IBM DB2 Connect
Personal Edition

Quick Beginnings

Version 5.2

S10J-8162-01

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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 281.

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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 OS/2, Windows 32-bit operating systems or Windows 3.x workstations.

Part 3 provides information on using the Data Sources Setup tool or the Client Configuration Assistant to configure communications between DB2 Connect and host systems.

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.

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.
- *Italics* indicates variables that you should replace with a value. It is also used to indicate book titles and to emphasize words.
- `Monospace` indicates file names, directory paths, and examples of text you enter exactly as shown.

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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. It provides 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 and Chapter 3, “How to Use DB2 Connect in Your Network” on page 13.	Optional.
Confirm that your system meets the DB2 Connect software and hardware prerequisites,	“Software Requirements” on page 23 and “Disk Requirements” on page 22.	Recommended.
Install DB2 Connect,	the installation chapter for your environment and your workstation's operating system: • For OS/2: – Chapter 5, “Installing DB2 Connect on OS/2 Systems” on page 29 – Chapter 26, “Unattended DB2 Installation on OS/2 or Windows 3.x Operating Systems” on page 189 • For Windows 32-bit operating systems: – Chapter 6, “Installing DB2 Connect on Windows 32-bit Operating Systems” on page 33 – Chapter 27, “Unattended DB2 Installation on Windows 32-bit Operating Systems” on page 199 • For Windows 3.x systems: – Chapter 7, “Installing DB2 Connect for Windows 3.x” on page 41 – Chapter 26, “Unattended DB2 Installation on OS/2 or Windows 3.x Operating Systems” on page 189	Required.

If you want to...	Refer to...	Required Reading?
Create SNA connections to DRDA databases,	the chapter that applies to your workstation's operating system and SNA communications subsystem: • For OS/2: – Chapter 9, “Configuring Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53 – Chapter 11, “Configuring Communications Server for OS/2 for DB2 Connect for OS/2” on page 61 • For Windows 32-bit operating systems: – Chapter 9, “Configuring Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53 – Chapter 12, “Configuring Integrated SNA Support Manually on Windows Workstations” on page 77 – Chapter 14, “Configuring IBM Communications Server for Windows NT” on page 93 – Chapter 15, “Configuring IBM Communications Server for Windows NT SNA Client” on page 105 – Chapter 16, “Configuring Microsoft SNA Server Version 4.0 for Windows NT” on page 113 – Chapter 17, “Configuring Microsoft SNA Client” on page 121 • For Windows 3.x: – Chapter 8, “Configuring Host and AS/400 Connections on Windows 3.1 or 3.11 Workstations” on page 49 – Chapter 12, “Configuring Integrated SNA Support Manually on Windows Workstations” on page 77 – Chapter 17, “Configuring Microsoft SNA Client” on page 121	Required.
Configure DB2 Connect Personal Edition to communicate with DB2 Universal Database servers,	Chapter 19, “Configuring Access to a Remote DB2 Server Using the Client Configuration Assistant” on page 133.	Required, if you will access DB2 Universal Database servers.
Use the DB2 components,	Chapter 21, “Getting Started with DB2 Universal Database” on page 141.	Recommended.

If you want to...	Refer to...	Required Reading?
Control access, authentication, passwords, and user ID or username management,	"Working with the System Administrative Group" on page 143.	Recommended.
Use clients,	Chapter 22, "Running Your Own Applications" on page 147.	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 147.	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 149.	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 23, "Entering DB2 Commands and SQL Statements" on page 161.	Recommended.
Prepare DRDA hosts to accept connections from DB2 Connect,	Chapter 29, "Configuring DRDA Hosts for DB2 Connect" on page 231.	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 240	
Print or view online documentation,	"Printing the PostScript Books" on page 259 or "Viewing Online Books" on page 258.	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

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Chapter 1. About DB2 Connect

DB2 is a *relational* database management system that is web-enabled with Java support; scalable from single processors to clusters of symmetric multiprocessors; and multimedia capable with image, audio, video, and text support.

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 this data with applications running on PCs, UNIX workstations, and Apple Macintosh workstations.

DB2 Connect Personal Edition, formerly known as DDCS Single User, enables applications on your OS/2, Windows 3.x, Windows 32-bit operating systems to directly access host databases stored on:

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

DB2 Connect provides access to those databases in a cost-effective way by using 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 provide 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 that are written in C, C++, Java, COBOL, FORTRAN, SmallTalk, REXX, and other programming languages. Programmers can use the latest tools, such as 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 Support(JDBC)
- Embedded SQL for Java (SQLJ)

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 having the cost and complexity of data extract and import procedures.

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- *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 PowerSoft PowerBuilder, Microsoft VisualBasic, and Borland Delphi, to create client/server solutions.

DB2 Connect Personal Edition provides an integrated package that gives all of the tools you need to be productive quickly. DB2 Connect Personal Edition includes:

- Direct host access without gateways or host components.
- Integrated SNA Support (except on OS/2), which gives you out-of-the-box connectivity without the need to purchase extra network components.
- Highly optimized ODBC and JDBC drivers for instant support of thousands of client-server and Java applications.
- A complimentary copy of the award-winning Lotus Approach to help you quickly turn your host and AS/400 data into information you can use.

Each copy of DB2 Connect Personal Edition provides separate versions of the code optimized for OS/2 and Windows 32-bit operating systems, as well as 16-bit versions for Windows 3.x. This means the copy of DB2 you purchased will serve you no matter which operating system you are using today or plan to move to in the future.

DB2 Connect Personal 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
A relational database management system that enables local and remote client applications to create, update, control, and manage relational databases using Structured Query Language (SQL), ODBC, JDBC, or CLI.

This product is available for OS/2, Windows NT, and SCO UnixWare 7 only.

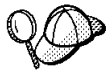
DB2 Universal Database Enterprise Edition
A relational database management system that enables local and remote client applications to create, update, control, and manage relational databases using Structured Query Language (SQL), ODBC, JDBC, or CLI. This product also includes support for host and AS/400 connectivity. This product provides its users with access to DB2 databases that reside on host systems such as MVS/ESA, OS/390, AS/400, VM, and VSE. This product is available for AIX, HP-UX, OS/2, SCO UnixWare 7, Solaris and Windows NT.

DB2 Application Developer's 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 operating systems.

The Application Developer's Kit gives you all the tools that 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. DB2 Personal Edition can also act as client to access remote DB2 servers. This product is available for the OS/2 and Windows 32-bit operating systems only.

DB2 Connect Enterprise Edition
Provides access from clients on a network to DB2 databases residing on host systems such as AS/400, MVS/ESA, OS/390, VM, and VSE. DB2 Connect Enterprise Edition is available for the AIX, HP-UX, OS/2, Solaris, SCO UnixWare 7, and Windows NT. This product was formerly known as DDCS Multi-User Gateway.



DB2 Workgroup Edition, DB2 Enterprise Edition, DB2 Personal Edition, and DB2 Extended Enterprise Edition are commonly referred to as DB2 server or DB2 Universal Database throughout this book.

Chapter 2. What's New in DB2 Connect Version 5.2?

DB2 Connect Version Version 5.2 includes the following enhancements for the host and AS/400 DRDA functions:

- DCE Cell Directory support

  Users working with host and AS/400 databases servers now have additional options for providing database location information when using DCE Cell Directory support for implementations from IBM and Gradient. Refer to the *Administration Guide* for additional information.

- Enhanced password management

  DB2 Connect now permits users to change their passwords without having to log on to their database server. Users can now change their passwords in any one of four ways: by using the SQL CONNECT statement from the DB2 Command Line Processor, by requesting a password change from within the ODBC login dialog, by using the password change option of the Client Configuration Assistant, or by using the ATTACH command.

  In addition, application programmers can now take advantage of DB2 Connect enhanced password management to deliver more robust security mechanisms for their applications. The ability to change user passwords is provided for Embedded SQL, ODBC, and DB2 CLI, as well as for Java using both JDBC and SQLJ.

  For example, with this support, a user connected to a DB2 for OS/390 database server no longer has to sign on to TSO in order to change his or her password when it expires. Through DRDA, DB2 for OS/390 can change the password for you. The old password along with the new password and the verify password must be supplied by the user.

  If the security specified at the DB2 Connect EE gateway is `DCS` then a request to change the password is sent to the DRDA server. If the authentication specified is `SERVER` then the password on the gateway machine is changed.

  An additional benefit is that, with TCP/IP connections to the host, a separate LU definition is no longer required, as was the case with DB2 Connect Version 5.0. Refer to the DB2 Connect Enterprise Edition *Quick Beginnings* manual for additional information.

- Enhanced security failure notification

  Users connecting to host and AS/400 databases can now get additional information on the cause of security failures when they occur, for example as the result of an expired password. Refer to the DB2 Connect *Quick Beginnings* manuals for further information.

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In addition, password change support is now supported through DRDA (see *Enhanced password management above).*

- Enhanced System/390 SYSPLEX exploitation

  DB2 Connect Enterprise Edition (EE), and the DB2 Connect component that is included in both DB2 UDB EE and DB2 UDB Extended - Enterprise Edition (EEE), can now provide enhanced load balancing and fault tolerance by routing connections to different nodes on a System/390 SYSPLEX. Some additional configuration considerations apply, and these are documented in the DB2 Connect Enterprise Edition *Quick Beginnings* manual.

- Optimized Catalog Access for ODBC and JDBC Applications

  A new tool `db2ocat` is provided on Windows 32-bit operating systems in order to assist customers to optimize system catalog searches for ODBC applications.

  DB2 Connect now offers a way to dramatically improve the performance of ODBC and JDBC applications that make extensive use of the system catalog. This improvement is provided using the CLISCHEMA parameter in the DB2CLI.INI file, which allows applications to use an ODBC-optimized catalog instead of the regular system catalog tables. In addition, a point-and-click utility that greatly simplifies the creation and maintenance of ODBC-optimized catalogs can be obtained by downloading `db2ocat.zip` from:

  ```
  ftp://ftp.software.ibm.com/ps/products/db2/tools.
  ```

- Microsoft Transaction Server support

  DB2 family databases including host and AS/400 databases can now fully participate in distributed transactions managed by the Microsoft Transaction Server (MTS). Refer to the DB2 Connect Enterprise Edition *Quick Beginnings* manual for additional information.

- New BIND options (DYNAMICRULES)

  There are two new enumerated values for the DYNAMICRULES option of the BIND command. These two values: DEFINE, and INVOKE, are defined to specify the authorization identity to be used for the execution of a dynamic SQL statement in a user defined function (UDF) or in a stored procedure:

  DEFINE Indicates that the authorization identifier used for the execution of dynamic SQL is the definer of the UDF or stored procedure.

  INVOKE Indicates that the authorization identifier used for the execution of dynamic SQL is the invoker of the UDF or stored procedure.

  Refer to the *Command Reference* for further information.

- Set Client Information API enhancements

  A new Set Client Information API allows three-tier client/server or TP monitor applications to pass more specific information about the application end user to DB2 for OS/390.

  The new information includes the end user name supplied by server application, the workstation name, the application name, and the accounting string. This

information can now be reported by the DB2 for OS/390 DISPLAY THREAD command and it is available in DB2 for OS/390 accounting records. Previously, in three-tier environments, DB2 for OS/390 could only provide information about the server application and the individual authentication user ID , and not about the numerous end users who multiplex SQL queries on long-running connections.

For additional information refer to the *API Reference*.

- SQLDescribeParam support for DB2 Connect

  With this enhancement, an application is now able to issue the *SQLDescribeParam* API call to retrieve parameter descriptions from a DB2 for OS/390 data source. For further information refer to *What's New*.

- Support for Bidirectional Languages

  DB2 Connect now provides support for bidirectional languages such as Arabic and Hebrew. Refer to the *Administration Guide* for more information about the nature of this support.

  For information on configuring DB2 Connect Version 5.2 for bidirectional languages please refer to the Release Notes for DB2 Connect Version 5.2.

- System Monitor enhancements

  The following System Monitor enhancements for DB2 Connect are provided in Version 5.2:

  1. Enhancements to the `sqlmonss` API call and the LIST DCS APPLICATIONS command provide for the listing of seven new data elements: DCS application status, client login ID, client platform, client protocol, host CCSID, process ID of client application, and status change time.
  2. New GET SNAPSHOT support for DB2 Connect at the database manager and application levels, where the application level reporting includes statement and transaction levels.
  3. New SNAPSHOT support for DB2 Connect at the database level.

  Further information is provided in the *DB2 Connect User's Guide* .

  Information about detailed updates to the *System Monitor Guide and Reference* is contained in *What's New*.

- Two-phase commit support enhancements

  – In DB2 Connect Enterprise Edition Version 5.0, two-phase commit support over SNA connections using the DB2 Syncpoint Manager (SPM) was only available on AIX and OS/2. With DB2 Connect Enterprise Edition Version 5.2, this support is now extended to Windows NT. This support requires IBM eNetwork Communications Server for Windows NT Version 5.01 or higher.

  – Two-phase commit for XA applications was previously only supported over SNA connections, using the SPM. It is now also supported over TCP/IP connections using the SPM.

    Applications executed by Transaction Processing Monitors such as IBM TXSeries, CICS for Open Systems, Encina Monitor, and Microsoft Transaction

Server previously had to access host systems such as DB2 for OS/390 using SNA. With DB2 Connect Version 5.2, TCP/IP can now be used by these same applications. The DB2 Syncpoint Manager must be used to enable this new feature.

For further information refer to your DB2 Connect *Quick Beginnings* manual.

- Simplified DB2 Syncpoint Manager Configuration

  DB2 Syncpoint Manager configuration has been simplified. Many steps are now automated or eliminated compared to previous releases. Please refer to your DB2 Connect *Quick Beginnings* manual.

- Support for the SCO** operating system

  DB2 Connect Enterprise Edition Version 5.2 is available for the SCO operating system.

- Support for Big Integer, Large Object, Row ID, and User Defined Distinct data types.

  DB2 Connect Version 5.2 now provides support for Big Integer, Large Object, Row ID, and User Defined Distinct data types. Refer to the *SQL Reference* for more details.

- Enhancements to the Client Configuration Assistant:
  - In V5.2 you can use the Client Configuration Assistant (CCA) to configure TCP/IP connections to DB2 for VM and DB2 for AS/400 database servers.
  - You can also use the CCA to configure IBM Communications Server for NT (CS/NT) and IBM Personal Communications (PComm) SNA stacks if you are using an SNA network.

