
db2icrt db2inst1
```

When an instance is created, its name is also added to the list of instances on the system.

The **db2icrt** command creates the *INSTHOME*/sqllib directory, where *INSTHOME* is the home of the instance owner.



You should not create files or directories under *INSTHOME*/sqllib directory other than those created by DB2 products. This avoids a potential loss of data if an instance is deleted. There is one exception. If your system supports fenced User Defined Functions and fenced Stored Procedures, put the fenced User Defined Functions and the fenced Stored Procedures applications in the *INSTHOME*/sqllib/function directory.

Step 5. Creating an Administration Server

The Administration Server provides services to support client tools that:

- Automate the configuration of connections to DB2 databases.
- Administer DB2 from your server system or a remote client using the Control Center.

Step 6. Creating Links for DB2 Files (Optional)

This step is optional and can be used to create links for DB2 files to `/usr/lib`, and for include files to `/usr/include` for a particular version and release level of the product.

You may want to create these links if you are developing or running applications and want to avoid having to specify the full path to the product libraries and include files.

You invoke the **db2ln** command as follows:

```
/opt/IBMd2/V5.0/db2ln
```

If there are existing links to `/usr/lib` and `/usr/include` from previous versions of DB2 products, they will automatically be removed by executing **db2ln** to create links for this version of DB2. If you want to reestablish the links to the libraries or previous versions, then you must execute the **db2rmln** command from Version 5 before you execute the **db2ln** command from the previous version.



Links can be established for only one version of DB2 on a given system.



Now that you have installed DB2 Universal Database, see Chapter 25, "Using the Command Line Processor to Configure the DB2 Connect Server to Accept Clients" on page 221 for information on how to set up your server to accept in-bound client connections.

Chapter 46. Administering Clients Using the CCA

Use the information in this section to use the Client Configuration Assistant to perform administration tasks on OS/2, Windows 95, and Windows NT workstations.

When you install the DB2 server, if your protocols are set up and configured, DB2 server communications are automatically configured to allow DB2 to accept requests from remote clients.



The CCA can be installed on OS/2, Windows 95, and Windows NT workstations. If it is not installed on your system, you can install it by reinstalling the DB2 product and choosing to install the CCA.

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 database connections to be configured as CLI/ODBC data sources.
- Import or export client 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.

Configuring Database Connections



To complete the steps in this section, you must be logged on to the local system as a user with System Administrative (SYSADM) authority on the instance.



You can configure database connections through the Add Database SmartGuide, by:

- Using a profile as a source of information to add database connections, see “Using an Access Profile” on page 440.
- Searching the network for databases, see “Searching the Network for Databases” on page 443.
- Adding database connections manually, see “Manually Configure a Connection to a DB2 Database” on page 448.

Each of these is covered in more detail in the material that follows.

Using an Access Profile

You can use either a Server profile or a Client profile to configure database connections on a client.

Server Profiles

Server profiles can be generated for a DB2 Connect server. They contain information about instances on the 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 server profiles, use the Generate Access Profile function provided in the Control Center. When a profile is generated for the DB2 Connect server, it includes server instances that have the *discover_inst* configuration parameter set to ENABLE, and databases with the *discover_db* configuration parameter set to ENABLE. The *discover* parameter, in the Administration Server, must be set to either *SEARCH* or *KNOWN* to generate a profile for a server system.

For information on setting the *discover_inst*, *discover_db* and *discover* configuration parameters, see “Setting Discovery Parameters” on page 446.

Generating a Server Profile: To generate an access profile, perform the following steps:

- 1 Start the Control Center.
- 2 Click on the **[+]** sign beside the **Systems** icon to get a list of systems.
- 3 Select the system to be profiled and click on the right mouse button.
- 4 Select the **Generate access profile** option.
- 5 Select the path and type in a file name for the profile, then click on the **Generate** push button.

To process a server profile and add its databases to the client's connection configuration list, use the Client Configuration Assistant's Import or Add functions. Using the Add function is the preferred method.

Using a Server Profile on the Client: To add a database using the Add function:

- 1 Start the Client Configuration Assistant (CCA).
- 2 Click on the **Add** push button.
- 3 Select the **Use an Access Profile** radio button, and click on the **Next** push button.
- 4 Click on the **Browse** push button to select the server profile that you want to access, or enter the path and filename in the **File** field.
- 5 Select a database to be added.
- 6 If desired, you can select the **Alias** and **ODBC** tabs at the top of the panel to specify a database alias name for the database, or to select CLI/ODBC options for the database. This step is optional.
- 7 Click on the **Done** push button.
- 8 You can test the connection that has been added by clicking on the **Test Connection** push button.

Client Profiles

Information in Client profiles can be added to the client through the following:

- Using the Add function, which allows you to selectively process the database connection data in the client profile and add it to the client. (This function invokes the Add Database SmartGuide.)
- Using the Import function, which allows you to selectively process database connection data, client configuration settings, and CLI/ODBC common parameters.

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

Exporting a Client Profile: Client profiles are generated from clients using the Export function of the CCA. Use the export function to copy the database information used by one client to other clients.

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/ODBC settings).
- Client settings (including database manager configuration parameters).
- CLI/ODBC common parameters.
- Configuration data for the local APPC communications subsystem.

Export can be used to generate a customized profile that can be imported on another client to set it up initially, or to update it.

To export a profile from the client, configure the client for communications and do the following:

- 1 Enter **db2cca admin** at a command prompt to start the Client Configuration Assistant in administrator mode. (You must be an administrator on the local system to perform this command.)



The Export function of the CCA is only available when the CCA is started in administrator mode. The CCA can be started in administrator mode by modifying the **Client Configuration Assistant** icon to add the parameter *admin* to the startup of the CCA, or by issuing the **db2cca admin** command.

- 2 Click on the **Export** push button.
- 3 Select the databases to be exported from the **Available DB2 Databases** window, and add them to the **Databases to be exported** window.
- 4 Select the check boxes that correspond to the options that you want to set up for the target client:
 - **Client Settings**
 - **CLI/ODBC Common parameters**
 - **APPC local stack configuration**

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.

- 5 Click on **OK**.
- 6 Enter a path and file name for the Client profile.

Importing a Client Profile:



The Import function can be used to easily set up new client systems. The Import function works as follows:

Client Settings

Configuration parameters found in the export file replace existing ones on the client; all other parameters are set to default.

CLI/ODBC Common Parameters

Values found in the exported file replace those on the client.

Local Configuration Data for the APPC Communications Subsystem

If it is not already configured, this information is used to configure the APPC communications subsystem.

Perform these steps at the client that you want to set up. You can use this process to initially set up a new client, or to update an existing one.

- 1 Start the Client Configuration Assistant (CCA).
- 2 Click on the **Import** push button.
- 3 Select the path and filename of the client profile you want to import and click on **OK**.
- 4 The Import Client Profile window opens. Select the items you want to import. For more information, click on the **Help** push button.
- 5 Click on **OK**.



If databases are contained in the client profile that you are importing, and you select to import them, the Add Database SmartGuide starts to allow you to selectively import the databases you want to connect to.

Searching the Network for Databases

Instead of entering protocol information to make a connection to remote database servers, you can use the CCA to find all the databases on your local network by following these steps:



The following scenario assumes that the installation defaults on the client and the server have not been changed, and that messages used by the *Search* method of discovery are not filtered by your network.

- 1 Start the Client Configuration Assistant (CCA).
- 2 Click on the **Add** push button on the CCA's main panel to start the Add Database SmartGuide.
- 3 Select the **Search the network** radio button, and click on the **Next** push button.
- 4 Click on the **[+]** sign beside the **Known Systems** icon to list all the systems known to your workstation.
 - a Click on the **[+]** sign beside the system to get a list of the instances and databases on it. Select the database that you want to add and proceed to Step 5.
 - b If the system that contains the database that you want is not listed, click on the **[+]** sign beside the **Other Systems (Search the network)** icon to search the network for additional systems. Click on the **[+]** sign beside the system to get a list of the instances and databases on it. Select the database that you want to add and proceed to Step 5.

- C** If the system you want is still not listed, it can be added to the list of systems by clicking on the **Add Systems** push button.
- 5** If desired, you can select the **Alias** and **ODBC** tabs at the top of the panel to specify a database alias name for the database, or to select CLI/ODBC options for the database. This step is optional.
- 6** Click on the **Done** push button.
- 7** You can test the connection that has been added by clicking on the **Test Connection** push button.

Searching the network can be customized to meet the needs of individual organizations. The material that follows provides details on this customization. Refer to the *Administration Guide* for more information on individual configuration parameters and profile registry values.

Choosing a Discovery Method

Network searching uses a DB2 facility called *Discovery* to obtain information from DB2 servers. This information is used to configure clients for database connections. Two discovery methods are available for searching the network:

- **Known**

Known discovery allows you to discover instances and databases on systems that are known to your client, and add new systems so that their instances and databases can be discovered; however, it does not support searching the network for servers.

Click on the **[+]** sign beside the **Known Systems** icon to get a list of known DB2 server systems. Click on the **[+]** sign beside the system to get a list of the instances and databases on it. Select the database that you want to add and complete the other panels in the Add Database SmartGuide.

Initially, the list of systems will be blank; however, if you are running the CCA on the server, an entry for the local server will be shown. Add systems to the list by clicking on the **Add System** push button. To use this option you must know a few details about the Administration Server on the DB2 system to be searched:

- A protocol configured and running on the administration server.
- The protocol's configuration information.

The Administration Server will listen for KNOWN discovery requests, from clients, on the protocols specified by the DB2COMM registry value in the Administration Server.

- **Search**

This mode provides all of the facilities of Known discovery, and adds the option to allow your local network to be searched for DB2 Connect servers.

Searching does not require information about the Administration Server. When you click on the **[+]** sign beside the **Other Systems (Search the network)** icon, a list of DB2 Connect servers is displayed. Click on the **[+]** beside the system to get a list of the instances and databases on it. Select the database that you want to add and complete the other panels in the Add Database SmartGuide.



Search may appear to be a simpler discovery method. However, in larger networks, network routers and bridges can filter the messages search uses to find DB2 servers on the network, resulting in an incomplete or even empty list. In this case, use the *Add System* method; its messages are not filtered by routers and bridges. If in doubt, contact your network administrator for assistance.

To have the server support Known discovery, set the *discover* parameter in the Administration Server to KNOWN. To have it support Search discovery, set this parameter to SEARCH. To prevent discovery of the server, and all of its instances and databases, set *discover* to DISABLE.

On the client, enabling discovery is also done using the *discover* parameter; however, in this case, the *discover* parameter is set in the client instance (or a server acting as a client) as follows:

- KNOWN** Allows the CCA to refresh systems in the known list, and to add new systems to the list by using the **Add Systems** button. When *discover* is set to KNOWN, the CCA will not be able to search the network.
- SEARCH** Enables all the facilities of the KNOWN setting, and enables network searching.
- DISABLE** Disables discovery. In this case, the **Search the network** option is not available in the Add Database SmartGuide.



Servers configured with *discover* set to KNOWN, will not respond to search requests from clients. It is important that you consider this when changing the *discover* parameter, which was set to SEARCH during the installation.

Additional Settings for SEARCH Discovery

Search discovery requires that the configuration parameter *discover_comm* be set on both the server (in the Administration Server's configuration file) and the client (in the database manager configuration file).

The *discover_comm* parameter is used to control the communication protocols that the server will listen on for search requests from clients, and that clients will use to send out search requests. The *discover_comm* parameter can be any combination of TCP/IP and NetBIOS; the protocols supported by SEARCH discovery.

On the server, the values specified by *discover_comm* must be equal to, or a subset, of the values set by *db2comm* for the Administration Server.



Check the settings for the *DB2COMM* registry value by issuing the **db2set DB2COMM** command. For more information, see Chapter 39, “Controlling Your DB2 Environment” on page 357.

On the server, *discover_comm* is set in the Administration Server. On the client (or a server acting as a client), *discover_comm* is set in the instance.

Note: When using discovery search mode, at least one protocol specified by the *discover_comm* parameter on the client must match those specified by *discover_comm* on the Administration Server. If there is no match, the server will not respond to the client's requests.

In addition, there are two DB2 profile registry values that can be used to tune search discovery on the client: *db2discoverytime* and *db2nbdiscoverrcvbufs*. The default values should be suitable in most cases. For more information, refer to the *Administration Guide*.

Hiding Server Instances and Databases from Discovery

You may have multiple instances, and multiple databases within these instances, on a server. You may want to hide some of these from the discovery process.

To allow clients to discover server instances on a system, set the *discover_inst* database manager configuration parameter in each server instance on the system to ENABLE (this is the default value). Set this parameter to DISABLE to hide this instance and its databases from discovery.

To allow a database to be discovered from a client, set the *discover_db* database configuration parameter to ENABLE (this is the default value). Set this parameter to DISABLE to hide the database from discovery.

Setting Discovery Parameters

discover and discover_comm

The *discover* and *discover_comm* parameters are set in the Administration Server on the server system, and in the client instance. Set these parameters as follows:

- On the Administration Server:

Update the Administration Server's configuration file, in the command line processor, as follows:

```
update admin cfg using discover [ DISABLE | KNOWN | SEARCH ]
update admin cfg using discover_comm [ NETBIOS | TCPIP ]
db2admin stop
db2admin start
```

Note: Search Discovery will only operate on TCP/IP and NetBIOS.

- On the client:
 - 1 Start the Client Configuration Assistant (CCA).
 - 2 Click on the **Client Settings** push button.
 - 3 Select the **Communications** tab.
 - 4 Select and change the parameters that you want to modify in the **Parameters** window.



If the *discover_comm* includes *netbios*, you must ensure that the Workstation name (*nname*) parameter is set for the both the client and the Administration Server. Also, you must ensure that the *db2nbadapters* registry value is set to the Adapter number that you want to use. For more information, refer to the *Administration Guide*.

discover_inst and discover_db

Use the Control Center to set the *discover_inst* and *discover_db* parameters. To set these parameters, follow these steps:

- 1 Start the Control Center.
- 2 Select the instance that you want to configure and click on the right mouse button.
- 3 Select the **Configure** option from the pop-up menu. The Configuration window opens.
- 4 Select the **Environment** tab and select the *discover_inst* parameter.
- 5 Enter the desired value in the **Value** box and click on **OK**.
- 6 Select the database that you want to configure and click on the right mouse button.
- 7 Select the **Configure** option from the pop-up menu. The Configuration window opens.
- 8 Select the **Environment** tab and select the *discover_db* parameter.
- 9 Enter the desired value in the **Value** box and click on **OK**.

discoverytime and db2nbdiscoverrcvbufs

The *db2discoverytime* and *db2nbdiscoverrcvbufs* profile registry values are set in the client instance (or a server acting as a client). Set these parameters as follows:

- To set the *db2discoverytime* registry value to 35 seconds, enter the following command:

```
db2set db2discoverytime=35
```

This specifies that the searched discovery should wait 35 seconds for a response from servers.

- To set the `db2nbdiscoverrcvbufs` registry value to 10, enter the following command:

```
db2set db2nbdiscoverrcvbufs=10
```

This specifies the number of NetBIOS buffers that will be allocated for response messages from discovered servers.

Manually Configure a Connection to a DB2 Database

Manually configuring a database connection requires you to know:

- One of the protocols supported by the server instance containing the database.
- The protocol connection information required to configure the connection to the server instance.
- The name of the database on the server system.

With this information, the SmartGuide will guide you through the steps necessary to add the database connection.

- 1** Start the Client Configuration Assistant (CCA).
- 2** Click on the **Add** push button on the CCA's main panel to start the Add Database SmartGuide.
- 3** Select the **Manually configure a connection to a DB2 database** radio button, and click on the **Next** push button.
- 4** Select the protocol that you will use to connect to the database. Click on the **Next** push button.
- 5** Type in the required protocol parameters. Click on the **Next** push button.
- 6** Type in the name of the database in the **Target database** field.
- 7** If desired, you can select the **Alias** and **ODBC** tabs at the top of the panel to specify a database alias name for the database, or to select CLI/ODBC options for the database. This step is optional.
- 8** Click on the **Done** push button.
- 9** You can test the connection that has been added by clicking on the **Test Connection** push button.

Part 8. Configuring DRDA Hosts

Chapter 47. Configuring DRDA Hosts for DB2 Connect

This chapter details steps to be taken by your network or system administrator and your DB2 administrator in order for you to be able to successfully connect DB2 Connect to a *DRDA application server (AS)* on an MVS or OS/390 DRDA host.

Note that the steps listed in this chapter must be performed by users who have the necessary privileged system access and special expertise. You should make this information available to your support staff if required.

This section also provides some information for DB2 for AS/400 users, and pointers to additional information sources for MVS, OS/390, OS/400, VM, and VSE users, as follows:

- *DB2 for OS/390 Version 5 Installation Guide*, GC26-8970 contains the most complete and up to date information for DB2 for OS/390.
- Information about how to set up DB2 Universal Database as a DRDA AS is provided in the *Quick Beginnings* manuals for DB2 Universal Database products.
- Selected information about how to set up an MVS, OS/390, OS/400, VM, or VSE system as a DRDA AS for use over SNA connections with the DB2 Connect *DRDA application requester (AR)* is provided with DB2 Connect in the *DB2 Connectivity Supplement*.
- More information about how to set up an MVS, OS/390, OS/400, VM, or VSE system as a DRDA AR for use with DB2 Universal Database DRDA AS is also provided in the *DB2 Connectivity Supplement*.
- *Distributed Relational Database Cross Platform Connectivity and Applications*, SG24-4311 contains useful post-configuration information.

The examples in this chapter match those provided elsewhere in this book. When you use these examples you *must* substitute your own values for elements such as network name, LU name, and mode name.

Preparing MVS/ESA or OS/390 for DB2 Connect

Your VTAM administrator and your host system administrator must configure VTAM and OS/390 (or MVS/ESA) to prepare DB2 for OS/390 (or DB2 for MVS/ESA) to receive inbound connection requests from your DB2 Connect workstation.

This section provides:

- Examples of VTAM definitions required at your DB2 for OS/390 host for use with DB2 Connect SNA connections. These should be compared with current definitions. See “Configuring VTAM” on page 453.
- Instructions for establishing TCP/IP network connections between DB2 Connect and DB2 for OS/390. See “Configuring TCP/IP for DB2 for OS/390” on page 460. Chapter 23, “Setting up Two-phase Commit using TCP/IP” on page 215 provides further information on using TCP/IP connections.
- DB2 host configuration steps (see “Configuring DB2 for OS/390” on page 457, or “Configuring DB2 for MVS/ESA” on page 458). Many details of these steps have changed with the introduction of DB2 for OS/390 Version 5.1. Most of these steps apply to SNA users, but some also apply to users who will connect to DB2 for OS/390 via TCP/IP.

For a summary of the example VTAM names used throughout this book, see “Sample Network Element Names (VTAM)” on page 453. For TCP/IP names, see “Configuring TCP/IP for DB2 for OS/390” on page 460.

Note: If you will use the LU6.2 Syncpoint Manager (SPM) function of DB2 Connect Enterprise Edition for AIX or OS/2, it is particularly important to read Chapter 22, “Setting Up Two-phase Commit Using SNA” on page 191. The examples documented here do not include the additional steps required to set up the SPM.

Summary of Steps

In order to prepare DB2 for OS/390 or DB2 for MVS/ESA to receive connection requests from DB2 Connect, you must complete the following steps at your DB2 for OS/390 host:

- 1 Configure VTAM - see “Configuring VTAM” on page 453, or:
- 2 Configure TCP/IP - see “Configuring TCP/IP for DB2 for OS/390” on page 460, or:
- 3 Configure DB2 for OS/390 or DB2 for MVS/ESA - see “Configuring DB2 for OS/390” on page 457, or “Configuring DB2 for MVS/ESA” on page 458.

Configuring VTAM

VTAM needs to be configured only if DB2 Connect will use SNA connections; it is not required if DB2 Connect will only use TCP/IP database connections (see “Configuring TCP/IP for DB2 for OS/390” on page 460).

To configure VTAM, your VTAM Administrator needs to determine the names and options to be used on your system. The following definitions must be provided to enable the DB2 Connect workstation to connect to the host:

- 1** The VTAM APPL Definition for DB2 for OS/390 or DB2 for MVS/ESA. (The APPL name (LU name) for the DB2 subsystem is NYM2DB2 in these examples.)
- 2** The VTAM PU and LU Definitions for DB2 Connect. (The PU and LU definitions for the DB2 Connect workstation are NYX1 and NYX1GW01 respectively in these examples.)
Note: If you are using SNA two-phase commit, the LU definition must be the name defined at the DB2 Connect server using the SPMNAME database manager configuration parameter.
- 3** The VTAM Log Mode Definition for DB2. (The log mode entry to be used for the connection is IBMRDB in these examples.)

The VTAM sample definitions are provided in the sections that follow. These samples use parameters that match the parameters used elsewhere in this book.

Sample Network Element Names (VTAM)

All the examples in this section use the same names as elsewhere in this book, as shown in Figure 26 on page 454:

```

DB2 Connect GATEWAY:
  - Network ID           : SPIFNET
  - Local Node Name     : NYX1      (PU name)
  - Local Node ID      : 05D27509

  - LU Name             : SPIFNET.NYX1GW01 (the same LU is used
                                for DB2 Connect,
                                for DB2 Universal Database DRDA-AS,
                                and for the SPM)
  - LU Alias           : NYX1GW01

HOST:
  - Network ID         : SPIFNET
  - Node Name         : NYX

  - LU Name           : SPIFNET.NYM2DB2
  - LU Alias         : NYM2DB2
  - LAN Destination Address : 400009451902 (NCP TIC address)

MODE DEFINITION:
  - Mode Name         : IBMRDB

DB2 for MVS/ESA:
  - Location          : NEW_YORK3

SECURITY:
  - Security Type     : Program
  - Authentication Type : DCS

```

Figure 26. Network Element Names Used in the VTAM Examples

In this scenario, both userid and password are checked only at the host. If you use Authentication SERVER, which is the default, then authentication will also take place at the DB2 Connect server.

Note: If you are using SNA two-phase commit, the LU Name must be the same as the SPM LU name at the DB2 Connect server.

Sample VTAM APPL Definition for OS/390

Figure 27 on page 455 lists the sample VTAM application major node definition used for DB2 for OS/390 in this book. In most cases, such a definition will already exist with a different LU name.

Otherwise, this *application major node* must be defined, and DB2 for OS/390 must be customized in order to use the LU name defined. This name is the Partner LU name required by DB2 Connect.

```

-----+-----1-----+-----2-----+-----3-----+-----4-----+-----5-----+-----6-----+-----7--
DB2APPLS VBUILD TYPE=APPL

NYM2DB2  APPL  APPC=YES,                X
           AUTH=(ACQ),                  X
           AUTOSES=1,                    X
           DLOGMOD=IBMRDB,                X
           DMINWNL=512,                   X
           DMINWNR=512,                   X
           DSESSLIM=2048,                  X
           EAS=6000,                       X
           MODETAB=RDBMODES,              X
           PARSESS=YES,                    X
           PRTCT=SFLU,                     X
           MODETAB=RDBMODES,              X
           SECACPT=ALREADYV,              X
           SRBEXIT=YES,                    X
           VERIFY=NONE,                    X
           VPACING=8

```

Figure 27. Sample VTAM APPL Definition for DB2 for OS/390 or DB2 for MVS/ESA

Notes:

1. Continuations must begin in column 16, with continuation marks in column 72.
2. To use the DB2 Syncpoint Manager (SPM), you must also include:

```
SYNCLVL=SYNCPT
```

This enables Syncpoint support, which allows you to use two-phase commit over SNA connections to DB2 for OS/390.

Sample VTAM PU and LU Definitions for DB2 Connect

Figure 28 on page 456 lists the sample VTAM switched major node definition used for the example DB2 Connect workstation in this book.

If you already use SNA applications on the DB2 Connect workstation, then a PU definition already exists. However, an independent LU definition might not. The independent LU definition required for DB2 Connect must have LOCADDR=0 specified.