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, Windows 98 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 or higher)
  - Built-in replication support
  - Generic bind option: you can specify any bind option supported by the host database.
  - SYSPLEX exploitation (DB2 Connect Enterprise Edition only; requires DB2 for OS/390 Version 5.1 or higher)
- Usability:
  - New installation method
  - TCP/IP database connections are much easier to configure (requires DB2 for OS/390 Version 5.1 or higher, or DB2 for AS/400 Version 4.2)
  - 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 or higher)
  - 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 or higher)
- Connectivity:
  - Support for DRDA over TCP/IP connections to other IBM DRDA Application Servers, as they introduce support for TCP/IP.

- 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 or higher)
  - 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 or higher)
  - Ability to use DB2 for OS/390 for added reliability of transaction coordination (requires DB2 for OS/390 Version 5.1 or higher, 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 29 or Chapter 6, “Installing DB2 Connect on Windows 32-bit Operating Systems” on page 33 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 server.

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

Note: If is important that you decide which of the network configurations applies to your environment. This is a required step in setting up connectivity to your database servers.

Direct Connection to a Host or AS/400 Server

Direct connection without intermediate gateways and servers is a very convenient and desirable configuration. This is especially true for situations where the host or the AS/400 database supports TCP/IP connectivity (for example, DB2 for OS/390 V5.1 or later, or OS/400 V4 Release 2). 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.

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TCP/IP connectivity requires that the host database support TCP/IP. At this point, DB2 for OS/390 V5.1, DB2/400 V4R2, and DB2 for VM V6.1 support 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 1 shows workstations directly connected to a DRDA host. Each workstation has DB2 Connect Personal Edition installed.

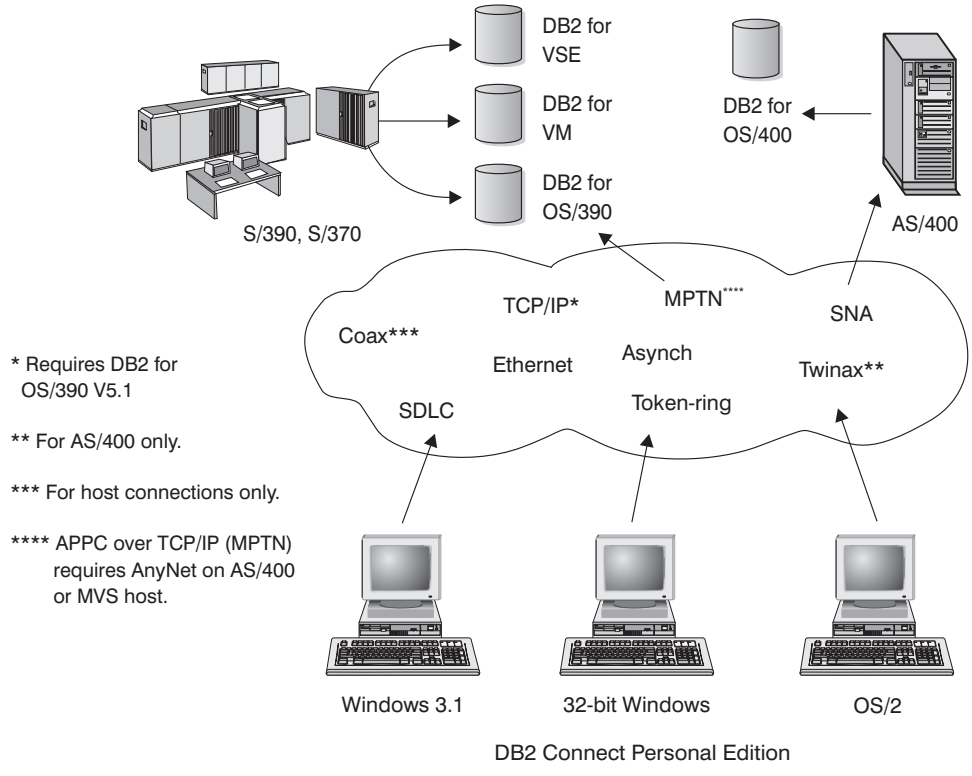


Figure 1. Direct Connection Between DB2 Connect and a DRDA Host

In this environment, if you are using Windows 32-bit operating systems, 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 2 on page 15 illustrates such a situation.

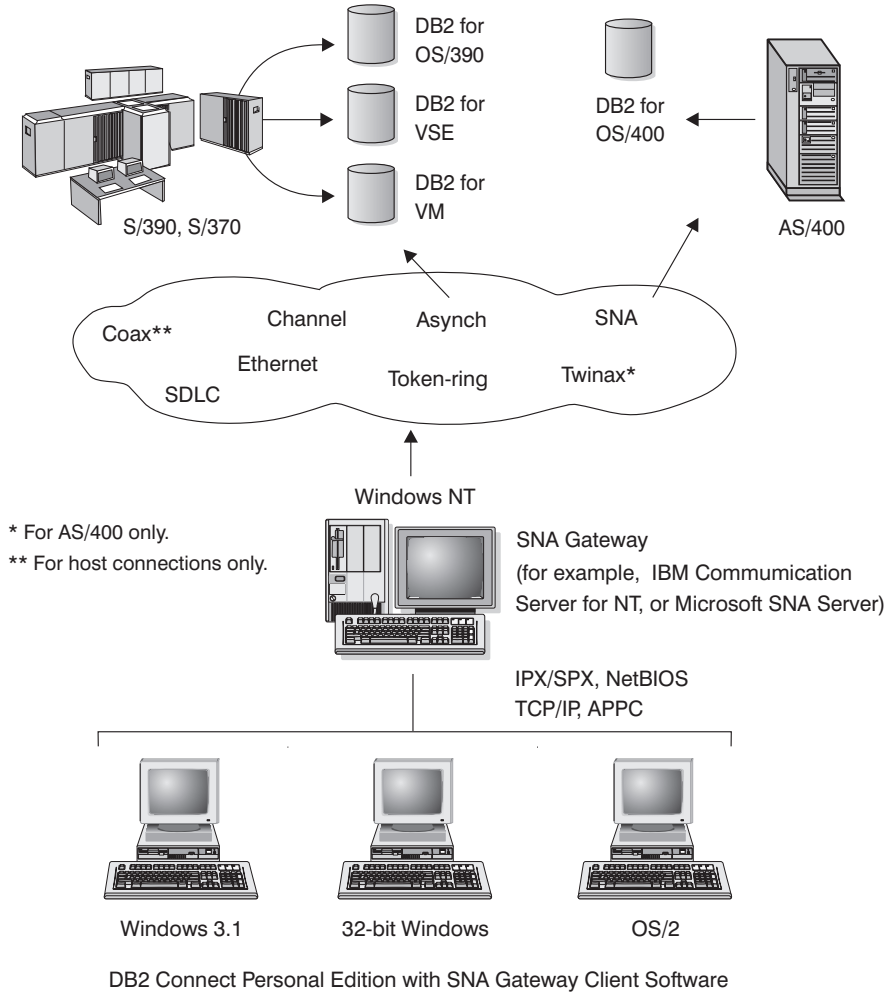


Figure 2. Indirect Connection to DRDA Host via SNA Communications Gateway

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 3 on page 17 provides an overview of the DB2 Connect Enterprise Edition gateway scenario.

Contact your authorized IBM reseller for additional information about DB2 Connect Enterprise Edition.

Connections via a DB2 Connect Enterprise Edition Server

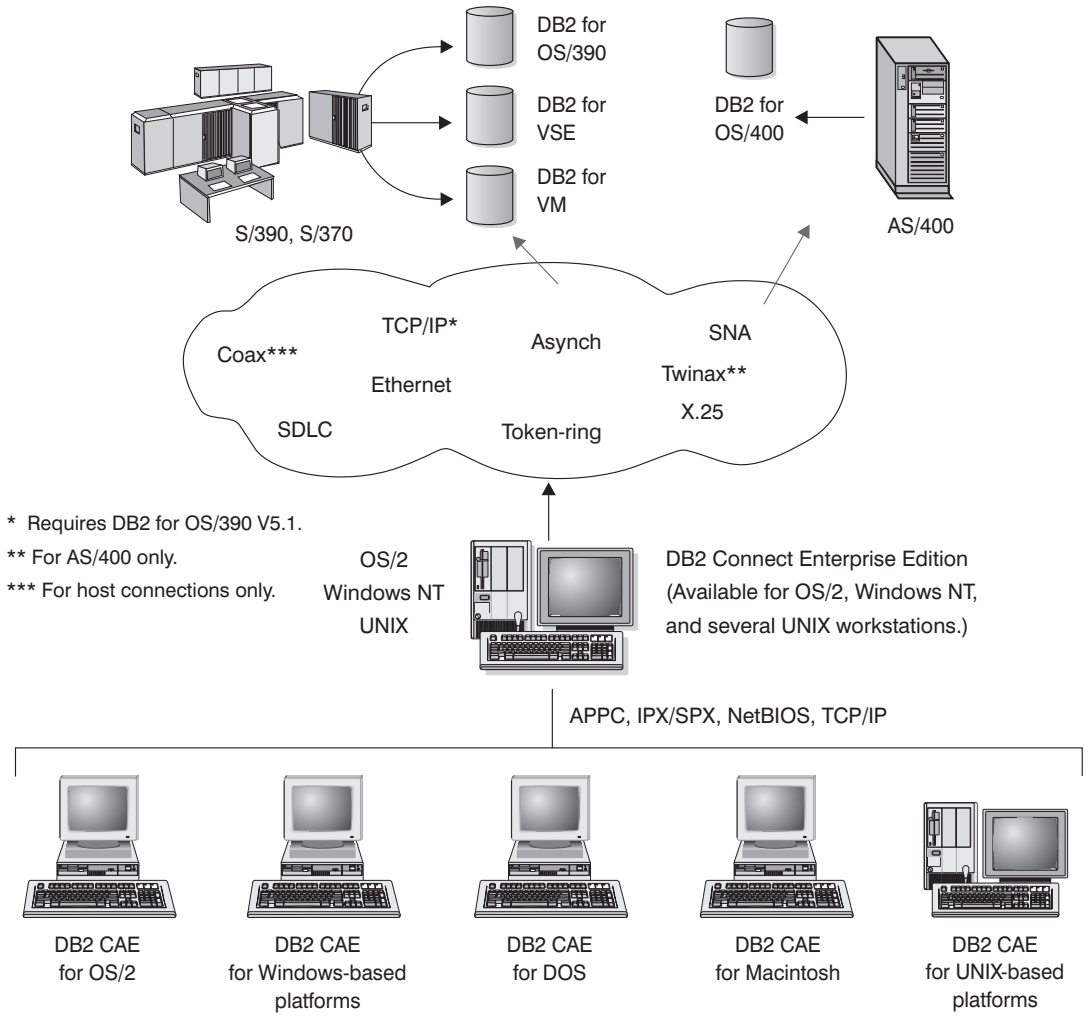
Figure 3 on page 17 illustrates IBM's solution for environments in which you want to use a DB2 Client Application Enabler making an indirect connection to a DRDA host through DB2 Connect Enterprise Edition server.

All DB2 and DB2 Connect products include a Client Application Enabler component. In addition, Client Application Enablers for AIX, DOS, HP-UX, Macintosh, OS/2, SCO Unix Ware, Silicon Graphics, SINIX, Solaris, and Windows 32-bit operating systems are provided on separate CD-ROMs with all DB2 products except the Personal Edition versions.

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.

This type of a configuration is required for supporting applications that exploit transaction monitors (e.g. CICS, Encina, Tuxedo) as well as applications that are implemented as Java applets. This configuration is also the right choice for multi-tier applications for both traditional client-server as well as web application server environments.

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



Actual connectivity options depend on the platform chosen.

Figure 3. Indirect Connection to DRDA Host via DB2 Connect Enterprise Edition

Connections to DB2 Universal Database Servers

Figure 4 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.

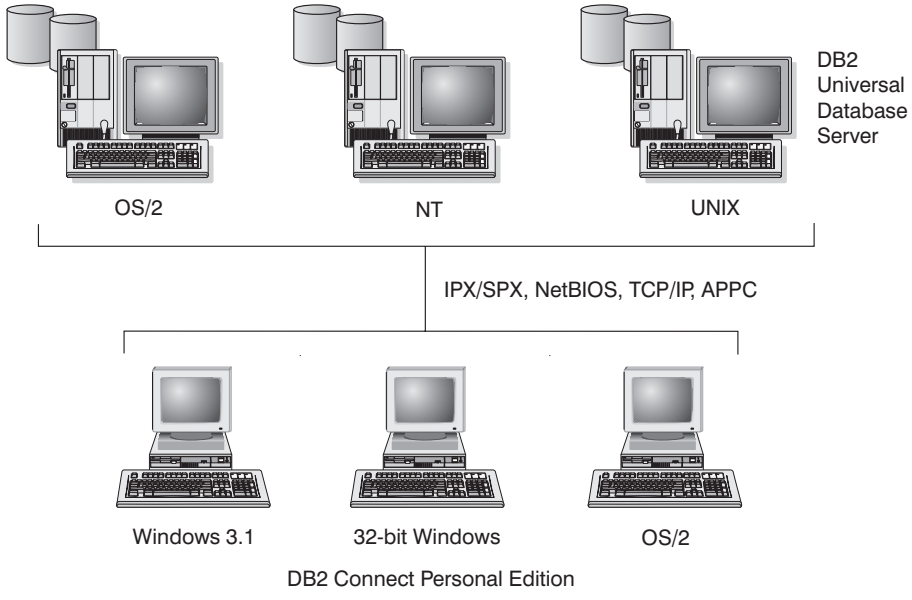


Figure 4. Connection between DB2 Connect Personal Edition and a DB2 Server

Part 2. DB2 Connect: Planning and Installation

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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 29, Chapter 6, “Installing DB2 Connect on Windows 32-bit Operating Systems” on page 33, or Chapter 7, “Installing DB2 Connect for Windows 3.x” on page 41 .

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 host data from your local machine, use the configuration shown in Figure 5. The diagram shows DB2 Connect Personal Edition installed on the system and various local applications able to access data from host databases.