```

-----+-----1-----+-----2-----+-----3-----+-----4-----+-----5-----+-----6-----+-----7--
          SWITCHED MAJOR NODE DEFINITION FOR PU NYX1 and
          INDEPENDENT LU NYX1GW01

LOC300    VBUILD TYPE=LOCAL

NYX1      ADDR=01, IDBLK=071, IDNUM=27509, ANS=CONT, DISCNT=NO,          X
          IRETRY=YES, ISTATUS=ACTIVE, MAXDATA=4302, MAXOUT=7,          X
          MAXPATH=1, PUTYPE=2, SECNET=NO, MODETAB=RDBMODES            X
          SSCPFM=USSSCS, PACING=0, VPACING=2

NYX1GW01  LOCADDR=000, MODETAB=RDBMODES, DLOGMODE=IBMRDB

OTHERLU   LOCADDR=002

```

Figure 28. Sample VTAM Switched Major Node Definition for DB2 Connect

Alternatively, you can enable DYNPU and DYNLU in VTAM to allow any PU and LU access through VTAM.

Sample VTAM Log Mode Definition for DB2

Figure 29 on page 457 lists the sample VTAM logon mode table definition IBMRDB used in this book. Note that this example specifies a 4K RUSIZE, which may not be suitable for your environment (for example, if you are using Ethernet, which has a maximum Frame Size of 1536 bytes). Your VTAM Administrator should check these values and advise you which mode table entry name and RUSIZE to specify for DB2 Connect.

```

-----+-----1-----+-----2-----+-----3-----+-----4-----+-----5-----+-----6-----+-----7-----
RDBMODES MODTAB

IBMRDB  MODEENT LOGMODE=IBMRDB,  DRDA DEFAULT MODE      *
        TYPE=0,                    NEGOTIABLE BIND        *
        PSNDPAC=X'01',              PRIMARY SEND PACING COUNT *
        SSNDPAC=X'01',              SECONDARY SEND PACING COUNT *
        SRCVPAC=X'00',              SECONDARY RECEIVE PACING COUNT *
        RUSIZES=X'8989',            RUSIZES IN-4K  OUT-4K   *
        FMPROF=X'13',              LU6.2 FM PROFILE      *
        TSPROF=X'07',              LU6.2 TS PROFILE      *
        PRIPROT=X'B0',              LU6.2 PRIMARY PROTOCOLS *
        SECPROT=X'B0',              LU6.2 SECONDARY PROTOCOLS *
        COMPROT=X'D0B1',            LU6.2 COMMON PROTOCOLS *
        PSERVIC=X'0602000000000000122F00'  LU6.2 LU TYPE

SNASVCMG MODEENT LOGMODE=SNASVCMG, DRDA DEFAULT MODE      *
        PSNDPAC=X'00',              PRIMARY SEND PACING COUNT *
        SSNDPAC=X'02',              SECONDARY SEND PACING COUNT *
        SRCVPAC=X'00',              SECONDARY RECEIVE PACING COUNT *
        RUSIZES=X'8585',            RUSIZES IN-1K  OUT-1K   *
        FMPROF=X'13',              LU6.2 FM PROFILE      *
        TSPROF=X'07',              LU6.2 TS PROFILE      *
        PRIPROT=X'B0',              LU6.2 PRIMARY PROTOCOLS *
        SECPROT=X'B0',              LU6.2 SECONDARY PROTOCOLS *
        COMPROT=X'D0B1',            LU6.2 COMMON PROTOCOLS *
        PSERVIC=X'06020000000000000000300'  LU6.2 LU TYPE

```

Figure 29. Sample VTAM Log Mode Definition for DB2 Connect

Note that you must define SNASVCMG when using APPC.

Configuring DB2 for OS/390

Before you can use DB2 Connect, your DB2 for OS/390 Administrator must configure DB2 for OS/390 to permit connections from the DB2 Connect workstation. This section indicates the *minimum* updates required in order to permit the DB2 Connect Application Requester to make a connection to DB2 for OS/390. More detailed examples can be found in *DB2 Connectivity Supplement*, and *DB2 for OS/390 Installation Reference*.

The following tables need to be updated, depending on the type of connections you are using (SNA or TCP/IP):

- SYSIBM.LUNAMES for SNA connections
- SYSIBM.IPNAMES for TCP/IP connections

The sections that follow contain examples of commands to update these tables for DB2 for OS/390. Work with your DB2 Administrator to determine the updates required for

your DB2 for OS/390 system. The DB2 for OS/390 Communications Database tables are described in *DB2 for OS/390 SQL Reference*.

Updating *SYSIBM.LUNAMES*

To permit database connection requests to be accepted from any incoming DB2 Connect LU, just insert a blank row. Use an SQL command such as the following:

```
INSERT INTO SYSIBM.LUNAMES (LUNAME) VALUES ('      ')
```

Alternatively, if you want to restrict access by LU name, you can use an SQL command such as the following to update this table:

```
INSERT INTO SYSIBM.LUNAMES (LUNAME,  
                             SECURITY_OUT,  
                             ENCRYPTPSWDS,  
                             USERNAMES)  
VALUES('NYX1GW01','P','N','0');
```

Result:

COLUMN	EXAMPLE	REMARK
=====	=====	=====
LUNAME	NYX1GW01	Name of the DB2 Connect LU
SECURITY_OUT	P	
ENCRYPTPSWDS	N	
USERNAMES	0	

Updating *SYSIBM.IPNAMES*

If you want to permit inbound database connection requests for TCP/IP nodes, you can use an SQL command such as the following to update this table:

```
INSERT INTO SYSIBM.IPNAMES (LINKNAME) VALUES('      ')
```

Configuring DB2 for MVS/ESA

Before you can use the DB2 Connect connection, your DB2 for MVS/ESA Administrator must configure DB2 for MVS/ESA to permit connections from the DB2 Connect workstation. To configure DB2 for MVS/ESA, the following tables need to be updated:

- SYSIBM.SYSUSERNAMES
- SYSIBM.SYSLUNAMES
- SYSIBM.SYSLUMODES

The sections that follow contain examples of commands to update these tables. Work with your DB2 Administrator to determine the options required for your DB2 for MVS/ESA system.

Updating *SYSIBM.SYSUSERNAMES*

If you want to use secondary authorization IDs, you can use the following SQL command to update this table:

```
INSERT INTO SYSIBM.SYSUSERNAMES VALUES('I','ADBUSER','NYX1GW01',' ',' ');
```

Result:

COLUMN =====	EXAMPLE =====	REMARK =====
Type	I	
Authid	ADBUSER	
LU Name	NYX1GW01	Name of the DB2 Connect LU
NewAuthID	(blank)	
Password	(blank)	

USERNAME types are: O (outbound translation), I (inbound translation), B (both inbound and outbound) and blank (no authorization ids are translated, and no password is sent to the server).

Updating *SYSIBM.SYSLUNAMES*

If you want to restrict access by LU name, you can use an SQL command such as the following to update this table:

```
INSERT INTO SYSIBM.SYSLUNAMES VALUES('NYX1GW01','IBMRDB','A','N',' ','I');
```

Result:

COLUMN =====	EXAMPLE =====	REMARK =====
LUNAME	NYX1GW01	Name of the DB2 Connect LU
SYSMODENAME	IBMRDB	
USERSECURITY	A	
ENCRYPTPSWDS	N	
MODESELECT		
USERNAMES	I	

Alternatively, just insert a blank row, and this will allow any incoming DB2 Connect LUs to be accepted.

Updating *SYSIBM.SYSLUMODES*

You can use an SQL command such as the following to update this table:

```
INSERT INTO SYSIBM.SYSLUMODES VALUES ('NYX1', 'IBMRDB', 150, 'Y');
```

where:

- NYX1 = PU name of server involved
- IBMRDB = name of VTAM logon mode
- 150 = max. number of conversations
- Y = number of sessions preallocated at startup. This can also be left as N, or blank (the default) for deferred at startup.

Configuring TCP/IP for DB2 for OS/390

This section tells you how to configure TCP/IP communications between your DB2 Connect workstation and DRDA servers running DB2 for OS/390 Version 5.1. It assumes that:

- You are connecting to a single host database via TCP/IP. Multiple host connections will be handled in exactly the same way, although the *port number* and *service number* required in each case may be different.
- The target database resides on DB2 for OS/390 Version 5.1.
- All the necessary software prerequisites are installed.
- DB2 clients have been set up as required.

Note: If you want to know how to set up DRDA *two-phase commit* over TCP/IP connections, see Chapter 23, “Setting up Two-phase Commit using TCP/IP” on page 215. This chapter also addresses some migration considerations.

Also, if you do not know this information for the OS/390 or MVS/ESA system that you are connecting to, consult your system administrator for:

- The host name. You can obtain the host's IP address by entering at the host:

```
TSO NETSTAT HOME
```

- Port numbers available and defined to the DB2 for OS/390 Distributed Data Facility (DDF). You can check these by looking at DDF startup messages in the system log. For example:

```
DSNL004I  DDF START COMPLETE
          DDF START COMPLETE
          LOCATION  NEW_YORK3
          LU        SPIFNET.NYM2DB2
          GENERICLU -NONE
          DOMAIN   mvshost.spifnet.com
          TCPPORT  446
          RESPORT  5020
```

These examples use the default port number 446 which has been defined for DRDA.

Collecting Information

Before you can use DB2 Connect over a TCP/IP connection, you must collect some information about both the DRDA host and the DB2 Connect workstation. For each DRDA host server that you are connecting to via TCP/IP, you must know in advance:

- The location of the TCP/IP services file at the DB2 Connect workstation:
 - On a UNIX system, the location of this file is usually `/etc/services`.
 - On OS/2 Warp with IBM TCP/IP for OS/2 Version 3 the location of this file is usually `\mptn\etc\services`. If you have LAPS and TCP/IP, the location is usually `\tcpi\etc\services`.
 - On Windows NT, the location of this file may be `\winnt\system32\drivers\etc\services` or `\tcpi\etc\services`.
- The location of the TCP/IP hosts file at the DB2 Connect workstation:
 - On a UNIX system, the location of this file is usually `/etc/hosts`.
 - On OS/2 Warp with MPTN and IBM TCP/IP for OS/2 Version 3, the location of this file is usually `\mptn\etc\hosts`. If you have LAPS and TCP/IP, the location is usually `\tcpi\etc\hosts`.
 - On Windows NT, the location of this file may be `\winnt35\system32\drivers\etc\hosts`, `\winnt\system32\drivers\etc\hosts`, or `\tcpi\etc\hosts`.

You may use a *Domain Name Server* to avoid maintaining this file on multiple systems.

- The locations of the equivalent files at the target DB2 for OS/390 host.
- The TCP/IP *port number* defined to DB2 for OS/390. (Note that the associated *service name* information is not exchanged between the DB2 Connect workstation and DB2 for OS/390). Port number 446 has been registered for DRDA, and this is the port number used in these examples.
- The TCP/IP addresses and host names for both the host and the DB2 Connect workstation.
- The *target database name* of the database you will connect to at the DB2 for OS/390 host. (This is the same as the *LOCATION NAME* of the database).
- The user ID and password to be used when issuing *CONNECT* requests for the database at the host.

Refer to your local network administrator and your DB2 for OS/390 administrator for help getting this information. Use one copy of the example work sheet, Table 45 on page 463, to plan *each* TCP/IP connection between DB2 Connect and a DRDA host server.

Sample Network Scenario: Figure 30 illustrates the example scenario. The values used in this diagram correspond to those used in Table 45 on page 463.

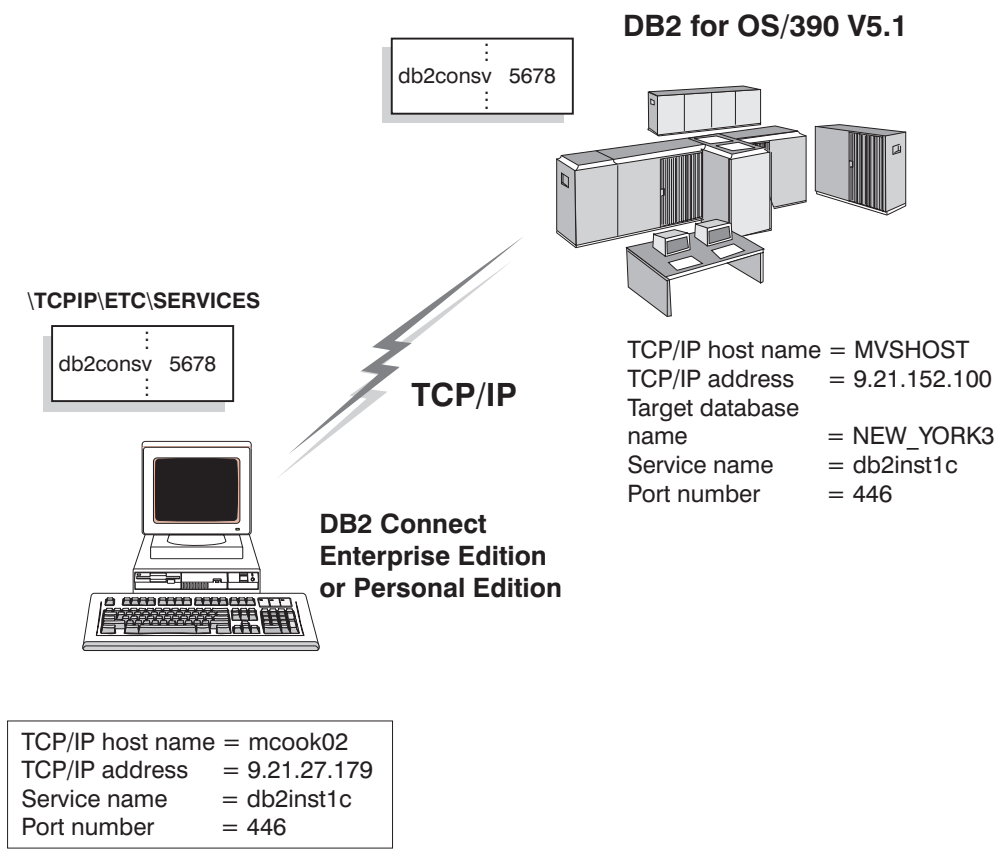


Figure 30. Sample scenario for TCP/IP connection to DB2 for OS/390 host

Example Worksheet

Table 45. Example Worksheet for Planning TCP/IP Connections to DB2 for OS/390			
Ref.	Description	Sample Value	Your Value
User Information			
TCP-1	User Name	A.D.B.User	
TCP-2	Contact Info	(123)-456-7890	
TCP-5	User ID	ADBUSER	
TCP-6	Database Type	db2390	
TCP-7	Connection type (must be TCPIP).	TCPIP	TCPIP
Network Elements at the Host			
TCP-8	Host name	MVSHOST	
TCP-9	Host IP address	9.21.152.100	
TCP-10	Service name	db2inst1c	
TCP-11	Port number	446	
TCP-12	Target database name	NEW_YORK3	
TCP-13	User ID		
TCP-14	Password		
Network Elements at the DB2 Connect Workstation			
TCP-18	Host name	mcook02	
TCP-19	IP address	9.21.27.179	
TCP-20	Service name	db2inst1c	
TCP-21	Port number	446	
DB2 Directory Entries (at the DB2 Connect workstation)			
TCP-30	Node name	MVSIPNOD	
TCP-31	Database name	nyc3	
TCP-32	Database alias	mvsipdb1	
TCP-33	DCS database name	nyc3	
TCP-34	TM_DATABASE	1ST_CONN (recommended)	

Notes:

1. If a DB2 Universal Database server is also installed on the same workstation as DB2 Connect, then the port numbers and service names defined should be the same: they are shared by DB2 Connect and DB2 Universal Database.
2. *Target database name* (item 12) is the DB2 for OS/390 *LOCATION NAME*.
3. TM_DATABASE is required only if you will use two-phase commit.
4. To obtain the host's IP address (item 9), enter at the host:

```
TSO NETSTAT HOME
```

5. To obtain the port number (item 11), look for DSNL004I in the DB2 master address space or system log. Port number 446 has been registered for DRDA, and this is the port number used in these examples.

Configuring the TCP/IP Connection

Use the manual steps in this section to complete the configuration and make the connection.

Complete the Worksheet: Complete a copy of the example worksheet for each TCP/IP host:

- 1 Fill in the values to be used for the TCP/IP address and hostname of the DB2 for OS/390 host (items 8 and 9).
- 2 Fill in the values to be used for the TCP/IP address and hostname of the DB2 Connect workstation (items 18 and 19).
- 3 Determine the *port number* or *service name* to be used for the connection (items 10 and 11, or 20 and 21).
- 4 Determine the host database name that you will connect to (the DB2 for OS/390 *LOCATION name* (item 12).
- 5 Determine the values to be used for *user ID* and *PASSWORD* when connecting to the host database.
- 6 Determine the value to be used for **TM_DATABASE** at the DB2 Connect workstation, item 34. In most cases we recommend **1ST_CONN** (the default is **NULL**).

Note that some additional planning considerations may apply, for example if you are using DCE. See the *DB2 Connect User's Guide*.

Update the DB2 for OS/390 Host: At your DB2 for OS/390 host:

- 1 Verify the *host address* or the *host name*.
- 2 Verify the *port number* or the *service name*.
- 3 Update the *SERVICES* file with the correct port number and service name if necessary.
- 4 Update the *HOSTS* file (or the Domain Name Server used by the DB2 for OS/390 system) with the hostname and IP address of the DB2 Connect workstation if necessary.
- 5 Ensure the new definitions are active before attempting to test the connection. Refer to your host network administrator or change control staff if necessary.

- 6 Check with the DB2 for OS/390 administrator that you have a valid user ID, password, and database *LOCATION NAME*.
- 7 *PING* the DB2 Connect workstation, using the correct port number if that option is supported by TCP/IP on the host system. For example:

```
ping remote_host_name -p port_number
```

Update the DB2 Connect Workstation: At your DB2 Connect workstation:

- 1 Verify the *host name*. Enter the *hostname* command at a system prompt. This will return the TCP/IP host name for the DB2 Connect workstation.
- 2 Verify the *host address*. Use the *ping* command, for example:

```
ping myhost
```

This will return the host address.
- 3 Verify the *port number*. Examine the TCP/IP services file on the workstation (see above for location information).
- 4 Verify the *service name*. Same as the previous step.
- 5 Update the services file with the correct port number and service name if necessary.
- 6 Update the hosts file (or the Domain Name Server used by the DB2 Connect workstation) with the hostname and IP address of the DB2 for OS/390 system. This may not need to be done if it has already been defined there. Check with your network administrator.
- 7 Ensure the new definitions are active before attempting to test the connection. Refer to your local network administrator or change control staff if necessary.
- 8 Check with the local DB2 administrator that you have a valid user ID and password for use when accessing DB2 Connect. You will need this in order to update the local Database Manager Configuration, as well as the DB2 Database, Node, and Data Connection Services directories, prior to issuing a *CONNECT* statement for the host database.
- 9 *PING* the DB2 for OS/390 host, using the correct port number if that option is supported by TCP/IP on the DB2 Connect workstation:

```
ping MVS_host_name -p port_number
```

Update the DB2 Connect Configuration: At a command line prompt, issue the following command to update the Database Manager Configuration:

```
db2 update dbm config using tm_database "1st_conn"
```

where *TM_DATABASE* can have one of the following settings:

- *1ST_CONN* the first database that a connection is established to will be used as the Transaction Manager database for transactions. If this option is used, then the first database connected to must be either a DB2 Universal Database Version 5

database, or a DB2 for OS/390 Version 5.1 database. This is the recommended setting.

- *database_name* the named database that is connected to will be used. If this option is used, we recommend that the named database should be either a DB2 Universal Database Version 5 database, or a DB2 for OS/390 Version 5.1 database.

Note: *TM_DATABASE* cannot be left to default. If no *TM_DATABASE* value is provided then any *CONNECT* issued will fail with *SQLCODE 865*. If you want more information about *TM_DATABASE* options, refer to *Administration Guide*. If you want to know how to set up *DRDA Two-phase commit* over *TCP/IP* connections, refer to Chapter 23, “Setting up Two-phase Commit using *TCP/IP*” on page 215.

Update the DB2 Connect Directories

- 1 At a command line prompt, issue the following command to catalog the DB2 for MVS/ESA node:

```
db2 catalog tcpip node MVSIPNOD remote MVSHOST server db2inst1c
```

where:

- *MVSIPNOD* is the local DB2 Connect node name to be used for the host.
- *MVSHOST* is the eight-character *TCP/IP* host name for the DB2 for OS/390 host. *TCP/IP* name lookup must resolve this name to the correct destination Internet address, either through an entry in the local *hostsfile* on the DB2 Connect workstation, or via a *Domain Name Server (DNS)* referenced by the DB2 Connect workstation.
- *db2inst1c* is either the *service name* or the *port number* defined at the DB2 Connect workstation. This must resolve to the same port number as that defined for use by DB2 Connect at the DB2 for MVS/ESA host.

- 2 Create entries for the Database and Data Connection Services directories, as follows (this shows the values used in the sample worksheet):

```
db2 catalog dcs database NYC3 as NEW_YORK3
```

```
db2 catalog database NYC3 as MVSIPDB1 at node MVSIPNOD authentication dcs
```

where:

- *MVSIPDB1* is the DB2 Connect database alias for the host database.
- *NYC3* is the DB2 Connect database *name* for the host database.
- *MVSIPNOD* is the DB2 Connect node name for the host.
- *NEW_YORK3* is the DB2 for OS/390 *LOCATION NAME* for the target database.

CONNECT and BIND: Finally, connect to the DRDA Server and bind the utilities and applications to the DRDA server using commands similar to the following in the command line processor:


```
connect to MVSIPDB1 user USERID using PASSWORD
bind path@ddcsmvs.lst blocking all
      sqlerror continue messages ddcsmvs.msg grant public

disconnect all
```

These commands are described in detail in the *Command Reference*.

Preparing DB2 for AS/400 for DB2 Connect

DB2 Connect gives applications on remote systems access to data in your DB2 for AS/400 system. In order to set up the connection, the person installing DB2 Connect needs the following information:

- The local network name. You can get this information by entering **DSPNETA**.
- The local adapter address. You can get this information by entering **WRKLIND (*trlan)**.
- The mode name. You can get a list of mode names by entering **WRKMODD**. If the mode IBMRDB has been defined on your OS/400 system, you should use it.
- The local control point name. You can get this information by entering **DSPNETA**.
- The remote transaction program name. The default (defined by DRDA) is X'07'6DB (X'07F6C4C2'). The default is always used by DB2 for AS/400. If entering a hexadecimal number is not convenient, an alias is QCNTEDDM.
- The relational database name. You can get this information by entering **DSPRDBDIRE**. This will display a list. The line containing *LOCAL in the Remote Location column identifies the RDBNAME which must be defined to the client.

Here is an example screen:

```

Display Relational Database Directory Entries

Position to . . . . .