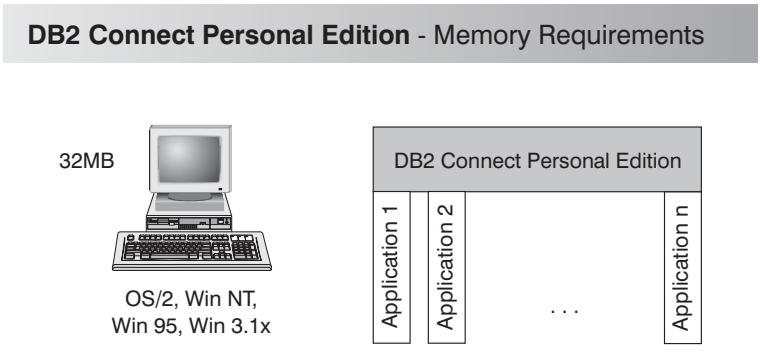

Figure 5. Configuration for Accessing Host Databases Using DB2 Connect Personal Edition

The amount of memory you need on your system depends on the applications you intend to run. We suggest that you have a minimum of 32 MB to access host databases using DB2 Connect Personal Edition. Use this guideline to determine the amount of memory necessary in your environment.

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Disk Requirements

This section shows the *minimum* amount of disk space that is required to install DB2 products and components. It does not include the disk requirements necessary for the operating system, application development tools, and communications products. Consult each product's documentation for these values. Estimates for disk space requirements are listed here; the actual amounts required depend on the functions you are using. Use this information to plan for systems with a large number of concurrent clients or databases. For information about space requirements for data, refer to the *Administration Guide*.

Estimating Fixed Disk Requirements

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

Server Components

Use Table 1 on page 23 to estimate the amount of disk space you need to install DB2 and associated components on your operating system.

Table 1. Estimating Disk Requirements

DB2 Connect Personal Edition for OS/2	
DB2 Connect — this amount includes the following components: • Client Configuration Assistant • Graphical Tools • Control Center • Performance Monitor • Visual Explain • Windows Support • East Asian Conversion Support	100 MB 5 MB 5 MB 30 MB 10 MB 5 MB 10 MB 5 MB
Online documentation in HTML format	30 MB
DB2 Connect Personal Edition for Windows 95, or Windows NT	
DB2 Connect — this amount includes the following components: • Graphical Tools (Client Configuration Assistant, Control Center, Performance Monitor, and Visual Explain) • East Asian Conversion Support	70 MB 35 MB 5 MB
Online documentation in HTML format	30 MB
DB2 Connect Personal Edition for Windows 3.x	
DB2 Connect	50 MB
Online documentation in HTML format	30 MB
• East Asian Conversion Support	5 MB

Note: The disk amounts listed are approximations.

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 Personal Edition relies on network software to provide connectivity to host and AS/400 databases as well as to DB2 Universal Database servers. Therefore, it is important to establish which network software you will use before proceeding with the installation.

DB2 Connect Personal Edition uses communication software for establishing host connectivity and connectivity to DB2 Universal Database servers. For the host connectivity, your software requirements will depend on:

- The protocol that you will be using (APPC, TCP/IP, or MPTN)

- Whether you will be using direct connection (see “Direct Connection to a Host or AS/400 Server” on page 13) or connections via SNA gateway (see “Connections via Communications Gateway” on page 15).

Software Requirements for OS/2 Users

DB2 Connect Personal 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 with SMP Feature

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

Host Communications

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

- IBM Communication Manager for OS/2 V1.11
- IBM Communication Server for OS/2 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 described the enablement of OS/2 clients for APPC (LU6.2) communications.

Software Requirements for Windows NT Users

DB2 Connect Personal Edition can be used on machines running Windows NT 3.51 or later version of the operating system. Both Windows NT workstation and Windows NT server are supported.

Windows NT supplies all the communication support required to establish TCP/IP, NetBIOS, Named Pipe and IPX/SPX connectivity. Therefore, no additional software is required for connecting to DB2 Universal Database servers.

Host Communications

For direct connection to host and AS/400 databases via SNA (APPC), and MPTN, DB2 Connect Personal Edition provides an Integrated SNA support. Alternately, one of the following communication products can be used for connecting DB2 Connect Personal Edition to host databases via SNA (APPC):

- IBM Personal Communications for Windows NT V4.2 or later
- IBM Communication Server for Windows NT V5 or later
- Microsoft SNA Server V2.11 or later
- Wall Data Rumba
- Other communications products that provide APPC connectivity and fully comply with WinCPI-C specification

For direct connections to host and AS/400 databases via TCP/IP, no additional software is required as Windows NT provides built-in TCP/IP support.

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.

Software Requirements for Windows 95 and Windows 98 Users

DB2 Connect Personal Edition can be used on machines running the Windows 95 and Windows 98 operating systems.

Windows 95 and Windows 98 supply all the communication support required to establish TCP/IP, NetBIOS, and IPX/SPX connectivity. Therefore, no additional software is required for connecting to DB2 Universal Database servers.

Host Communications

For direct connection to host and AS/400 databases via SNA (APPC), and MPTN, DB2 Connect Personal Edition provides an Integrated SNA support. Alternately, one of the following communication products can be used for connecting to host databases via SNA (APPC):

- IBM Personal Communications for Windows 95 V4.2 or later
- Wall Data Rumba
- Other communications products that provide APPC connectivity and fully comply with WinCPI-C specification

For direct connections to host databases via TCP/IP, no additional software is required as Windows provides built-in TCP/IP support.

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 clients for APPC (LU6.2) communications.

Software Requirements for Windows 3.1 and Windows for Workgroups 3.11 Users

DB2 Connect Personal Edition can be used on machines running the Windows 3.1 and Windows for Workgroups 3.11.

Because Windows for Workgroups 3.11 provides communication support for TCP/IP, NetBIOS, and IPX/SPX connectivity, this version of the 16-bit Windows operating system is preferable to Windows 3.1. When using Windows for Workgroups 3.11, no additional software is required for connecting to DB2 Universal Database servers.

Windows 3.1 workstations require the following connectivity software:

- IPX/SPX – Novell Requester for DOS
- NetBIOS – IBM LAN Support Program, IBM DOS LAN requester or other NetBIOS connectivity software
- TCP/IP – IBM TCP/IP for DOS V2.1.1 or any other TCP/IP product that conforms to the WinSOCK V1.1 specification.

Host Communications

For direct connection to host and AS/400 databases via SNA (APPC), and MPTN, DB2 Connect Personal Edition provides an Integrated SNA support.

For direct connections to host databases via TCP/IP, no additional software is required as Windows for Workgroups V3.11 users who have obtained TCP/IP communications subsystem from Microsoft. Windows 3.1 users can use any WinSOCK V1.1-compliant TCP/IP product, such as IBM TCP/IP for DOS V2.1.1.

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 3.1 clients for APPC (LU6.2) communications.

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 diver 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 26, “Unattended DB2 Installation on OS/2 or Windows 3.x Operating Systems” on page 189.

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

Before You Begin Installing on OS/2 Operating Systems

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

- The type of host connectivity that you want to use (a direct connection using DB2 Connect Personal Edition or a connection that uses an SNA gateway).
- 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 25, “Administering and Using OS/2 User Profile Management on OS/2 Systems” on page 179 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.

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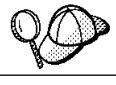
- The names of the products you want and are licensed to install (see Table 2 on page 30). To see descriptions of each of the products, see Chapter 1, “About DB2 Connect” on page 3.
- If you decide to install the Control Center, you must also decide whether you want the Control Center to autostart. The 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 Personal Edition.

Table 2. Products and Components for DB2 Connect Personal Edition

Product	Components
DB2 Connect Personal Edition	• DB2 Connect Personal 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



Ensure that you select DB2 Connect Personal Edition, not DB2 Universal Database Personal Edition.

Performing the Installation on OS/2

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

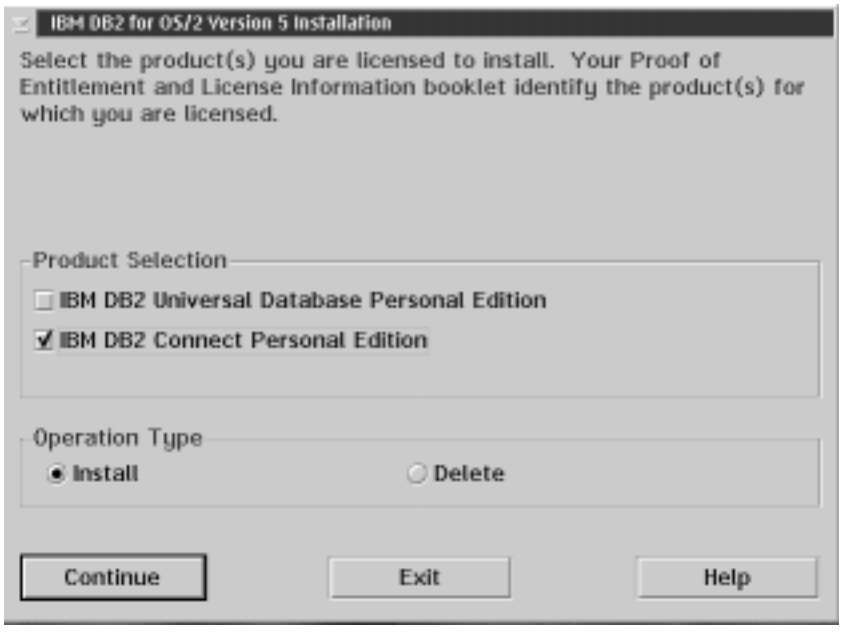
1. Insert the CD-ROM in the drive.
2. There are two ways to begin the DB2 installation. These are:
   - If you have the OS/2 Warp Server installed, double-click on the **Server Installation** icon located in the **Server** folder on the desktop.

OR

- Open an OS/2 windows and set the drive to *x:*, where *x:* 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 16 on page 264 lists the codes 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/BAT File from the Remote Workstation" on page 193 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.

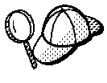
   d. Click on the **Disk Space** button to see how much space you have on each of the drives on your machine and to change disks if necessary.

   e. Click on the **Install** button to continue.

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

7. 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:\sqllib\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 Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53 or Chapter 11, “Configuring Communications Server for OS/2 for DB2 Connect for OS/2” on page 61.

Chapter 6. Installing DB2 Connect on Windows 32-bit Operating Systems

If you need to install software on many 32-bit Windows systems, see Chapter 27, “Unattended DB2 Installation on Windows 32-bit Operating Systems” on page 199.

This chapter describes how to install DB2 Connect on Windows 32-bit operating systems.

Before You Begin Installing on Windows NT and Windows 95

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

You need to ensure that you know the type of host connectivity that you want to use (a direct connection using DB2 Connect Personal Edition or a connection that uses an SNA gateway), and the protocol to be used for host connectivity:

- APPC
- TCP/IP
- MPTN

Creating Usernames for DB2 Installation and Operation

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

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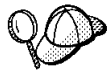
Creating a Username for Installing DB2 Products

Windows 95 and Windows 98
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 C, “Naming Rules” on page 269.

Windows NT
You need to have a username that will be used to install DB2. The username may belong to the Domain or local Administrators group.



This username will be removed from the system when the installation is complete.

Selecting Products and Components

Choosing Which Optional Components to Install

DB2 Connect offers the option of using APPC, TCP/IP, or MPTN protocols for host connectivity. For your convenience, DB2 Connect Personal Edition includes an Integrated SNA Support that provides APPC and MPTN connectivity. If you plan to use only TCP/IP for your host connectivity, you do not need to install the Integrated SNA Support. If you do choose to install Integrated SNA Support, you must ensure that you have the Microsoft DLC driver installed on your workstation. See “Ensuring DLC is Installed on Windows NT Workstations” on page 35 for instructions on installing the DLC driver.

Note: DB2 Connect Personal Edition for Windows NT and Windows 95 offers you the option of installing Integrated SNA Support. If your workstation has SNA support already installed, do not install Integrated SNA Support. Products that can provide SNA support include:

- IBM Communications Server for NT V5
- IBM Communications Server for NT SNA Client
- PCOMM AS/400 and 3270 V4.1 or later
- Wall Data Rumba

- Microsoft SNA Server
- Microsoft SNA Client.

The following table lists the products and selectable components that you can install on DB2 Connect Personal Edition. For information on the products and components, see Chapter 1, “About DB2 Connect” on page 3. The marks in the columns for **Typical Install** and **Compact Install** indicate the components that are installed when these types of install are used. If you want to install specific components and subcomponents, you can choose the **Compact Install** type. See “Performing the Installation on a Windows 95 or Windows NT Workstation” on page 36 for more information on install types.

Table 3. Products and Components for DB2 Connect Personal Edition for Windows 32-bit operating systems

Product	Components and Subcomponents	Typical Install	Compact Install
DB2 Connect Personal Edition (Host Connect)	□ Graphical Tools	√	
	□ Client Configuration Assistant	√	
	□ Control Center		
	□ Performance Monitor		
	□ Visual Explain		
	□ Integrated SNA Support	√	
	□ DB2 ODBC Driver	√	√
	□ East Asian Conversion Support		
	□ Documentation	√	

Ensuring DLC is Installed on Windows NT Workstations

If you plan to install the Integrated SNA Support, you need to ensure that DLC is already installed before you install DB2 Connect on your Windows NT workstation:

1. Click on **Start** and select **Settings**->**Control Panel**.
2. Double-click on the **Network** icon.
3. Select the **Protocols** tab.
4. In the **Protocols** field, see if DLC is listed.
   - If DLC is listed, you can install the DB2 Connect software.
   - If DLC is not listed, install it as follows:
     a. On the Network Protocols window, click on the **Add** push button.

b Select the **DLC Protocol** option.

c Insert your original Windows NT operating system CD-ROM into the CD-ROM drive.

d Click on the **Have Disk** push button, and provide the CD-ROM driver letter and path to the Windows NT installation directory.

e Click on **OK** to return to the Network Protocol window.

f Click on **OK**.

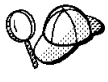
g Close the Network folder.

h Reboot you workstation when prompted.

Performing the Installation on a Windows 95 or Windows NT Workstation

To install DB2 Connect Personal Edition on a Windows 95 or Windows NT workstation:

1. If you are installing on a Windows NT workstation, 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 33.
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:

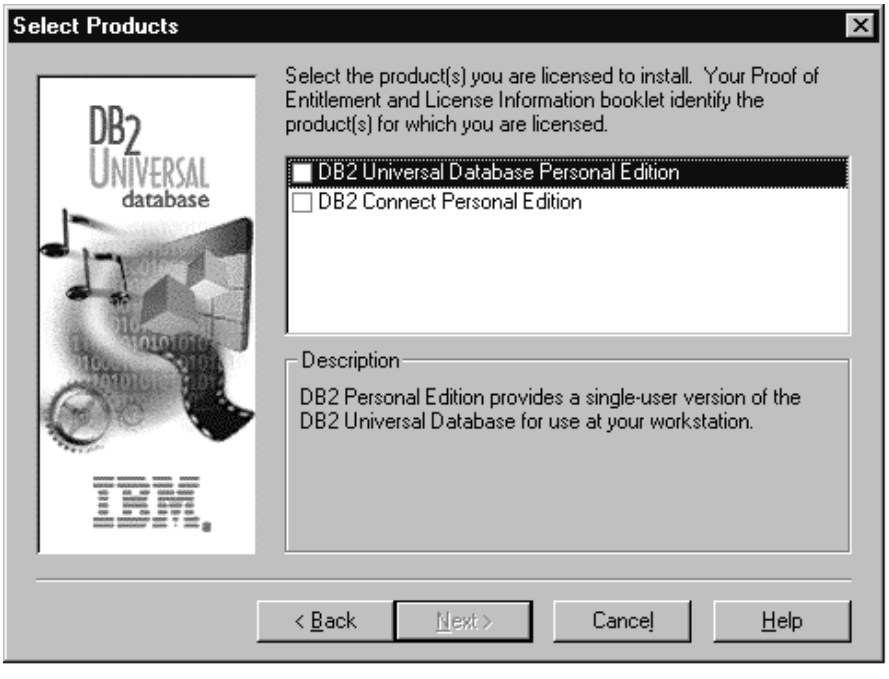
1. Click on **Start** and select the **Run** option.
2. Type the following in the **Open** field:

   `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 16 on page 264 lists the code for each available language.
3. Click on **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 push button:

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, and the Client Configuration Assistant. The DB2 instance is created.

Compact Install: Installs only 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 default for a Custom install is to install those components and subcomponents you would get in a Typical install.

The Client Configuration Assistant (CCA) component makes it easy for you to configure and administer connections to databases and to bind application and utilities to a database. See Chapter 28, “Using the Client Configuration Assistant” on page 217 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 database.

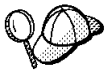
To *not* install a particular component, such as the Integrated SNA Support, choose a Custom installation and deselect the components you do not require.

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 guide you through the remaining steps. Invoke online help by clicking on the **Help** push button at any time.

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.



For information on errors encountered during 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` file 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.

8 If you have installed DB2 Connect on a Windows 95 workstation, you must now install DLC software:

a From the Control Panel, double-click on the **Network** icon.

b Click on the **Add** push button.

c Double-click the **Protocol** icon.

d Insert your original Windows 95 operating system CD-ROM into the CD-ROM drive.

e Click on the **Have Disk** push button, then enter:

x`:\`*install_dir*`\sna\ms32dlc`

where *x* is the installation drive and *install_dir* is the installation directory (usually `\sqllib`).

f Click on **OK**.

g Click on **OK** to return to the original panel.

h Follow the instructions that appear. When you are instructed to do so, use your original Windows 95 operating system CD-ROM to install the remainder of the required files.

i Reboot your workstation when prompted.

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

- Chapter 9, “Configuring Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53
- Chapter 12, “Configuring Integrated SNA Support Manually on Windows Workstations” on page 77
- Chapter 14, “Configuring IBM Communications Server for Windows NT” on page 93
- Chapter 15, “Configuring IBM Communications Server for Windows NT SNA Client” on page 105
- Chapter 16, “Configuring Microsoft SNA Server Version 4.0 for Windows NT” on page 113
- Chapter 17, “Configuring Microsoft SNA Client” on page 121.

Chapter 7. Installing DB2 Connect for Windows 3.x

If you need to install software on many Windows 3.x systems, see Chapter 26, “Unattended DB2 Installation on OS/2 or Windows 3.x Operating Systems” on page 189.

This chapter describes how to install DB2 Connect on a Windows 3.x workstation.

Before you begin, ensure that you know the type of host connectivity that want to use (a direct connection using DB2 Connect Personal Edition or a connection that uses an SNA gateway), and the protocol to be used for host connectivity:

- APPC
- TCP/IP
- MPTN

Performing the Installation on Windows 3.x

Read this section if you are installing DB2 Connect Personal Edition on a workstation that runs Windows 3.x.

Choosing Which Optional Components to Install

DB2 Connect Personal Edition for Windows 3.x offers you the option of installing the following components:

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Table 4. Products and Components for DB2 Connect Personal Edition for Windows 3.x	
Product	**Components**
DB2 Connect Personal Edition	• DB2 Connect Personal Edition • Integrated SNA Support (see the note, below) • Data Sources Setup tool (see the note, below) • Documentation • Japanese Conversion Support • Korean Conversion Support • Simplified Chinese Conversion Support • Traditional Chinese Conversion Support

DB2 Connect offers the option of using APPC, TCP/IP, or MPTN protocols for host connectivity. For your convenience, DB2 Connect Personal Edition includes an Integrated SNA Support that provides APPC and MPTN connectivity. If you plan to use only TCP/IP for your host connectivity, you do not need to install the Integrated SNA Support. If you do choose to install the Integrated SNA Support, you must ensure that you have the Microsoft DLC driver installed on your workstation. See “Step 1. Ensure DLC is Installed” on page 43 for instructions on installing the DLC driver.

Note:

Integrated SNA Support

Do not install Integrated SNA Support if your workstation has SNA support already installed. SNA support is already installed if your workstation has, for example:

- Wall Data Rumba
- Microsoft SNA Client.

Data Sources Setup Tool

Install the Data Sources Setup Tool if you want to configure the SNA provided with:

- PCOMM AS/400 and 3270 V4.1 or later
- Integrated SNA Support
- Wall Data Rumba
- Microsoft SNA Client
- Other products that conform to the IBM CPI-C specification with Microsoft WinCPI-C extensions.

You can also install the Data Sources Setup Tool if you want to configure DB2 using a GUI, rather than by issuing commands from a command line.

Step 1. Ensure DLC is Installed

If you choose to install the Integrated SNA support on either Windows 3.1 and Windows for Workgroups 3.11, DLC must be installed on the workstation before DB2 Connect is installed:

On Windows 3.1

To determine if DLC is installed, examine the `autoexec.bat` file or the `config.sys` file for a reference to `msdlc.exe`.

- If DLC is already installed, go to “Step 2. Ensure Win32s is Installed” on page 44.
- If it is not, you need to acquire DLC from the manufacturer of your workstation's communications adapter. For example, if you are using an IBM network adapter, you should obtain IBM DOS LAN Support Program Version 1.33 or higher, and install it by following the instructions provided.

On Windows for Workgroups 3.11

1. From the Program Manager, double-click on the Network icon.
2. In the Network folder, double-click on the Network Setup icon.
3. In the Network Setup window, see if DLC is listed in the Network Drivers field.
   - If it is, go to “Step 2. Ensure Win32s is Installed” on page 44.
   - If it is not listed:
     a. Obtain DLC from Microsoft.

        Microsoft distributes the DLC driver wfwdlc.exe free of charge. You can obtain it from the Microsoft Download Service either by calling (206) 936–6735 or by going to the Microsoft home page on the Internet (http://www.microsoft.com).

     b. On the Network Setup window, select **Drivers**->**Add Protocol**->**Microsoft DLC**.

     c. Click on **OK**.

     d. Enter the path to the installation media.

     e. Click on **OK**->**Close**->**OK**.

     f. Reboot your workstation.

Step 2. Ensure Win32s is Installed

To determine if Win32s is installed, check to see if the `\windows\system\win32s` directory exists.

- If it does, go to "Step 3. Install DB2 Connect for Windows 3.1."
- If it does not:

  1. Insert the DB2 Connect Personal Edition CD-ROM into the CD-ROM drive.
  2. From the Program Manager, select **File**->**Run**.
  3. In the **Command Line** field, enter:

     x:*language*\win16\win32s\setup

     where *language* is the two-character country code that represents your language (for example, `EN` for English). Table 16 on page 264 lists the codes for each available language.

Step 3. Install DB2 Connect for Windows 3.1

To install DB2 Connect Personal Edition on Windows 3.x:

1. Insert the DB2 Connect Personal Edition CD-ROM into the CD-ROM drive.
2. From the Program Manager, select **File**->**Run**.
3. In the **Command Line** field, enter:

   x:*language*\win16\install

   where *language* is the two-character country code that represents your language (for example, `EN` for English). Table 16 on page 264 lists the codes for each available language.
4. The Welcome screen appears, followed shortly by the first install window.
5. Select **OK** to update AUTOEXEC.BAT and to continue.
6. On the Install-directories window, select DB2 Connect Personal Edition, and any other options you want to install.

   You should install the *Documentation*, the *DB2 Data Sources Setup tool*, and *Integrated SNA Support*, in addition to *DB2 Connect Personal Edition*.

   Important: You should not install the DB2 Connect Integrated SNA Support if your DB2 Connect workstation already has another SNA product installed.

   See "Choosing Which Optional Components to Install" on page 34.
7. Select your preferred install drive and path; if necessary, select the **Disk Space** button to check available disk space.

8. Select the **Install** button to continue.

9. If your system already had Wall Data Rumba software installed, you need to copy the file *Rumba_root_dir* `\system\cpic.dll` to *Rumba_root_dir*`\system\wincpic.dll`. By replacing `wincpic.dll` with `cpic.dll`, you enable both your original applications and DB2 Connect to work together.

10. After the DB2 Connect software is installed:

    a. Restart your workstation.

    b. Open the DB2 folder.

    c. Click on the **Logon** icon to start DB2 Connect. (You need to perform this step before you can use the Data Sources Setup tool to define a connection to a DRDA database.)

Check the README files!: Read the two *README* files by clicking on their icons in the DB2 folder.

To set up connections to DRDA databases, see Chapter 8, “Configuring Host and AS/400 Connections on Windows 3.1 or 3.11 Workstations” on page 49 or Chapter 12, “Configuring Integrated SNA Support Manually on Windows Workstations” on page 77.

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

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Chapter 8. Configuring Host and AS/400 Connections on Windows 3.1 or 3.11 Workstations

For an application to work with DB2 data, it must be able to refer to that data using a symbolic name. Applications using ODBC refer to the data by using a Data Source Name (DSN). Applications developed using Embedded SQL refer to data by using an *alias*. Therefore, the goal of configuring a host connection is to create both a database alias as well as an ODBC data source name that can be used by applications running on the DB2 Connect workstation.

The DB2 Data Sources Setup tool is an easy-to-use utility that greatly simplifies the task of defining aliases and ODBC data sources for DB2 databases. It provides a point-and-click interface that guides you through the process of creating an APPC or a TCP/IP connection and cataloging the nodes and databases. It also enables you to perform such functions as binding DB2 utilities and testing connectivity. If you have an organization that has many DB2 Connect Personal Edition workstations, you can share definitions you have created by exporting them to a file and having other users import those definitions.

This chapter describes how you:

- Create a DB2 data source definition for your workstation (see “Defining a DB2 Data Source Definition”)
- Create a DB2 data source definition for another workstation (see “Exporting DB2 Data Source Definitions” on page 50)
- Use a DB2 data source definition created by others (see “Importing DB2 Data Source Definitions” on page 51).

Defining a DB2 Data Source Definition

1 In the DB2 for Windows folder, double-click on the **DB2 Data Sources Setup** icon. The DB2 Data Sources window opens.

On Windows 3.1 systems, if the DB2 Data Sources window open briefly then disappears, this indicates that Win32s is not installed. See “Step 2. Ensure Win32s is Installed” on page 44 for installation instructions.

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The **Configured DB2 data sources** area lists the DB2 data sources that your workstation is currently able to access.

To add a new data source, click on the **Add** push button. A screen containing a series of panels appears.

2. Fill in the information, moving from panel to panel by clicking on the **Next** push button. When you are finished, click on **Done**. The data source that you defined appears in the list.

3. If you want to test the connection:

   a. Click on the DB2 data source definition that you just created. The **Test** push button becomes selectable.

   b. Click on **Test**.

   c. In the screen that appears, enter your user identifier and password, then click on **OK**. The test results appear on the screen.

      Note: The initial connection may take a minute to establish. (Subsequent tests of that connection will take less time).

4. Once you have connected successfully, bind utilities, such as ODBC/CLI support, to the target DB2 database. To do this, click on the **Show Administrator Functions** push button, then click on the **Bind** push button.

By defining the data source, you have configured your DB2 Connect workstation to access a host database. You can now provide that data source definition to other DB2 Connect workstations (as described in "Exporting DB2 Data Source Definitions").

Exporting DB2 Data Source Definitions

The Data Sources Setup tool enables you to create DB2 data source definitions that you can provide to other DB2 Connect users. The instructions that follow assume that you start with a working DB2 data source definition, which you can create by following the instructions in "Defining a DB2 Data Source Definition" on page 49.

1. Click on the **Data Sources Setup tool** icon in the DB2 folder. The DB2 Data Sources window opens, listing the available data sources.

2. Click on the DB2 data source definition that you want to make available.

3. If you want to modify an existing definition, click on the **Setup** push button and follow the instructions on the screen to complete your modifications. When you are finished, click on **OK**.

4. If you want to test the connection, click on **Test**.

5. To save the data source definition to a file, click on the **Show Administrator Functions** push button, then click on the **Export** push button. When you choose the location for the definition file, remember that it must be made available to the users who will import it.

Note: The Export function implicitly captures many elements of your data source setup, including performance-enhancing settings such as any ODBC customization that you may have performed on the DB2 Connect workstation that you are exporting from. Such settings are applied automatically to the DB2 Connect workstation that imports your exported definition.

By exporting the data source definition, you can now provide that data source definition to other DB2 Connect workstations (as described in "Importing DB2 Data Source Definitions").

Importing DB2 Data Source Definitions

The Data Sources Setup tool enables an administrator to create DB2 data source definitions that can be imported on other DB2 Connect Personal Edition workstations (as described in "Exporting DB2 Data Source Definitions" on page 50.) The instructions that follow assume that an Administrator has supplied you with the location of the DB2 data source definition, whether on a shared drive or on a diskette.