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

Option  Relational      Remote
        Database       Location  Text
-----  -
-       DLHX              RCHAS2FA
-       JORMT2FA         JORMT2FA
-       JORMT4FD         JORMT4FD
-       JOSNAR7B        RCHASR7B
-       RCHASR7B        *LOCAL
-       RCHASR7C        RCHASR7C
-       RCH2PDH3        RCHASDH3
-       R7BDH3SNA       RCH2PDH3
-       RCHASDH3        RCHASDH3

```

When you have obtained these parameters from OS/400, enter your values into the worksheet that follows:

Table 46. Configuration Parameters from OS/400

Item	Parameter	Example	Your value
A-1	Local network name	SPIFNET	
A-2	Local adapter address	400009451902	
A-3	Mode name	IBMRDB	
A-4	Local control point name	SYD2101A	
A-5	Remote transaction program	X'07F6C4C2' (default)	
A-6	Relational database name	NEW_YORK3	

For further information about how to set up DB2 for AS/400 as an application server, refer to the online *DB2 Connectivity Supplement* provided with your DB2 Connect product.

More detailed information can also be found in the *DRDA Connectivity Guide*.

Preparing DB2 for VSE & VM

For information about how to set up DB2 for VSE & VM as an application server, refer to the online *DB2 Connectivity Supplement*.

More detailed information can also be found in the *DRDA Connectivity Guide*.

Part 9. Appendixes

Appendix A. Obtaining Information

Information on the DB2 product is available in several different formats:

- Online Help
- PostScript (.ps)
- HTML (.htm)

All books described in this section are also available in printed form. 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.

How the DB2 Library Is Structured

The DB2 Universal Database library consists of SmartGuides, online help, and books. This section describes the information that is provided, and how to access it.

To help you access product information online, DB2 provides the Information Center on OS/2, Windows 95, and the Windows NT operating systems. You can view task information, DB2 books, troubleshooting information, sample programs, and DB2 information on the Web. "About the Information Center" on page 478 has more details.

SmartGuides

SmartGuides help you complete some administration tasks by taking you through each task one step at a time. SmartGuides are available on OS/2, Windows 95, and the Windows NT operating systems. The following table lists the SmartGuides.

SmartGuide	Helps you to...	How to Access...
<i>Add Database</i>	Catalog a database on a client workstation.	From the Client Configuration Assistant, click on Add .
<i>Create Database</i>	Create a database, and to perform some basic configuration tasks.	From the Control Center, click with the right mouse button on the Databases icon and select Create->New .
<i>Performance Configuration</i>	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 performance .

SmartGuide	Helps you to...	How to Access...
<i>Backup Database</i>	Determine, create, and schedule a backup plan.	From the Control Center, click with the right mouse button on the database you want to backup and select Backup->Database using SmartGuide .
<i>Restore Database</i>	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 .
<i>Create Table</i>	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 .
<i>Create Table Space</i>	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 .

Online Help

Online help is available with all DB2 components. The following table describes the various types of help.

Type of Help	Contents	How to Access...
<i>Command Help</i>	Explains the syntax of commands in the command line processor.	From the command line processor in interactive mode, enter: <i>? command</i> where <i>command</i> is a keyword or the entire command. For example, <i>? catalog</i> displays help for all the CATALOG commands, whereas <i>? catalog database</i> displays help for the CATALOG DATABASE command.
<i>Control Center Help</i>	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 on the Help push button or press the F1 key.

Type of Help	Contents	How to Access...
<i>Message Help</i>	Describes the cause of a message number, and any action you should take.	<p>From the command line processor in interactive mode, enter:</p> <p>? <i>message number</i></p> <p>where <i>message number</i> is a valid message number.</p> <p>For example, ? SQL30081 displays help about the SQL30081 message.</p> <p>To view message help one screen at a time, enter:</p> <p>? <i>XXXnnnnn</i> more</p> <p>where <i>XXX</i> is the message prefix, such as SQL, and <i>nnnnn</i> is the message number, such as 30081.</p> <p>To save message help in a file, enter:</p> <p>? <i>XXXnnnnn</i> > <i>filename.ext</i></p> <p>where <i>filename.ext</i> is the file where you want to save the message help.</p> <p>Note: On UNIX-based systems, enter:</p> <p>\? <i>XXXnnnnn</i> more or</p> <p>\? <i>XXXnnnnn</i> > <i>filename.ext</i></p>
<i>SQL Help</i>	Explains the syntax of SQL statements.	<p>From the command line processor in interactive mode, enter:</p> <p>help <i>statement</i></p> <p>where <i>statement</i> is an SQL statement.</p> <p>For example, help SELECT displays help about the SELECT statement.</p>
<i>SQLSTATE Help</i>	Explains SQL states and class codes.	<p>From the command line processor in interactive mode, enter:</p> <p>? <i>sqlstate</i> or ? <i>class-code</i></p> <p>where <i>sqlstate</i> is a valid five digit SQL state and <i>class-code</i> is a valid two digit class code.</p> <p>For example, ? 08003 displays help for the 08003 SQL state, whereas ? 08 displays help for the 08 class code.</p>

DB2 Books

The table in this section lists the DB2 books. They are divided into two groups:

- Cross-platform books: These books are for DB2 on any of the supported platforms.
- Platform-specific books: These books are for DB2 on a specific platform. For example, there is a separate *Quick Beginnings* book for DB2 on OS/2, Windows NT, and UNIX-based operating systems.

Most books are available in HTML and PostScript format, and in hardcopy that you can order from IBM. The exceptions are noted in the table.

You can obtain DB2 books and access information in a variety of different ways:

- View** To view an HTML book, you can do the following:
- If you are running DB2 administration tools on OS/2, Windows 95, or the Windows NT operating systems, you can use the Information Center. “About the Information Center” on page 478 has more details.
 - Use the open file function of the Web browser supplied by DB2 (or one of your own) to open the following page:
`sqllib/doc/html/index.htm`
The page contains descriptions of and links to the DB2 books. The path is located on the drive where DB2 is installed.
You can also 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.
- Search** 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.
 - 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. “About the Information Center” on page 478 has more details.
- Print** To print a book on a PostScript printer, look for the file name shown in the table.
- Order** To order a hardcopy book from IBM, use the form number.

Book Name	Book Description	Form Number File Name
Cross-Platform Books		
<i>Administration Getting Started</i>	Introduces basic DB2 database administration concepts and tasks, and walks you through the primary administrative tasks.	S10J-8154 db2k0x50
<i>Administration Guide</i>	Contains information required to design, implement, and maintain a database to be accessed either locally or in a client/server environment.	S10J-8157 db2d0x50
<i>API Reference</i>	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.	S10J-8167 db2b0x50
<i>CLI Guide and Reference</i>	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.	S10J-8159 db2l0x50
<i>Command Reference</i>	Explains how to use the command line processor, and describes the DB2 commands you can use to manage your database.	S10J-8166 db2n0x50
<i>DB2 Connect Enterprise Edition Quick Beginnings</i>	Provides planning, installing, configuring, and using information for DB2 Connect Enterprise Edition. Also contains installation and setup information for all supported clients.	S10J-7888 db2cyx50
<i>DB2 Connect Personal Edition Quick Beginnings</i>	Provides planning, installing, configuring, and using information for DB2 Connect Personal Edition.	S10J-8162 db2c1x50
<i>DB2 Connect User's Guide</i>	Provides concepts, programming and general using information about the DB2 Connect products.	S10J-8163 db2c0x50
<i>DB2 Connectivity Supplement</i>	Provides setup and reference information for customers who want 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 customers who want to use DRDA Application Servers with DB2 Connect (formerly DDCS) application requesters. Note: Available in HTML and PostScript formats only.	No form number db2h1x50
<i>Embedded SQL Programming Guide</i>	Explains how to develop applications that access DB2 databases using embedded SQL, and includes discussions about programming techniques and performance considerations.	S10J-8158 db2a0x50
<i>Glossary</i>	Provides a comprehensive list of all DB2 terms and definitions. Note: Available in HTML format only.	No form number db2t0x50

Book Name	Book Description	Form Number File Name
<i>Installing and Configuring DB2 Clients</i>	Provides installation and setup information for all DB2 Client Application Enablers and DB2 Software Developer's Kits. Note: Available in HTML and PostScript formats only.	No form number db2iyx50
<i>Master Index</i>	Contains a cross reference to the major topics covered in the DB2 library. Note: Available in PostScript format and hardcopy only.	S10J-8170 db2w0x50
<i>Message Reference</i>	Lists messages and codes issued by DB2, and describes the actions you should take.	S10J-8168 db2m0x50
<i>Replication Guide and Reference</i>	Provides planning, configuring, administering, and using information for the IBM Replication tools supplied with DB2.	S95H-0999 db2e0x50
<i>Road Map to DB2 Programming</i>	Introduces the different ways your applications can access DB2, describes key DB2 features you can use in your applications, and points to detailed sources of information for DB2 programming.	S10J-8155 db2u0x50
<i>SQL Getting Started</i>	Introduces SQL concepts, and provides examples for many constructs and tasks.	S10J-8156 db2y0x50
<i>SQL Reference</i>	Describes SQL syntax, semantics, and the rules of the language. Also includes information about release-to-release incompatibilities, product limits, and catalog views.	S10J-8165 db2s0x50
<i>System Monitor Guide and Reference</i>	Describes how to collect different kinds of information about your database and the database manager. Explains how you can use the information to understand database activity, improve performance, and determine the cause of problems.	S10J-8164 db2f0x50
<i>Troubleshooting Guide</i>	Helps you determine the source of errors, recover from problems, and use diagnostic tools in consultation with DB2 Customer Service.	S10J-8169 db2p0x50
<i>What's New</i>	Describes the new features, functions, and enhancements in DB2 Universal Database. Note: Available in HTML and PostScript formats only.	No form number db2q0x50
Platform-Specific Books		
<i>Building Applications for UNIX Environments</i>	Provides environment setup information and step-by-step instructions to compile, link, and run DB2 applications on a UNIX system.	S10J-8161 db2axx50
<i>Building Applications for Windows and OS/2 Environments</i>	Provides environment setup information and step-by-step instructions to compile, link, and run DB2 applications on a Windows or OS/2 system.	S10J-8160 db2a1x50

Book Name	Book Description	Form Number File Name
<i>DB2 Extended Enterprise Edition Quick Beginnings</i>	Provides planning, installing, configuring, and using information for DB2 Universal Database Extended Enterprise Edition for AIX.	S72H-9620 db2v3x50
<i>DB2 Personal Edition Quick Beginnings</i>	Provides planning, installing, configuring, and using information for DB2 Universal Database Personal Edition on OS/2, Windows 95, and the Windows NT operating systems.	S10J-8150 db2i1x50
<i>DB2 SDK for Macintosh Building Your Applications</i>	Provides environment setup information and step-by-step instructions to compile, link, and run DB2 applications on a Macintosh system. Note: Available in PostScript format and hardcopy for DB2 Version 2.1.2 only.	S50H-0528 sqla7x02
<i>DB2 SDK for SCO OpenServer Building Your Applications</i>	Provides environment setup information and step-by-step instructions to compile, link, and run DB2 applications on a SCO OpenServer system. Note: Available for DB2 Version 2.1.2 only.	S89H-3242 sqla9x02
<i>DB2 SDK for Silicon Graphics IRIX Building Your Applications</i>	Provides environment setup information and step-by-step instructions to compile, link, and run DB2 applications on a Silicon Graphics system. Note: Available in PostScript format and hardcopy for DB2 Version 2.1.2 only.	S89H-4032 sqlaax02
<i>DB2 SDK for SINIX Building Your Applications</i>	Provides environment setup information and step-by-step instructions to compile, link, and run DB2 applications on a SINIX system. Note: Available in PostScript format and hardcopy for DB2 Version 2.1.2 only.	S50H-0530 sqla8x00
<i>Quick Beginnings for OS/2</i>	Provides planning, installing, configuring, and using information for DB2 Universal Database on OS/2. Also contains installing and setup information for all supported clients.	S10J-8147 db2i2x50
<i>Quick Beginnings for UNIX</i>	Provides planning, installing, configuring, and using information for DB2 Universal Database on UNIX-based platforms. Also contains installing and setup information for all supported clients.	S10J-8148 db2ixx50
<i>Quick Beginnings for Windows NT</i>	Provides planning, installing, configuring, and using information for DB2 Universal Database on the Windows NT operating system. Also contains installing and setup information for all supported clients.	S10J-8149 db2i6x50

Notes:

1. The character in the sixth position of the file name indicates the language of a book. For example, the file name db2d0e50 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	Language	Identifier
Brazilian Portuguese	B	Hungarian	H
Bulgarian	U	Italian	I
Czech	X	Norwegian	N
Danish	D	Polish	P
English	E	Russian	R
Finnish	Y	Slovenian	L
French	F	Spanish	Z
German	G	Swedish	S

2. For late breaking information that could not be included in the DB2 books, see the README file. Each DB2 product includes a README file which you can find in the directory where the product is installed.

About the Information Center

The Information Center provides quick access to DB2 product information. The Information Center is available on OS/2, Windows 95, and the Windows NT operating systems. You must install the DB2 administration tools to see the Information Center.

Depending on your system, you can access the Information Center from the:

- Main product folder
- Toolbar in the Control Center
- Windows Start menu.

The Information Center provides the following kinds of information. Click on 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 search capabilities so you can look for specific topics, and filter capabilities to limit the scope of your searches.

Ordering the Printed DB2 Books

You can also order the printed DB2 manuals. There are two sets of books available. The form number for the entire set of DB2 books is SB0F-8915-00. The form number for the books listed under the heading "Cross-Platform Books" is SB0F-8914-00.

Printing the PostScript Books

If you prefer to have printed copies of the manuals, you can uncompress and print PostScript versions as follows.

On UNIX systems:

- 1 Use the instructions in "Step 3. Mounting the CD-ROM" on page 58 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 Uncompress and print the manual you require using the command for UNIX platforms:

- For AIX:

```
zcat filename | qprt -P PSprinter_queue
```

- For HP-UX or Solaris:

```
zcat filename | lp -d PSprinter_queue
```

where *filename* is the name of 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 *Quick Beginnings for UNIX* on AIX, you can use the following command:

```
zcat /cdrom/doc/en/ps/db2ixe50.ps.Z | qprt -P ps1
```

On OS/2, Windows 95, and Windows NT systems:

- 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:*language*\books\ps directory, where x: is the letter representing the CD-ROM drive and where *language* is the two-character country code that represents your language (for example, EN for English). Table 47 on page 484 lists the code for each available language.
- 2 Uncompress the file by running the book name. 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
```



Specify the full-path name for the file you intend to print.

Viewing Online Books

The manuals included with this product are in Hypertext Markup Language (HTML) softcopy format. Softcopy format enables you to search or browse the information more easily, using hypertext links for related information. It also makes it easier to share the library across your site.

Although you can use any HTML Version 3.2-compliant browser to view the online books, a copy of the Netscape browser is available on the Portfolio CD-ROM provided with DB2 Universal Database Version 5; you can optionally install it on your system.

Installing the Netscape Browser

If you do not have an HTML Version 3.2-compliant browser installed on your system, you can install the Netscape browser from the Portfolio CD-ROM.

To install Netscape, insert the Portfolio CD-ROM into the CD-ROM drive. The Netscape installation automatically begins. Follow the instructions provided on the panels to install the product. If the installation does not automatically begin, see the README.TXT file located at the root directory on the CD-ROM for installation instructions.

To install Netscape, use the following instructions:

- 1** Mount the Portfolio CD-ROM.
- 2** Refer to the README.TXT file located at the root directory the CD-ROM for installation instructions.

The README.TXT file also contains information about the products.

Appendix B. National Language Support (NLS)

This appendix contains information about configuring national language support for the DB2 Connect product, and includes information on:

- Which languages are supported by DB2 Connect Enterprise Edition and DB2 Connect Personal Edition.
- How DB2 Connect handles the conversion of data between unlike systems.
- How to customize your DB2 Connect workstation for your particular national language environment.
- How to customize your host Coded Character Set Identifier (CCSID) setting.

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_05_00/msg/%L
DB2 for HP-UX	/opt/IBMDB2/V5.0/msg/%L
DB2 for Solaris	/opt/IBMDB2/V5.0/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. You can, however, change these settings after installing DB2. This includes changing 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 you install the DBCS (double-byte character set) version of DB2 on the corresponding DBCS version of the operating system. Also, note that DB2 national language support may not produce the expected results if the country, code page and regional settings are incorrect for the intended language.

Table 47 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\win16\install* would be *x:\EN\win16\install* for English.

Table 47. Languages and Code Pages

Country Code	Language	Country Code	Language
BG	Bulgaria	IL	Hebrew
BR	Brazilian Portuguese	IT	Italian
CN	Simplified Chinese (PRC)	JP	Japanese
CZ	Czech	KR	Korean
DE	German	NO	Norwegian
DK	Danish	PL	Polish
ES	Spain	RU	Russian
FI	Finnish	SE	Swedish
FR	French	SI	Slovenian
GR	Greece	TW	Traditional Chinese (Taiwan)
HU	Hungary	EN	English

Date and Time Formats

The character string representation of date and time formats is the default format of datetime values associated with the country code of the application. This default format may be overridden by specification of the *F* format option when the program is precompiled or bound to the database.

The following is a description of the input and output formats for date and time:

- Input Time Format
 - There is no default input time format
 - All time formats are allowed as input for all country codes.
- Output Time Format
 - The default output time format is equal to the local time format.
- Input Date Format
 - There is no default input date format
 - Where the local format for date conflicts with an ISO, JIS, EUR, or USA date format, the local format is recognized for date input. For example, see the UK entry in Table 48.
- Output Date Format
 - The default output date format is shown in Table 48.

Note: Table 48 also shows a listing of the string formats for the various country codes.

Country Code	Local Date Format	Local Time Format	Default Output Date Format	Input Date Formats
785 Arabic	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
001 Australia (1)	mm-dd-yyyy	JIS	LOC	LOC, USA, EUR, ISO
061 Australia	dd-mm-yyyy	JIS	LOC	LOC, USA, EUR, ISO
032 Belgium	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
055 Brazil	dd.mm.yy	JIS	LOC	LOC, USA, EUR, ISO
359 Bulgaria	dd.mm.yyyy	JIS	EUR	LOC, USA, EUR, ISO

Table 48 (Page 2 of 3). Date and Time Formats by Country Code

Country Code	Local Date Format	Local Time Format	Default Output Date Format	Input Date Formats
001 Canada	mm-dd-yyyy	JIS	USA	LOC, USA, EUR, ISO
002 Canada (French)	dd-mm-yyyy	ISO	ISO	LOC, USA, EUR, ISO
385 Croatia	yyyy-mm-dd	JIS	ISO	LOC, USA, EUR, ISO
042 Czech Republic	yyyy-mm-dd	JIS	ISO	LOC, USA, EUR, ISO
045 Denmark	dd-mm-yyyy	ISO	ISO	LOC, USA, EUR, ISO
358 Finland	dd/mm/yyyy	ISO	EUR	LOC, EUR, ISO
389 FYR Macedonia	dd.mm.yyyy	JIS	EUR	LOC, USA, EUR, ISO
033 France	dd/mm/yyyy	JIS	EUR	LOC, EUR, ISO
049 Germany	dd/mm/yyyy	ISO	ISO	LOC, EUR, ISO
030 Greece	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
036 Hungary	yyyy-mm-dd	JIS	ISO	LOC, USA, EUR, ISO
354 Iceland	dd-mm-yyyy	JIS	LOC	LOC, USA, EUR, ISO
972 Israel	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
039 Italy	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
081 Japan	mm/dd/yyyy	JIS	ISO	LOC, USA, EUR, ISO
082 Korea	mm/dd/yyyy	JIS	ISO	LOC, USA, EUR, ISO
001 Latin America (1)	mm-dd-yyyy	JIS	LOC	LOC, USA, EUR, ISO
003 Latin America	dd-mm-yyyy	JIS	LOC	LOC, EUR, ISO
031 Netherlands	dd-mm-yyyy	JIS	LOC	LOC, USA, EUR, ISO
047 Norway	dd/mm/yyyy	ISO	EUR	LOC, EUR, ISO
048 Poland	yyyy-mm-dd	JIS	ISO	LOC, USA, EUR, ISO
351 Portugal	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
086 PRC	mm/dd/yyyy	JIS	ISO	LOC, USA, EUR, ISO

Table 48 (Page 3 of 3). Date and Time Formats by Country Code

Country Code	Local Date Format	Local Time Format	Default Output Date Format	Input Date Formats
040 Romania	yyyy-mm-dd	JIS	ISO	LOC, USA, EUR, ISO
007 Russia	dd/mm/yyyy	ISO	LOC	LOC, EUR, ISO
381 Serbia/Montenegro	yyyy-mm-dd	JIS	ISO	LOC, USA, EUR, ISO
042 Slovakia	yyyy-mm-dd	JIS	ISO	LOC, USA, EUR, ISO
386 Slovenia	yyyy-mm-dd	JIS	ISO	LOC, USA, EUR, ISO
034 Spain	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
046 Sweden	dd/mm/yyyy	ISO	ISO	LOC, EUR, ISO
041 Switzerland	dd/mm/yyyy	ISO	EUR	LOC, EUR, ISO
088 Taiwan	mm-dd-yyyy	JIS	ISO	LOC, USA, EUR, ISO
066 Thailand (2)	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
090 Turkey	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
044 UK	dd/mm/yyyy	JIS	LOC	LOC, EUR, ISO
001 USA	mm-dd-yyyy	JIS	USA	LOC, USA, EUR, ISO
Notes:				
1. Countries using the default C locale are assigned country code 001.				
2. yyyy is in Buddhist era: Gregorian + 543 years.				

Conversion of Character Data

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

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

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

For example, if DB2 Connect is used to access DB2 for OS/390 or DB2/MVS data, the following happens:

1. DB2 Connect sends an SQL statement and input data to OS/390 or MVS.
2. DB2 for OS/390 converts the data to an EBCDIC CCSID and processes it.
3. DB2 for OS/390 sends the result back to the DB2 Connect workstation.
4. DB2 Connect converts the result to an ASCII or ISO code page and returns it to the user.

The table that follows shows the conversions that are supported between code pages (on the workstation) and CCSIDs (on the host).

For more detailed information about supported code page conversions, refer to the *Administration Guide*.

Table 49. Workstation Code Page to Host CCSID Conversion

Host CCSIDs	Code Page	Countries
037, 273, 277, 278, 280, 284, 285, 297, 500, 871	437, 819, 850, 860, 863, 1004, 1051, 1252, 1275	Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Iceland, Italy, Latin America, Netherlands, New Zealand, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, UK, USA
875, 423	813, 869, 1253, 1280	Greece
870	852, 912, 1250, 1282	Croatia, Czech Republic, Hungary, Poland, Romania, Serbia/Montenegro (Latin), Slovakia, Slovenia
1025	855, 915, 1251, 1283	Bulgaria, FYR Macedonia, Serbia/Montenegro (Cyrillic)
1026	857, 920, 1254, 1281	Turkey
424	862, 916, 1255	Israel
420	864, 1046, 1089, 1256	Arabic countries
1025	866, 915, 1251, 1283	Russia
838	874	Thailand
930, 939, 1027, 5026, 5035	932, 942, 943, 954, 5039	Japan
937	938, 948, 950, 964	Taiwan
933	949, 970, 1363	Korea
935	1381, 1383	People's Republic of China

Note that code page 1004 is supported as code page 1252.

In general, data can be converted from a code page to a CCSID and back again to the same code page with no change. The following are the only exceptions to that rule:

- In double-byte character set (DBCS) code pages, some data containing user-defined characters may be lost.
- For single-byte code pages defined within mixed-byte code pages, some characters may be mapped to substitution characters and then lost when the data is converted back to the original code page.