To apply a previously-created DB2 data source definition to your DB2 Connect workstation:

1. Click on the **Data Sources Setup tool** icon in the DB2 folder. The first Data Sources Setup tool window, **DB2 Data Sources**, opens.
2. Click on the **Import** push button. The **Import DB2 Data Source Definitions** screen appears.
3. Click on the **Browse** push button.
4. Click on the file which contains the DB2 data source definitions, as instructed by your administrator.
5. Click on **OK**.
6. Click on the data source that you want to add to your workstation from the list of data sources contained in the definition file.
   - If the data source definition is complete, the DB2 Connect workstation is configured.
   - If the data source definition is incomplete, a screen will appear showing which information is missing. Provide the missing information, then click on the **Done** push button.

Your DB2 Connect workstation will be configured to access the selected data source automatically. The imported data source definition may contain performance enhancing information such as ODBC customization settings. In this case, the additional information will be applied to your DB2 Connect workstation automatically.

To test the connection, from the Data Sources Setup tool:

1. Click on the DB2 data source definition from the list.

   The **Test** push button becomes selectable.

2. If your host has been configured to permit a connection from your workstation, click on **Test**.

3. In the screen that appears, enter your user identifier and password, then click on **OK**. The test results appear on the screen.

   The initial connection may take several minutes to establish, but subsequent connection will take less time. You can now use applications to access data at the target database.

Chapter 9. Configuring Host and AS/400 Connections on OS/2 and 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. For OS/2 , start the Client Configuration Assistant. In Windows, click on **Start** and select **Programs**->**DB2 for Windows**->**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. In the next panel you are presented with two **Symbolic destination** fields. The first field is mandatory; the second is required only if you wish to do password maintenance on the host. For the **Connection** field, follow these guidelines:

        – 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. If you would like to configure a symbolic destination name for your database, type in the name you want and click on the **configure** push button. You do not have to type in the symdestname before clicking on the **Configure** push button. Once you are done with the configuration, the program will provide you with a symdestname.

        – If the **Configure** push button is greyed and cannot be selected, it means that the CCA cannot guide you through the process of

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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 10, “Configuring Communications to Host and AS/400 Databases Manually” on page 59 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). When you have defined the symbolic destination for the database, come back to this CCA page and type in the name. Then skip to step 5.

- If you wish to do password maintenance, enter the symbolic destination name used by the host for password maintenance in the second field. If the **Configure** push button is enabled, you can click it to bring up another dialog box where you can fill in the new password maintenance LU. Once you are done with the configuration, the program will provide you with a symdestname.
- Select either the **APPC (SNA)** radio button or the **APPC over TCP/IP** radio button, then click on the **Next** push button. You are presented with two new pages.
- Fill in the fields on the **This PC** page and the **Server** page. (In most situations you do not need to fill in values for the **Session** section.) Click on the **Done** push button.

- If you want to use TCP/IP:

  a Select TCP/IP as the protocol for the connection, then select the **Target Operating System** for the host to which you want to connect.

  b Click on the **Next** push button.

  c Fill in the **Hostname** and **Port Number** fields. Optionally, fill in the **Service Name** field. Click on the **Next** push button.

5 On the Target Database page, fill in the requested value, then click on the **Next** push button.

6 Fill in values for the Alias page, and, if you want to run ODBC applications, the ODBC page. Click on the **Done** push button to complete the definition.

7 Click on the **Test Connection** push button to test the connection to the specified database.

8 Enter your user ID and password if needed to access the database and click on the **OK** push button. If the connection is successful, a message confirming the connection appears. If not, refer to the *Troubleshooting Guide* for possible causes. You are now able to use the database.

9 It is strongly recommended that you bind DB2 utilities to the database you just defined. To do this:

a. Select the database to which you want to bind the utilities.
b. Click on the **Bind** push button.
c. Select whether you want to bind utilities or applications.
d. Click on the **Continue** push button.
e. 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.
f. Select the utilities you want to bind and click on **OK**.

If you want to access another database, select the **Add Another** push button.

Now that you have configured host connections, go to Chapter 19, “Configuring Access to a Remote DB2 Server Using the Client Configuration Assistant” on page 133 to configure access to DB2 Universal Database servers (if required), or to Chapter 21, “Getting Started with DB2 Universal Database” on page 141.

Part 4. Configuring Other Connectivity Options

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Chapter 10. 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 11, “Configuring Communications Server for OS/2 for DB2 Connect for OS/2” on page 61).
- DB2's integrated SNA (see Chapter 12, “Configuring Integrated SNA Support Manually on Windows Workstations” on page 77).
- IBM Personal Communications for Windows NT (see Chapter 13, “Configuring IBM Personal Communications for Windows 32-Bit Operating Systems” on page 83).
- IBM Communications Server for NT (see Chapter 14, “Configuring IBM Communications Server for Windows NT” on page 93).
- IBM Communications Server for NT SNA Client (see Chapter 15, “Configuring IBM Communications Server for Windows NT SNA Client” on page 105).
- Microsoft SNA Server (see Chapter 16, “Configuring Microsoft SNA Server Version 4.0 for Windows NT” on page 113).
- Microsoft SNA Client (see Chapter 17, “Configuring Microsoft SNA Client” on page 121).

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 29, “Configuring DRDA Hosts for DB2 Connect” on page 231 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.

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Chapter 11. 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 Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53. 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 5 on page 62
- For AS/400, use Table 6 on page 64

To help you fill in the worksheets, Figure 6 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.

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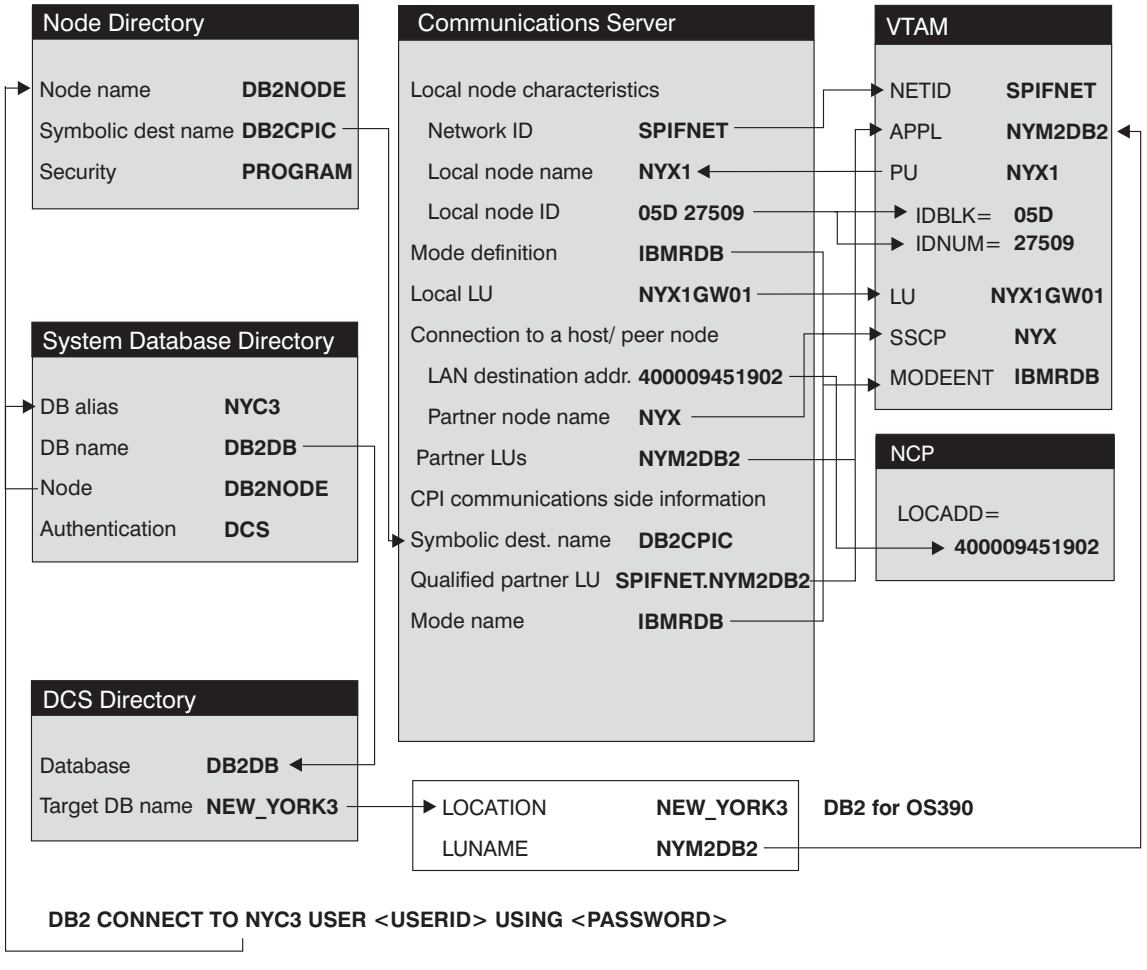


Figure 6. Configuration on the DRDA Server and DB2 Connect Workstation

Table 5 (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 5 (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'QCNTEDDM' (or RDB_NAME for VM, AXE transactions name for VSE, or DB2DRDA 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 6. 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'QCNTEDDM'	
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

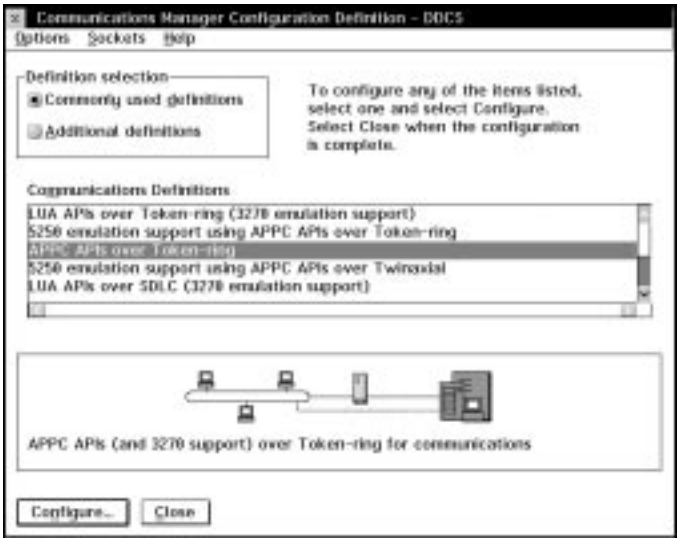
Most users will find it easiest to use the DB2 Client Configuration Assistant tool to configure Communications Server for OS/2 or Communications Manager for OS/2, as described in Chapter 9, “Configuring Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53.

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.

5 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.

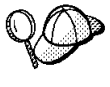
If this is a new configuration file, the next panel displayed will be the APPC APIs over Token-Ring panel. Otherwise the next panel displayed will be the Communications Server Profile List panel.

6 The APPC APIs over Token-Ring panel opens.

a Enter your values for:

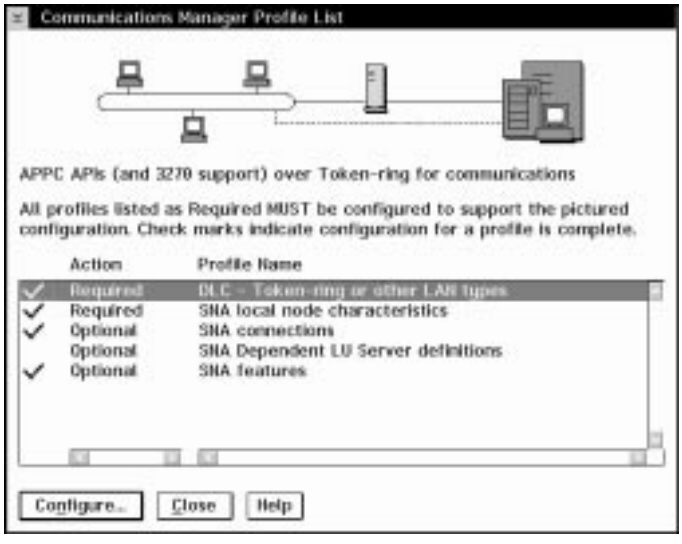
- Network ID **9**
- Local node name **10**

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

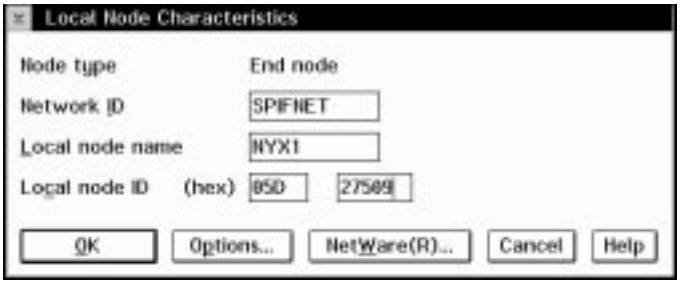
From the Communications Server Profile List panel, prepare a LAN DLC profile as follows:

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:

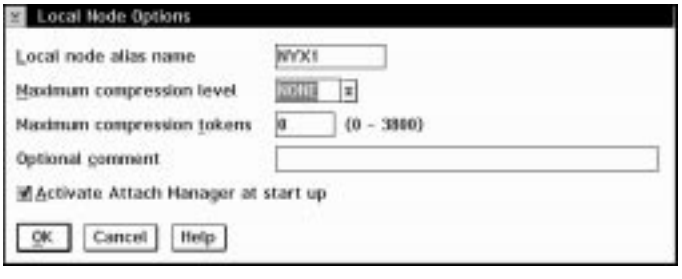
1. On the Communications Server Profile List panel, select **SNA local node characteristics**->**Configure**. The Local Node Characteristic panel opens.



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.