Customizing Language Support

By default, DB2 Connect queries the current code page settings for your system and the database. This section tells you how the conversion is checked, gives examples, and tells you how you can customize your DB2 Connect Personal Edition workstation.

Summary

When DB2 Connect connects to a database, the client's code page is passed to the host, which validates the conversion requested between the client code page and the host database code page. (In the case of DB2 Connect DB2 Connect Personal Edition, the client is the DB2 Connect workstation).

If the conversion is not supported, then message SQL30073N is issued. Otherwise, a similar check is then performed by DB2 Connect.

For example, if you are connecting to a DB2 for OS/390 or DB2 for MVS/ESA database that uses host CCSID 930 (Japan), then your PC must be set up to use *one* of the code pages listed in that row of the table.

Note: Always set the *DB2CODEPAGE* environment variable to a value that is supported by the operating system

How to Determine your Workstation Code Page

To determine what the current code page setting is for your DB2 Connect Personal Edition workstation:

Windows 95 and Windows NT

Note that Windows NT supports both OEM and ANSI code pages concurrently. DB2 programs run in the ANSI code page, and (when using DB2 Windows NT) databases are created using the ANSI code page as well. The DOS Command Line Processor runs in the OEM code page but the Windows operating system converts the characters to ANSI code page before connecting to DB2. This type of conversion does not take place from DB2 to the DOS Command Line Processor. To avoid any discrepancies, you can do one of the following:

- Use the Command Center instead of the DOS Command Line Processor
- If you must use the DOS Command Line Processor, do the following:
 - 1 Set the *DB2CODEPAGE* environment variable to your OEM code page.

- 2 Choose a TrueType font.
- 3 Issue the **db2**.
- 4 Enter all your commands from within the DB2 shell.

Refer to your operating system documentation.

Database Configuration

DB2 Universal Database provides you with these database configuration parameters:

Database code page	The code page used to create the database. It is derived from the code set used to create the database.
Database code set	The code set used to create the database.
Database country code	The country code used to create the database. It is derived from the territory used to create the database.
Database territory	The territory used to create the database.

These settings are used by DB2 Connect when a DRDA application requester is used to connect to a DB2 Universal Database server as a DRDA application server.

You can view the settings, as follows. For example, to list the database configuration for the *SAMPLE* database, enter the following command at a DB2 prompt:

```
get db cfg for sample
```

The output will look similar to this:

```
Database Configuration for Database sample
```

```
Database configuration release level      = 0x0600
Database release level                   = 0x0600

Database territory                        = US
Database code page                        = 437
Database code set                         = IBM-437
Database country code                    = 1
.
.
.
```

For further information, refer to the *Quick Beginnings* guide for your DB2 server. Note that these database configuration settings should not be changed.

Customizing Your DRDA Host

The information in this section provides a summary of the steps required. For further information, refer to the *IBM DRDA Connectivity Guide*, SC26-4783, and the documentation provided for your host RDBMS and operating system.

MVS

On an OS/390 or MVS system, the host CCSID cannot be queried when set. The system setup file DSNHDECP contains code page and character set related system parameters:

- SCCSID** Determines the system CCSID setting for single byte characters.
- MCCSID** Determines the system setting for mixed character sets, and is not required unless using double byte characters. It should be set to 65534 when using single byte characters only.
- GCCSID** Determines the system setting for graphic character sets, is not required unless using double byte characters. It should be set to 65534 when using single byte characters only.

Example for "US English":

```
SCCSID set to 37 (leading zeros not required)
MCCSID set to 65534
GCCSID set to 65534
```

Example for "Japanese English":

```
SCCSID set to 1027
MCCSID set to 5035
GCCSID set to 4396
```

To change the settings, ask your OS.390 or MVS system administrator to:

- 1 Determine the correct values to be set in order to meet your requirements, bearing in mind the requirements of other system users.
- 2 Modify and execute the DSNTINST CLIST, specifying UPDATE on the main panel, in order to change the Application Programming defaults.
- 3 Run job DSNTIJUZ, created by the previous step, in order to update the system.
- 4 Validate the results.
- 5 Halt and restart the DB2 system to activate the change.

OS/400

The system-wide CCSID setting normally defaults to 65535, which indicates no character conversion. The DB2 Connect workstation cannot connect to an AS/400 system if this setting is used.

When a connection is made to DB2/400, there is a user profile that the corresponding job runs under. Individual users have a user profile, in which one of the settings is CCSID. This defaults to *SYSVAL.

For DB2 Connect to successfully connect, either the system-wide CCSID setting must be changed to some value other than 65535, or the CCSID attribute of the user's user profile must be set to some value other than *SYSVAL.

For US English, set the user profile CCSID value to 37. For other languages, see the appendix entitled "National Language Version Default System Values," in *AS/400 National Language Support*, SC41-3101, which lists supported languages and CCSIDs for the AS/400.

For double byte characters, OS/400 must be enabled for DBCS, and the CCSID must be set to a "mixed" value from which the other codes required can be derived.

Refer to your AS/400 system administrator and documentation for further information.

VM and VSE

With DB2 for VM and VSE, the parameter *CHARNAME* is set when the database is started. This parameter is set at the database level, and it can be queried by viewing the system table *SYSTEM.SYSOPTIONS*.

DB2 for VM and VSE provides a list of possible values for *CHARNAME*. For example, for Japanese English, set *CHARNAME* to the string *Japanese_English*. For US English (CCSID 37), set *CHARNAME* to *English*. For CCSID 500, set *CHARNAME* to *International*.

Note that, in addition to database level tagging, DB2 for VM and VSE also provides column level CCSID tagging. All the data inside a database need not have the same CCSID. For example, in a single table one column could be tagged with CCSID 500, another tagged with 277, and so on.

Also, DB2 for VM and VSE does not currently provide support for host code pages 1026 or 931, neither does it provide support for several of the conversions listed earlier, namely:

Code Page	Host CCSID
1004	037, 273, 277, 278, 280, 284, 285, 297, 500, 871
1051	037, 273, 277, 278, 280, 284, 285, 297, 500, 871
1046	420
1089	420

Any of the Macintosh code pages (1275, 1280, 1281, 1282, 1283)

Refer to your DB2 for VM and VSE Database Administrator and documentation for further information.

Appendix C. Contents of the DB2 Products

This appendix lists the contents of various DB2 Universal Database products.

Packaging

The following DB2 Universal Database components, packages, or filesets are available for installation:

Table 50 (Page 1 of 2). DB2 Components, Packages or Filesets

Description	Fileset Name		
	DB2 for AIX	DB2 for HP-UX	DB2 for Solaris
DB2 Client	db2_05_00.client	DB2V5CAE.client	db2cliv50
Open Database Connectivity (ODBC)	db2_05_00.odbc	DB2V5CAE.odbc	db2odbc50
Java Database Connectivity (JDBC)	db2_05_00.jdbc	DB2V5CAE.jdbc	db2jdbc50
Administration Server	db2_05_00.das	DB2V5WGRP.das	db2das50
DB2 Run-time Environment	db2_05_00.db2.rte	DB2V5WGRP.db2rte	db2rte50
DB2 Sample Database Source	db2_05_00.db2.samples	DB2V5WGRP.dbsmpl	db2smpl50
DB2 Engine	db2_05_00.db2.engn	DB2V5WGRP.db2engn	db2engn50
DB2 Replication	db2_05_00.repl	DB2V5WGRP.repl	db2repl50
DB2 Connect	db2_05_00.conn	DB2V5CONN.conn	db2conn50
DB2 Communication Support - TCP/IP	db2_05_00.cs.rte	DB2V5WGRP.csrte	db2crte50
DB2 Communication Support - SNA	db2_05_00.cs.sna	DB2V5WGRP.cssna	db2csna50
DB2 Communication Support - DRDA Application Server	db2_05_00.cs.drda	DB2V5WGRP.csdrda	db2cdrd50
DB2 Communication Support - IPX	db2_05_00.cs.ipx	DB2V5WGRP.csipx	db2cipx50
License Support of DB2 Workgroup Edition	db2_05_00.wsrv	DB2V5WGRP.wsrv	db2wkgp50
License Support of DB2 Enterprise Edition	db2_05_00.esrv	DB2V5ENTP.esrv	db2entp50
License Support of DB2 Connect Enterprise Edition	db2_05_00.cent	DB2V5CONN.cent	db2cent50
DB2 Application Development Tools (ADT)	db2_05_00.adt.rte	DB2V5SDK2.adtrte	db2adt50
DB2 ADT Sample Programs	db2_05_00.adt.samples	DB2V5SDK.adtsamp	db2adts50

Table 50 (Page 2 of 2). DB2 Components, Packages or Filesets

Description	Fileset Name		
	DB2 for AIX	DB2 for HP-UX	DB2 for Solaris
Code Page Conversion Tables - Japanese	db2_05_00.conv.jp	DB2V5WGRP.convjp	db2cnvj50
Code Page Conversion Tables - Korean	db2_05_00.conv.kr	DB2V5WGRP.convkr	db2cnvk50
Code Page Conversion Tables - Simplified Chinese	db2_05_00.conv.sch	DB2V5WGRP.convsch	db2cnvc50
Code Page Conversion Tables - Traditional Chinese	db2_05_00.conv.tch	DB2V5WGRP.convtch	db2cnvt50
DB2 Product Messages - %L ^{1, 2}	db2_05_00.msg.%L ⁴	DB2V5MSG.%L	db2ms%L50
DB2 Product Document (HTML) - %L ¹	db2_05_00.html.%L ⁴	DB2V5HTML.%L	db2ht%L50
<p>Notes:</p> <ol style="list-style-type: none"> 1. %L in the fileset name represents the locale name. There is a separate fileset for each locale. For Solaris and HP-UX systems, abbreviated names are used for some of the locales. See Table 51 on page 497 for the abbreviated locale names. 2. English messages are always installed. 3. DB2 supports a number of locales. However, DB2 messages are not translated in every supported locale. For a complete list of DB2 supported locales, see the "National Language Support (NLS)" appendix in the <i>Administration Guide</i>. 4. On AIX, DB2 Product Messages and Documentation are translated in several locales. However, not every message catalog or book is translated in every locale. The DB2 Product Messages and Documentation are translated into the following locales: bg_BG, cs_CZ, Da_DK, da_DK, De_DE, de_DE, EN_US, en_US, ES_ES, es_ES, Fi_FI, fi_FI, Fr_FR, fr_FR, hu_HU, Ja_JP, ja_JP, ko_KR, No_NO, no_NO, pl_PL, Pt_BR, pt_BR, ru_RU, sl_SI, Sv_SE, sv_SE, zh_CN, zh_TW. 			

Abbreviated names for locale names are given in the following table. %L represents the abbreviated locale name.

Table 51. Abbreviated Names for Locales

DB2 for HP-UX		DB2 for Solaris	
Locale	%L	Locale	%L
bg_BG.iso88595	bg_BG	-	-
da_DK.iso88591	da_DK	da	da
da_DK.roman8	da_DK	-	-
de_DE.iso88591	de_DE	de	de
de_DE.roman8	de_DE	-	-
en_US.iso88591	en_US	en_US	en
en_US.roman8	en_US	-	-
es_ES.iso88591	es_ES	es	es
es_ES.roman8	es_ES	-	-
fi_FI.iso88591	fi_FI	fi	fi
fi_FI.roman8	fi_FI	-	-
fr_FR.iso88591	fr_FR	fr	fr
fr_FR.roman8	fr_FR	-	-
ja_JP.eucJP	ja_JP	ja	ja
ko_KR.eucKR	ko_KR	ko	ko
no_NO.iso88591	no_NO	no	no
no_NO.roman8	no_NO	-	-
pt_BR.iso88591	pt_BR	pt	pt
pt_BR.roman8	pt_BR	-	-
sl_SI.iso88592	sl_SI	sl	sl
sv_SV.iso88591	sv_SV	sv	sv
sv_SV.roman8	sv_SV	-	-
zh_CN.eucCN	zh_CN	zh	zh
zh_TW.eucTW	zh_TW	tw	tw

Products and Selectable Components

Table 52. Components for DB2 Products

Product / Component Description	DB2 CAE	DB2 Universal Database Enterprise Edition	DB2 UDB Workgroup Edition	DB2 Connect
DB2 Client Application Enabler	√√	√√	√√	√√
Open Database Connectivity (ODBC) support	√	√	√	√
Java Database Connectivity (JDBC) support	√	√	√	√
Administration Server		√	√	√
DB2 Run-time Environment		√√	√√	√√
DB2 Engine		√√	√√	√√
DB2 Connect Support		√√		√√
Communication Support for TCP/IP		√√	√√	√√
Communication Support for IPX/SPX		√√	√√	√√
Communication Support for SNA		√√	√√	√√
Communication Support for DRDA Application Server		√√	√√	√√
Code Page Conversion Tables - Japanese		√	√	√
Code Page Conversion Tables - Korean		√	√	√
Code Page Conversion Tables - Simplified Chinese		√	√	√
Code Page Conversion Tables - Traditional Chinese		√	√	√
Licensed Support for DB2 Universal Database Workgroup Edition			√√	
Licensed Support for DB2 Universal Database Enterprise Edition		√√		
Licensed Support for DB2 Connect				√√
DB2 Replication	o	o	o	o
DB2 Product Messages (non-English) ¹	o	o	o	o
DB2 Product Library (HTML) ¹	o	o	o	o
√√	This is a required component that must be installed.			
√	This is a recommended component that is installed by default. You can choose not to install this component.			
o	This is an optional component that is not installed by default. If you want to install it, you must select it.			
Notes:				
	1. There is a separate component of the DB2 Product Messages and the DB2 Product Library for each locale.			
	2. The DB2 SDK is available only with the SDK Pack. Refer to "Developing Applications Using the DB2 Software Developer's Kit" on page 6.			

Table 53 on page 499 lists the DB2 Connect products and selectable components that you can install.

<i>Table 53. Products and Selectable Components for UNIX Systems</i>	
Product / Component Description	Status
DB2 Client Application Enabler	√√
Open Database Connectivity (ODBC) support	√
Java Database Connectivity (JDBC) support	√
Administration Server	√
DB2 Run-time Environment	√√
DB2 Connect Support	√√
Communication Support for TCP/IP	√√
Communication Support for IPX/SPX	√
Communication Support for SNA	√
Communication Support for DRDA Application Server	√
Licensed Support for DB2 Connect	√√
DB2 Replication	o
DB2 Product Messages (non-English) ¹	o
DB2 Product Library (PostScript) ¹	o
DB2 Product Library (HTML) ¹	o
√√	This is a required component that must be installed.
√	This is a recommended component that is installed by default. You can select whether or not to install this component.
o	This is an optional component. If you want to install it, you must select it.
Notes:	
1. There is a separate component of the DB2 Product Messages and the DB2 Product Library for each supported locale.	

Prerequisites

The DB2 filesets are listed below with their corresponding prerequisites.

Fileset Description	Prerequisite Fileset
DB2 Client Application Enabler	Appropriate version of the operating system
Open Database Connectivity (ODBC) support	DB2 Client Application Enabler
Java Database Connectivity (JDBC) support	DB2 Client Application Enabler
Administration Server	DB2 Run-time Environment
DB2 Run-time Environment	DB2 Client Application Enabler
DB2 Sample Database Source	DB2 Engine
DB2 Engine	DB2 Run-time Environment
DB2 Replication	DB2 Run-time Environment
DB2 Connect	DB2 Run-time Environment
Communication Support for TCP/IP	DB2 Run-time Environment
Communication Support for IPX/SPX	DB2 Run-time Environment
Communication Support for SNA	Communication Support for TCP/IP
Communication Support for DRDA Application Server	Communication Support for SNA
Licensed Support for DB2 Universal Database Workgroup Edition	DB2 Engine
Licensed Support for DB2 Universal Database: Enterprise Edition	DB2 Engine
Licensed Support for DB2 Connect Enterprise Edition	DB2 Connect
DB2 Application Development Tools (ADT)	DB2 Client Application Enabler
DB2 ADT Sample Programs	DB2 Application Development Tools
DB2 Product Messages	DB2 Client Application Enabler
DB2 Product Library (HTML)	DB2 Client Application Enabler

Appendix D. Naming Rules



Use the following to find the naming rules you need:

- “General Naming Rules”
 - “Database and Database Alias Names” on page 502
 - “Object Names” on page 502
 - “User IDs, Group Names, and Instance Names” on page 503
 - “DB2SYSTEM Naming Rules” on page 505
 - “Workstation Names (nname)” on page 504
 - “Password Naming Rules” on page 505
-

General Naming Rules

Unless otherwise specified, all names can include the following characters:

- A through Z

Note: When used in most names, characters A through Z are converted from lowercase to uppercase.

- 0 through 9
- @
- #
- \$
- _ (underscore)

Unless otherwise specified, all names must begin with one of the following characters:

- A through Z
- @
- #
- \$

Do not use SQL reserved words to name tables, views, columns, indexes, or authorization IDs. A list of SQL reserved words is included in the *SQL Reference*.

Database and Database Alias Names

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 501.

In addition, the name you specify can contain 1 to 8 characters.

Notes:

1. 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.
2. On Windows NT systems, ensure that no instance name is the same as a service name.

Object Names

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 501.

In addition, the name you specify:

- Can contain 1 to 18 characters
- Cannot be any of the SQL reserved words that are listed in the *SQL Reference*.

Note: 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 the above rules.

User IDs, Group Names, and Instance Names

User IDs are the identifiers assigned to individual users. When naming users, groups, or instances, see “General Naming Rules” on page 501.

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:
 - On OS/2, use uppercase names
 - On Windows 95 and Windows NT, use any case
 - On UNIX, use lowercase names

Additional Considerations for Usernames in Windows NT

To use DB2 for Windows NT, you need to create a special username that meets DB2's naming requirements. You must use this username to install and perform DB2 administration tasks.

When you name a username in Windows NT, the name you specify:

- Must be a member of the Administrators group on the local machine
- Must be acceptable to DB2 as described previously.

Whenever an instance is created for DB2 servers or DB2 Connect servers, a Windows NT service is also created using the instance name. In addition, an instance directory is created in the sqllib using the instance name. For example, if DB2 is installed in the e:\sqllib directory, the default instance creates the following directory path: e:\sqllib\db2. Therefore two additional restrictions apply when you are naming DB2 instances:

1. DB2 instance names cannot conflict with other Windows NT service names.
2. DB2 instance names cannot be the same as the names of existing directories or files under sqllib.

Note: Do not attempt to install or administer DB2 from Windows NT's default "Administrator" username. Because that username has more than eight characters, DB2 will not accept the request.

Workstation Names (nname)

Workstation names are used to specify the NetBIOS name for a database server or database client that resides on the local workstation. This name is stored in the database manager configuration file. The workstation name is known as the *nname*. When naming workstations, see "General Naming Rules" on page 501.

In addition, the name you specify:

- Must be unique within a network
- Can contain 1 to 8 characters
- Cannot include &

DB2SYSTEM Naming Rules

DB2SYSTEM names are used by DB2 to identify a physical DB2 machine, system, server, or workstation with a network. On UNIX and OS/2, you must specify a *DB2SYSTEM* name during or after install. On Windows 95 and Windows NT, you do not need to specify a *DB2SYSTEM* name; the DB2 install program detects the NT Computer name and assigns it to *DB2SYSTEM*.

When creating a *DB2SYSTEM* name, see “General Naming Rules” on page 501.

In addition, the name you specify:

- Must be unique within a network
- Can contain a maximum of 21 characters

Password Naming Rules

When determining passwords on OS/2 and Windows 3.x, the word or name you specify can consist of a maximum of 8 characters. On all other operating systems the word or name you specify can consist of a maximum of 18 characters.

Appendix E. List Files, Bind Files, and Packages

This appendix lists the bind files contained in different .lst files shipped with the product. Although the contents of these lists are similar for each platform, the bind packages are generated specifically for each platform. Each package name can be mapped back to the client platform.

Note that the Bind function in the DB2 Client Configuration Assistant chooses the correct bind files for you automatically.

Note: In the following tables, under the **Package Name** columns, each DB2 bind package is represented as follows. For example, in the file name SQLabxYz:

- SQL identifies the bind package as a DB2 utility,
- *ab* identifies the utility,
- *x* represents the last digit of the year the product became available,
- *Y* represents the platform of the client,
- *z* represents the modification level.

Users on OS/2, Windows 95, Windows NT, and AIX systems can use the **ddcspkgn** command to determine the package name for individual bind files or list (.lst) files. This command is found in the bin directory under the DB2 installation directory. For example, on an AIX system, enter the following command with the bind file in the local directory:

```
/sql1lib/bin/ddcspkgn db2ajgrt.bnd
```

The following list maps *Y* values to platforms:

xAz	Clients for AIX
xHz	Clients for HP-UX
xUz	Clients for Solaris
xXz	Clients for SINIX
xPz	Clients for Power PC
xDz	Clients for OS/2
xWz	Clients for Windows
xNz	Clients for Windows 95 and NT
xMz	Clients for Macintosh
xSz	Clients for SCO OpenServer
xGz	Clients for Silicon Graphics

List Files Associated with DRDA Servers

The following table lists which bind files are included in the .lst file associated with a particular DRDA host. The package associated with each bind file is also listed:

DRDA Server	List File
OS/390 and MVS	ddcsmvs.lst
VSE	ddcsvse.lst
VM	ddcsvm.lst
OS/400	ddcs400.lst

Table 55. DRDA Bind Files and Packages

Component	Bind File Name	Package Name	MVS	VM/VSE	OS/400
Binder (used by the GRANT bind option)	db2ajgrt.bnd	sqlabxyz	yes	yes	yes

DB2 Call Level Interface

Isolation level CS	db2clics.bnd	sql11xyz	yes	yes	yes
Isolation level RR	db2clirr.bnd	sql12xyz	yes	yes	yes
Isolation level UR	db2cliur.bnd	sql13xyz	yes	no	yes
Isolation level RS	db2clirs.bnd	sql14xyz	no	no	yes
Isolation level NC	db2clinc.bnd	sql15xyz	no	no	yes
Using MVS table names	db2clims.bnd	sql17xyz	yes	no	no
Using OS/400 table names (OS/400 3.1 or later)	db2clias.bnd	sql1axyz	no	no	yes
Using VSE/VM table names	db2clivm.bnd	sql18xyz	no	yes	no

Command Line Processor

Isolation level CS	db2clpcs.bnd	sqlc2xyz	yes	yes	yes
Isolation level RR	db2clpr.bnd	sqlc3xyz	yes	yes	yes
Isolation level UR	db2clpur.bnd	sqlc4xyz	yes	yes	yes
Isolation level RS	db2clprs.bnd	sqlc5xyz	no	no	yes
Isolation level NC	db2clpnc.bnd	sqlc6xyz	no	no	yes

REXX

Isolation level CS	db2arxcs.bnd	sqla1xyz	yes	yes	yes
Isolation level RR	db2arxrr.bnd	sqla2xyz	yes	yes	yes
Isolation level UR	db2arxur.bnd	sqla3xyz	yes	yes	yes
Isolation level RS	db2arxrs.bnd	sqla4xyz	yes	yes	yes
Isolation level NC	db2arxnc.bnd	sqla5xyz	no	no	yes

Utilities

Export	db2uexpm.bnd	sqlubxyz	yes	yes	yes
Import	db2uimpn.bnd	sqlufxyz	yes	yes	yes

Note: If your DB2 for MVS/ESA system has APAR PN60988 installed (or if it is a later release than Version 3 Release 1), you can add the bind files for isolation level NC to the ddcsmvs.lst file.

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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 selecting the "Roadmap to IBM Support" item at: <http://www.ibm.com/support/>.

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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