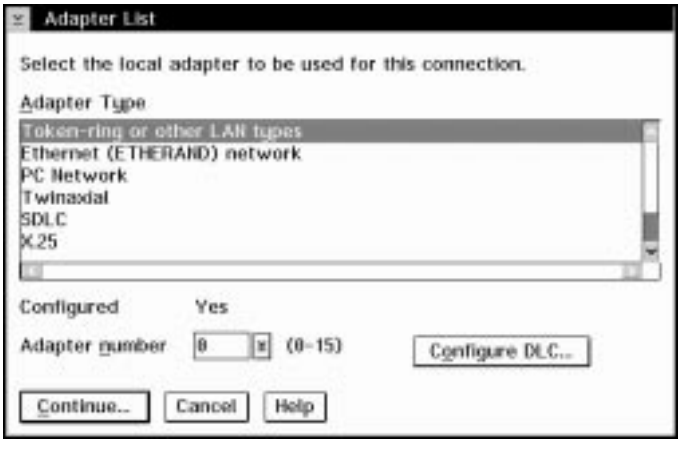
Preparing the SNA Connection Profiles

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**.
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.

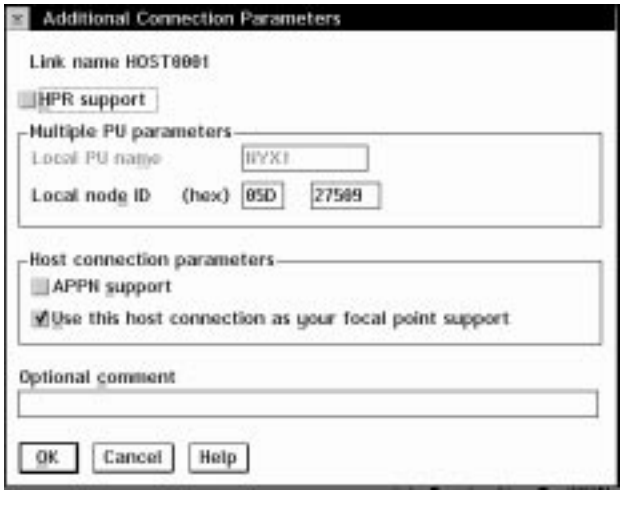
Partner LUs

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.



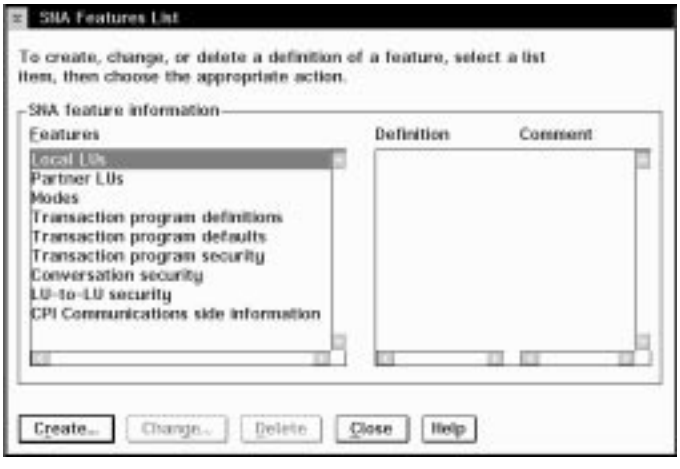
1. Verify that the **Multiple PU Parameters** fields are filled in. This value is the Local Node ID in hex, items **13** and **14** in the worksheet.

   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

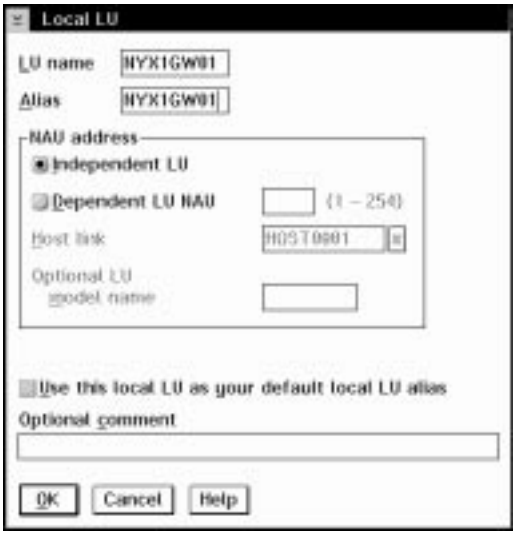
On the Communications Server Profile List panel, select **SNA features**->**Configure**. Subsequent steps begin from the SNA Features List panel that appears, as follows:



Preparing a Local LU Profile

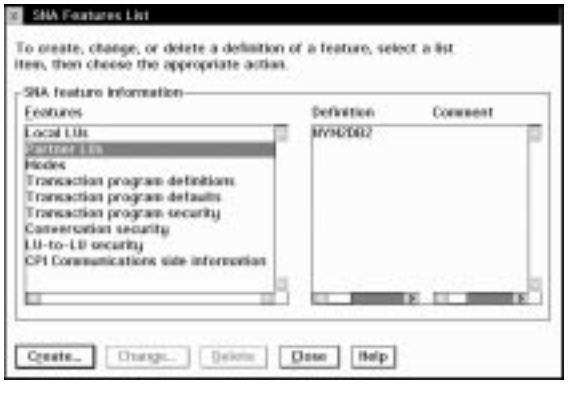
If the DB2 Connect workstation is defined as an independent LU, prepare a Local LU Profile as follows. In most cases, a VTAM administrator on OS/390, MVS, VSE, or VM would define an independent LU for DB2 Connect. For OS/400, the control point would normally be used instead of an independent LU.

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.

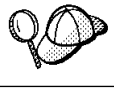
Complete the CPI Communications Side Information panel as follows:

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 DB2DB 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/bnd/@ddcsmvs.lst blocking all sqlerror continue
        messages mvs.msg grant public
connect reset
```

where *path* corresponds to the *DB2PATH* registry value. These commands are described in detail in the *DB2 Connect User's Guide*.

Once you have completed these steps, see Chapter 21, “Getting Started with DB2 Universal Database” on page 141 for details on the many functions that are available to use with DB2.

Chapter 12. Configuring Integrated SNA Support Manually on Windows Workstations

Read this chapter if you have a Windows NT, Windows 95, Windows 98 or Windows 3.1 workstation and you have installed the Integrated SNA Support option.

Although you should use the Data Sources Setup tool or 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 Integrated SNA Support and a remote DRDA server in such situations.

The example values used in this chapter are based on the scenario in Figure 6 on page 62, except that Integrated SNA Support 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 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.

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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, Windows 95 or Windows 98 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 `llllllxx`, where `llllll` 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 DB2DB 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 DB2DB 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 13. Configuring IBM Personal Communications for Windows 32-Bit Operating Systems

Read this chapter if you have a Windows NT, Windows 95 or Windows 98 workstation that has IBM Personal Communications for Windows NT or Windows 95 installed.

Before you begin, ensure that the IBM Personal Communications for Windows NT or Windows 95 you installed:

- Is Version 4.2 or higher
- Has the IBM Personal Communications IEEE 802.2 LAN interface (this is an installation option for IBM Personal Communications)
- 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 Personal Communications for Windows NT or Windows 95 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 7 on page 85).

To help you fill in the worksheets, Figure 7 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 Personal Communications for Windows NT or Windows 95. 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.

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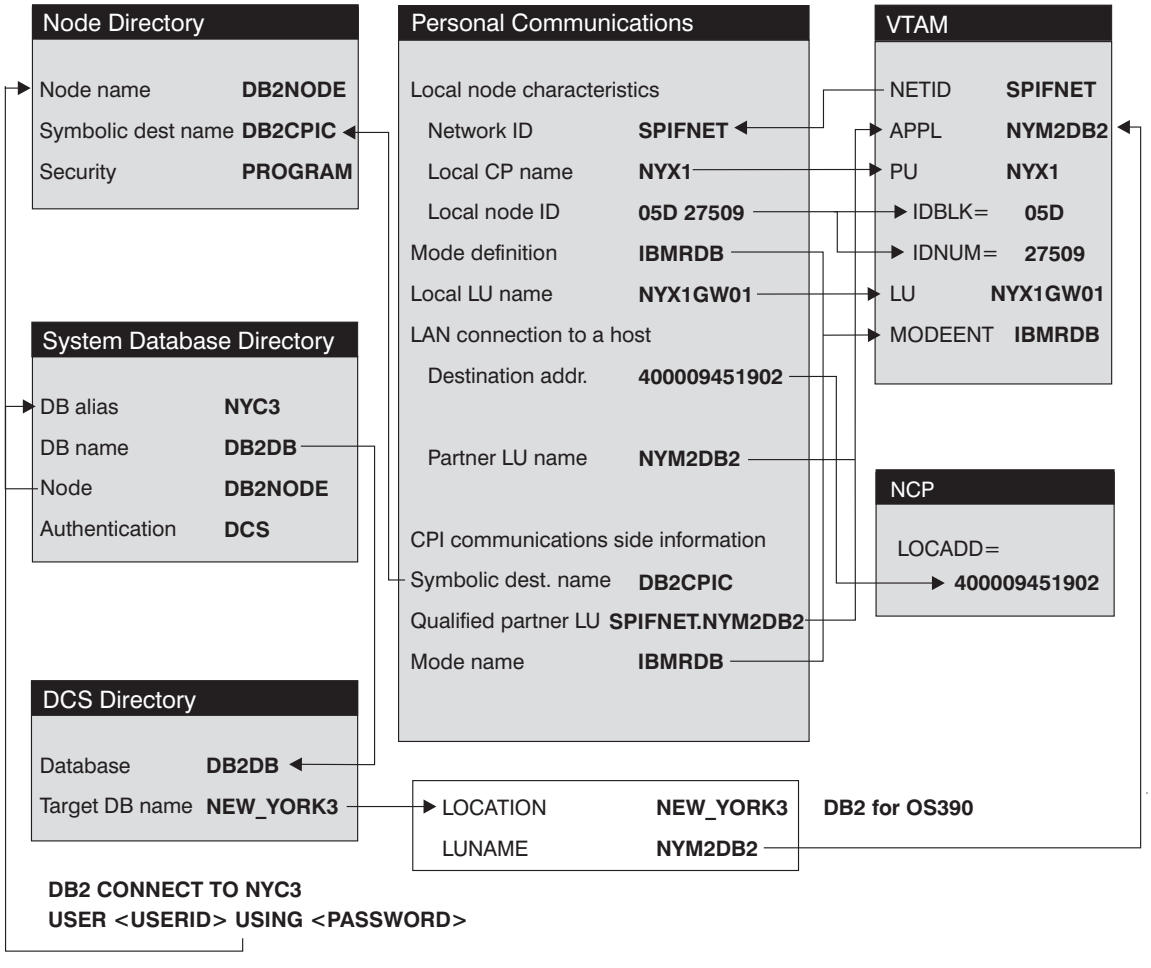

Figure 7. Configuration on the DRDA Server and DB2 Connect Workstation

Figure 7 illustrates the correspondences between information specified on the DRDA server system, information specified in Personal Communications, and information specified in DB2 directories. The values shown in the diagram are the example values used in the instructions in this chapter.

Table 7. Worksheet for Planning OS/390, MVS, VM, VSE, or OS/400 Connections

Ref.	Personal Communications 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 Personal Communications, click on the **Start** button, then select **Programs**->**IBM Communications Server**->**SNA Node Configuration**. The IBM Personal Communications SNA Node Configuration screen appears.

From the **File** button on the menu bar, select **New**. The **Define the Node** field appears.

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

- "Configure Node"
- "Configure Devices"
- "Configure Connections" on page 87
- "Configure Partner LU 6.2" on page 88
- "Configure Modes" on page 88
- "Configure Local LU 6.2" on page 88
- "Configure CPI-C Side Information" on page 89

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. Click on **OK**.

Configure Devices

To configure the device:

1. In the **Configuration options** field, select **Configure devices**.

Figure 8. Configuration Screen for Personal Communications.

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 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 Adjacent Node 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. In the **Fully-qualified CP name** fields, type in the network ID **3** and the adjacent control point SSCP name **4** (`SPIFNET.NYX`).

   Accept the defaults in the Advanced tab panel.
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** of the Basic tab panel, 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. In the **Partner LU Name** fields, type the Net ID **3** in the first field, and the Partner LU Name **2** (SPIFNET.NYM2DB2) in the second field.
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**.

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 Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53. However, you can also perform these steps manually as described in the sections that follow.

Update the Environment

IBM Personal Communications uses an environment variable called **appcllu** to communicate with DB2. You may set this variable on a per-session basis by opening a command window and typing `set appcllu=`*`local_lu_name`*, however you will probably find it more convenient to permanently set the variable. In order to permanently set the variable in Windows NT, do the following:

1. Click the **Start** button and choose **Settings**->**Control Panel**. Double-click on the **System** icon. When the **System Properties** window appears, select the **Environment** tab.
2. Type `appcllu` in the **Variable** field, and type your local LU name **11** in the **Value** field.
3. Click **Set** to accept the changes then click **OK** to exit the System Properties window.

The environment variable will now remain set for future sessions.

Step 3. Start SNA Node Operations

To start SNA node operations on your machine:

1. Click on the **Start** button, then choose **Programs**->**IBM Personal Communications**->**Administrative and PD Aids**-> **SNA Node Operations**. The **Personal Communications SNA Node Operations** window opens.
2. From the menu bar, click on **Operations** and choose **Start Node**. In the dialog box that opens, select the configuration file you saved at the end of Step 2 (in our example, `ny3.acg`). Click **OK**.

SNA node operations will now begin running.

Step 4. 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 DB2DB as NYC3 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 DB2DB 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 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/bnd/@ddcsmvs.lst blocking all sqlerror continue
        messages mvs.msg grant public
connect reset
```

where *path* corresponds to the *DB2PATH* registry value. These commands are described in detail in the *DB2 Connect User's Guide*.

Once you have completed these steps, see Chapter 21, “Getting Started with DB2 Universal Database” on page 141 for details on the many functions that are available to use with DB2.

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 if you are planning to update multiple databases within the same transaction; if you are planning to use 2-phase commit then Version 5.01 of IBM Communication Server is required
- 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. During installation CS/NT asks if you want to install LLC2. If you are not sure whether LLC2 was installed with your copy of CS/NT, you can find out as follows:

  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 8 on page 95).

To help you fill in the worksheets, Figure 9 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

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worksheet. Use the boxed numbers **1** to relate the configuration instructions to the worksheet values.

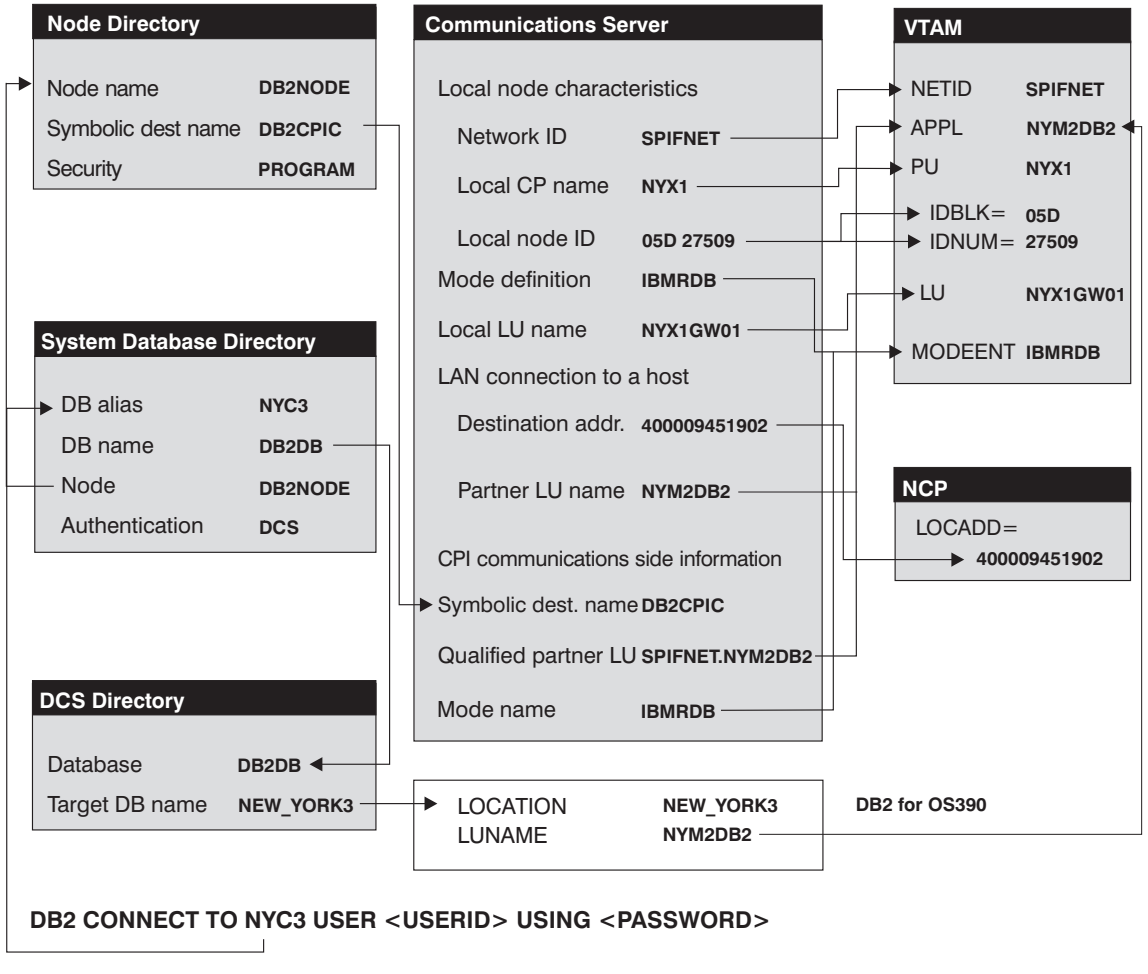


Figure 9. Configuration on the DRDA Server and DB2 Connect Workstation

Figure 9 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 8. Worksheet for Planning OS/390, MVS, VM, VSE, or OS/400 Connections

Ref.	CS/NT 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 VM, AXE transaction name for VSE, DB2DRDA for MVS or OS/390, QCNTEDDM for AS/400)	
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

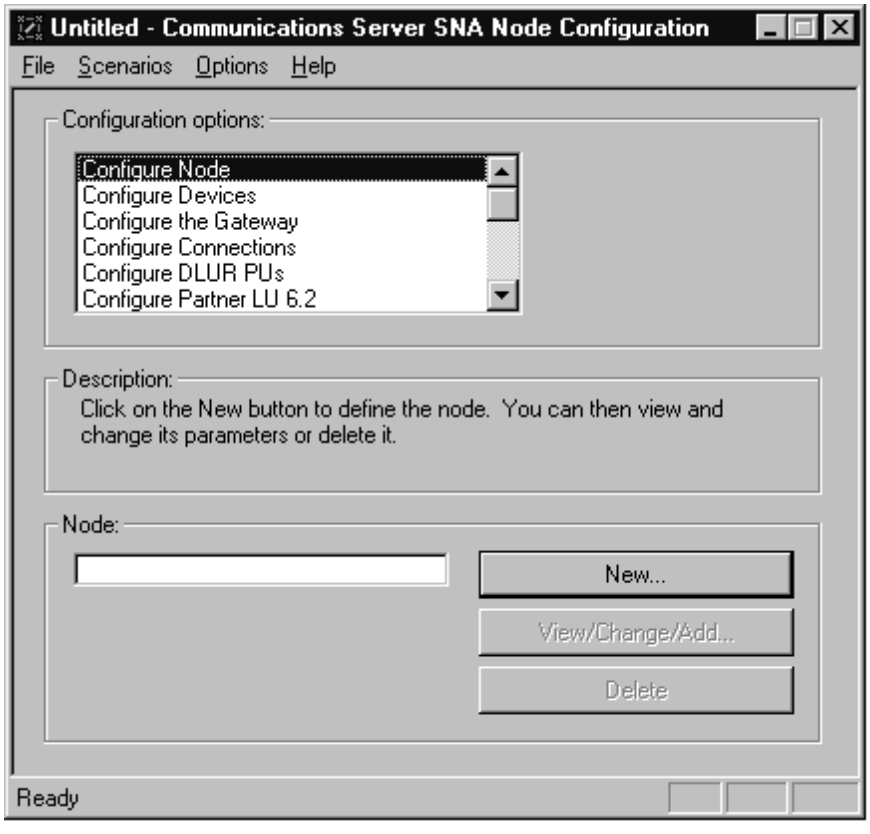
To start IBM Communications Server for NT, click on the **Start** button, then select **Programs**->**IBM Communications Server**->**SNA Node Configuration**. The IBM Communications Server SNA Node Configuration screen appears.

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 97
- “Configure Devices” on page 98
- “Configure the Gateway” on page 98 (used with Communications Server for Windows NT SNA Client only)
- “Configure Connections” on page 98
- “Configure Partner LU 6.2” on page 99
- “Configure Modes” on page 99
- “Configure Local LU 6.2” on page 100
- “Configure CPI-C Side Information” on page 100

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. Select the appropriate node type. The default is to select the **End Node** radio button.
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 105. 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 **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 the appropriate CP type (eg. **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**.

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 Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53. However, you can also perform these steps manually as described in the sections that follow.

Update the Environment

IBM Personal Communications uses an environment variable called **appcllu** to set the default APPC Local LU. You may set this variable on a per-session basis by opening a command window and typing `set appcllu=`*`local_lu_name`*, however you will probably find it more convenient to permanently set the variable. In order to permanently set the variable in Windows NT, do the following:

1. Click the **Start** button and choose **Settings**->**Control Panel**. Double-click on the **System** icon. When the **System Properties** window appears, select the **Environment** tab.
2. Type `appcllu` in the **Variable** field, and type your local LU name **11** in the **Value** field.
3. Click **Set** to accept the changes then click **OK** to exit the System Properties window.

The environment variable will now remain set for future sessions.

Step 3. Start SNA Node Operations

To start SNA node operations on your machine:

1. Click on the **Start** button, then choose **Programs**->**IBM Communication Server**->**SNA Node Operations**. The **SNA Node Operations** window opens.
2. From the menu bar, click on **Operations** and choose **Start Node**. In the dialog box that opens, select the configuration file you saved at the end of Step 2 (in our example, `ny3.acg`). Click **OK**.

SNA node operations will now begin running.

Step 4. 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 DB2DB as NYC3 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 DB2DB 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 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/bnd/@ddcsmvs.lst blocking all sqlerror continue
        messages mvs.msg grant public
connect reset
```

where *path* corresponds to the *DB2PATH* registry value. These commands are described in detail in the *DB2 Connect User's Guide*.

Once you have completed these steps, see Chapter 21, “Getting Started with DB2 Universal Database” on page 141 for details on the many functions that are available to use with DB2.

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 93 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 9 on page 106).

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.

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Table 9. 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 VM, AXE transaction name for VSE, or DB2DRDA 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	
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**.

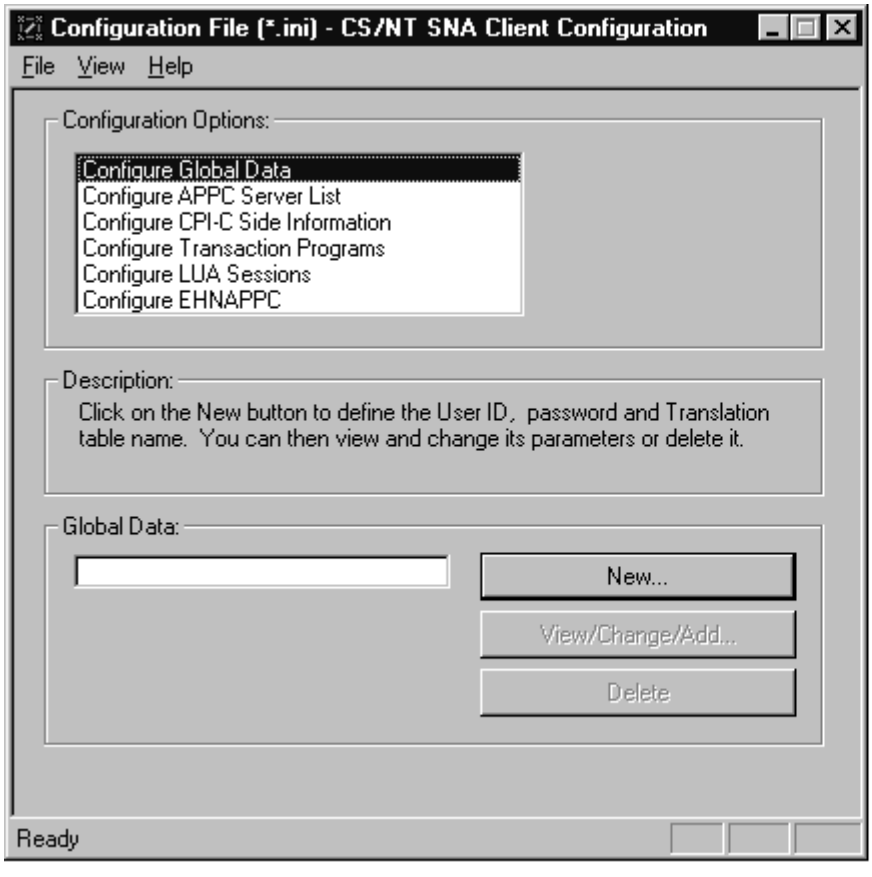
Step 3. Configure the SNA Client

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 (*.acg) – CS/NT SNA Client Configuration window appears.

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

- "Configure Global Data"
- "Configure APPC Server List" on page 109
- "Configure CPI-C Side Information" on page 109
- "Configure Transaction Programs" on page 109

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 107.

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 107.
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. Ensure that the **Background Process** box is checked.
7. 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 DB2DB as NYC3 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 DB2DB 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 8, “Configuring Host and AS/400 Connections on Windows 3.1 or 3.11 Workstations” on page 49 or Chapter 9, “Configuring Host and AS/400 Connections on OS/2 and Windows NT Workstations” on page 53. 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/bnd/@ddcsmvs.lst blocking all sqlerror continue
        messages mvs.msg grant public
connect reset
```

where *path* corresponds to the *DB2PATH* registry value. These commands are described in detail in the *DB2 Connect User's Guide*.

Once you have completed these steps, see Chapter 21, “Getting Started with DB2 Universal Database” on page 141 for details on the many functions that are available to use with DB2.

Chapter 16. Configuring Microsoft SNA Server Version 4.0 for Windows NT

Read this chapter if you have a Windows NT Server system that has Microsoft SNA Server Version 4.0 installed. Although Microsoft SNA Server will run on Windows NT 4.0 Workstation, Windows NT 4.0 Server is recommended.

Note: You must have Windows NT Fix Pack 3 installed in order to run SNA Server Version 4.0.

Step 1. Fill in the Worksheet

Before you configure the system for DB2 Connect, have your host-side administrator and LAN administrator fill in copies of the following worksheet for each host to which you wish to connect.

To help you fill in the worksheet, Figure 10 on page 116 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 Microsoft SNA Server. As you configure Microsoft SNA Server, replace the sample values that appear in the configuration instructions with your values from the worksheet. Use the boxed numbers (eg. **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.

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Table 10. 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	NETID	SPIFNET	
2	Remote LU Name	APPL	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	NETID		SPIFNET	
10	Local Control Point Name	PU Definition	NYX1	
11	(Local) LU name	LU Definition	NYX1GW01	
12	(Local) LU alias	Modeent	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 VM, AXE transaction name for VSE, or DB2DRDA 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	

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.

Step 2. Define Server Properties

You can define the properties of your SNA connections in the Microsoft SNA Server Manager. To access the manager, click on the Windows NT Start button, then select Programs->Microsoft SNA Server->Manager.

The Microsoft SNA Server Manager uses an interface similar to that of the Windows NT Explorer. Figure 10 on page 116 shows the interface. There are two panes in the main window of the Manager. All the configuration options we will be using can be accessed by clicking the right mouse button on objects in the left-hand pane of the window. Every object has a *context menu* that you can access by right-clicking on the object.

Define Control Point Name

The first step to configuring Microsoft SNA Server for DB2 Connect is to define the correct Control Point Name for your NT Server. Do the following:

1. Right-click on SNA Service and select Properties. The Properties dialog box appears.
2. Enter the correct **NETID** **9** and **Control Point Name** **4** in the corresponding fields of the dialog box.
3. Click OK to accept the changes.

Define Link Service (802.2)

Your next step is to set the properties of the link server. Perform the following steps:

1. Open the Servers folder in the left pane of the Manager by clicking the mouse on the plus sign next to the Server folder icon.
2. Click the right mouse button (right-click) on the server icon nested underneath the Servers folder.
3. Select Insert->Link Service. The **Insert Link Service** pop-up window appears.
4. Select **DLC 802 2 Link Service.** Press Add, then Finish.

Define Connection Properties

To specify the type of connection DB2 Connect will be using, do the following:

1. Right-click on SNA Service and select Insert->Connection->802.2. The **Connection Properties** dialog box appears.

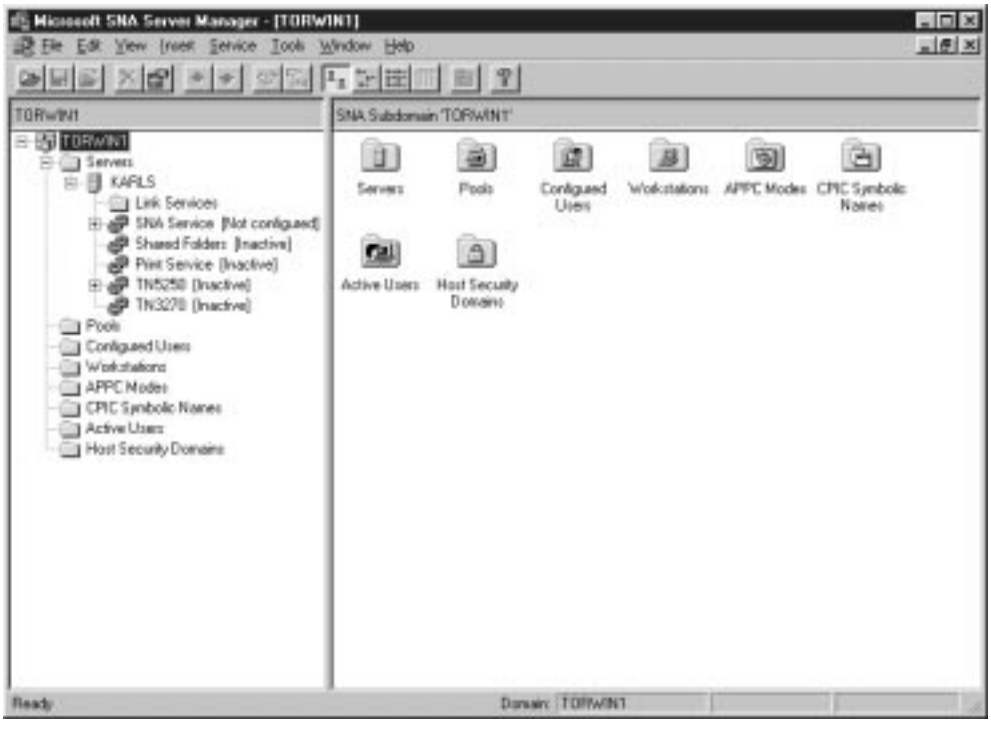

Figure 10. The Microsoft SNA Server Manager.

2. Under the **General** tab, enter a connection name **7** in the Name field.
3. Choose the **Link Service Type** (SnaDlc1).
4. Set the **Remote End** radio button to **Host System**.
   a. Set the **Allowed Directions** radio button to **Both Directions**.
   b. Set the **Activation** radio button to **On Server Startup**.
5. Select the **Address** tab and fill in the **Remote Network Address** **8** field. Accept the default numbers in the other fields.
6. Select the **System Identification** tab. Enter the following information
   a. For the **Local Node Name**, add the **NETID** **1** , the **Control Point Name** **4** , and the **Local Node ID** (**13** plus **14**). Accept the **XID Type** default.
   b. For the **Remote Node Name**, add the **NETID** **1** and the **Control Point Name** **4** . Accept the other defaults
7. Click **OK** to exit.

Define Local LU

To define the properties of the Local LU, do the following:

1. Right-click on **SNA Service** and select Insert->APPC->Local Lu. The **Local APPC LU Properties** dialog box appears.
2. Under the **General** tab, enter the following information:
   a. The **LU Alias** 12 .
   b. The **NETID** 9 .
   c. The **LU Name** 11 .
3. Select the **Advanced** tab, and select **Member of Default Outgoing Local APPC LU Pool**. Accept the other defaults.
4. Click **OK** to exit.

Define Remote LU

To define the properties of the Remote LU, do the following:

1. Right-click on **SNA Services** and select Insert->APPC->Remote LU.
2. Under the **General** tab, select **Connection** and enter the **LU Alias** 2 . The other fields will be filled in by the program.

   Note: If your LU alias is not the same as your LU Name, make sure you specify the LU Name in the appropriate field. The program will fill it in automatically, but it will be incorrect if the alias and the name are not the same.
3. Click **OK** to exit.

Define Mode

To define the properties of the APPC Mode, do the following:

1. Right-click on the **APPC Modes** folder icon, and select Insert->APPC->Mode Definition.
2. Under the **General** tab, enter the **Mode Name** 6 .
3. Select the **Limits** tab, and enter appropriate numbers for the **Parallel Session Limit** (eg. 30) and **Minimum Contention Winner Limit** (eg. 15). Your Host-Side or LAN administrator should be able to supply you with the numbers if you do not know the limits you should place here.
4. Accept the other defaults, and click **OK** to exit.

Define the CPIC Name Properties

To define the properties of the CPIC Name, do the following:

1. Right-click on **CPIC Symbolic Name** and select Insert->APPC->CPIC Symbolic Name. The **CPIC Name Properties** dialog box appears.
2. Under the **General** tab, enter the Symbolic Destination Name **16** in the **Name** field. Select a **Mode Name** of *IBMRDB*. Accept the other defaults.
3. Select the **Partner Information** tab.
   a. Under **Partner TP Name**, select the **SNA Service TP (in hex)** radio button.
   b. Under **Partner LU Name**, select **Fully Qualified** and enter the fully-qualified Partner LU Name (**1** and **2**) or alias.
4. Click **OK** to exit.

Step 3. Save the Configuration

Once you have entered all the settings for your SNA connection to DB2 Connect, click on the File menu of the Server Manager window and select **Save**. The Save File dialog box appears. Type a unique name for your configuration into the File Name field and click **Save**. Your configuration is now saved.

Step 4. 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 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 DB2DB 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/bnd/@ddcsmvs.lst blocking all sqlerror continue
        messages mvs.msg grant public
connect reset
```

where *path* corresponds to the *DB2PATH* registry value. These commands are described in detail in the *DB2 Connect User's Guide*.

Once you have completed these steps, see Chapter 21, “Getting Started with DB2 Universal Database” on page 141 for details on the many functions that are available to use with DB2.

Chapter 17. Configuring Microsoft SNA Client

Read this chapter if you have a Windows 3.1, Windows NT 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 122 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 Version 4.0 for Windows NT” on page 113.
4. Provide you with the symbolic destination name to use for each database connection defined in the previous step.

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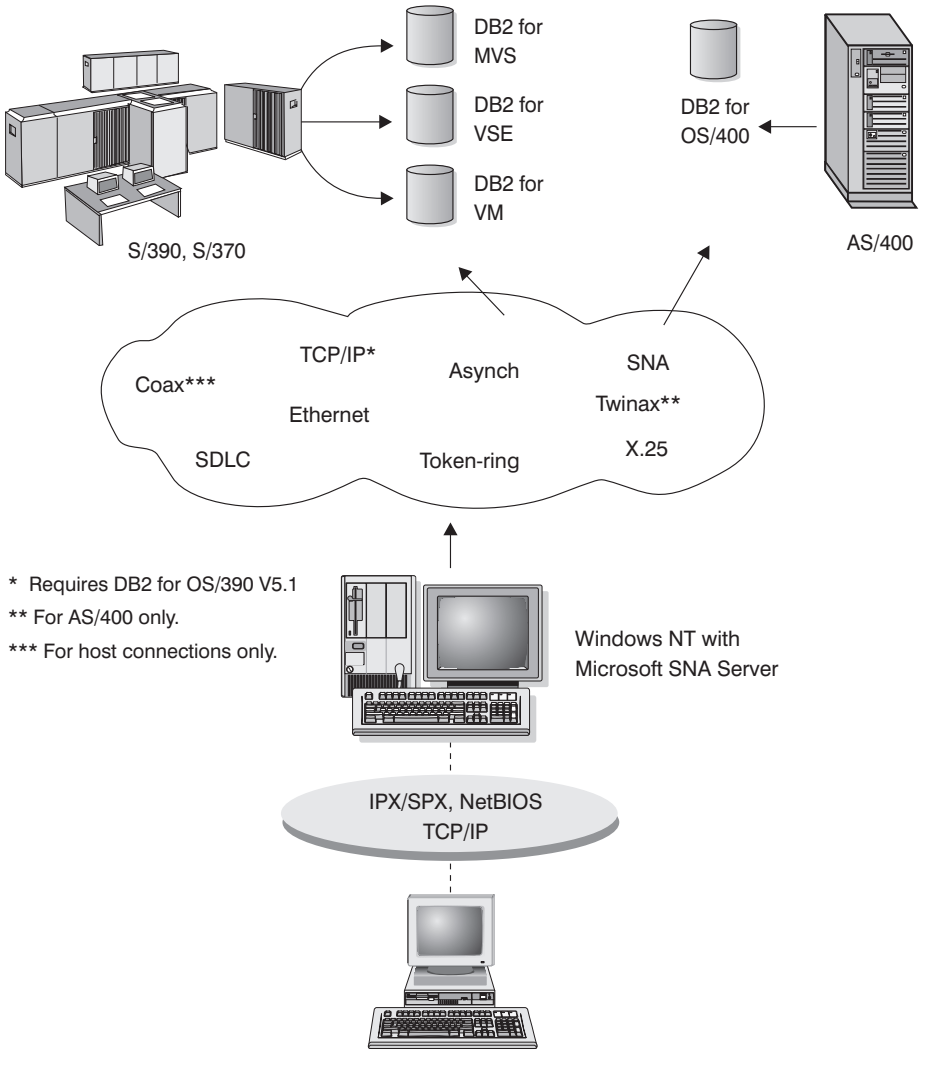

Figure 11. DB2 Connect Server Scenario Using DB2 Connect, MS SNA Client, and MS SNA Server

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 Appendix E, “Changing Your MVS Password” on page 277 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.

2 When the installation is completed, reboot.

3 Open the DB2 Folder, and click on the **Client Configuration Assistant** (or, on Windows 3.1, the **Data Sources Setup** tool) 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 11 on page 124), and **24** on the worksheet provided for use with SNA Server (Table 10 on page 114).

   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 11. 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 DB2DB 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. Enabling Multisite Updates (Two-Phase Commit)

This chapter provides an overview of the multisite update function as it applies to scenarios that involve host and AS/400 database servers. It describes products and components needed to implement PC, UNIX and web applications that update multiple DB2 databases in the same transaction.

Multisite update, also known as Distributed Unit of Work (DUOW) and Two-Phase Commit, is a function that enables your applications to update data in multiple remote database servers with guaranteed integrity. A good example of a multisite update is a banking transaction that involves transfer of money from one account to another in a different database server. In such a transaction it is critical that updates that implement debit operation on one account do not get committed unless updates required to process credit to the other account are committed as well. The multisite update considerations apply when data representing these accounts is managed by two different database servers.

DB2 products provide comprehensive support for multisite update. This support is available for applications developed using regular SQL as well as applications that utilize Transaction Monitor products that implement X/Open XA interface specification. Examples of such Transaction Monitor products include IBM TxSeries (CICS and Encina), Message and Queuing Series, Component Broker Series, San Francisco Project as well as Microsoft Transaction Server (MTS), BEA Tuxedo, NCR TopEnd and several others. There are different setup requirements depending on whether native SQL multisite update or TP Monitor multisite upate is used.

Both the native SQL and TP Monitor multi-site update programs must be precompiled with the `CONNECT 2 SYCNCPOINT TWOPHASE` options. Both can use the SQL Connect statement to indicate which database they want to be used for the SQL statements that follow. If there is no TP Monitor to tell DB2 it is going to coordinate the transaction (as indicated by DB2 receiving the `xa_open` calls from the TP monitor to establish a database connection), then the DB2 software will be used to coordinate the transaction.

When using TP monitor multi-site update, the application must request commit or rollback by using the TP monitor's API, e.g. `CICS SYNCPOINT`, `Encina Abort()`, `MTS SetAbort()`. When using native SQL muilti-update, the normal `SQL COMMIT` and `ROLLBACK` must be used.

TP Monitor multi-site update can coordinate a transaction that accesses both DB2 and non-DB2 resource managers such as Oracle, Informix, SQLServer, etc. Native SQL multisite update is used with DB2 servers only.

For a multisite update transaction to work each of the databases participating in a distributed transaction must be capable of supporting Distributed Unit of Work. At the

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time of this writing the following DB2 servers provided DUOW support that enabled them to participate in distributed transactions:

- DB2 Common Server V2
- DB2 Universal Database V5
- DB2 for MVS/ESA V3.1 and 4.1
- DB2 for OS/390 V5.1
- DB2 Universal Database for OS/390 V6.1
- DB2/400 V3.1 or later
- DB2 Server for VM and VSE V5.1

A distributed transaction can update any mix of supported database servers. For example, your application can update several tables in DB2 UDB on Windows NT, a DB2 for OS/390 database and a DB2/400 database all within a single transaction.

Host and AS/400 database servers require DB2 Connect to participate in a distributed transaction originating from PC, UNIX, and web applications. In addition many of the multisite update scenarios that involve host and AS/400 database servers require that Syncpoint Manager (SPM) component be configured. The need for SPM is dictated by the choice of protocol (SNA vs. TCP/IP) and use of a TP monitor. See Table ?? on page 129 for a summary of scenarios that require use of the SPM. The table shows that DB2 Connect is required for any access to the host or AS/400 from Intel or UNIX machines. In addition, for multisite updates, the SPM component of DB2 Connect is required if the access is via SNA or uses a TP monitor.

Host and AS/400 multisite update scenarios that require SPM.				
TP Monitor Used?	Protocol	SPM Needed?	Product Required (choose One)	Host and AS/400 Database Supported
Yes	TCP/IP	Yes	• DB2 Connect Enterprise Edition • DB2 UDB Enteprise Edition • DB2 UDB Extended Enterprise Edition	• DB2 for OS/390 V5.1 • DB2 UDB for OS/390 V6.1
Yes	SNA	Yes	• DB2 Connect Enterprise Edition* • DB2 UDB Enterprise Edition* • DB2 UDB Extended Enterprise Edition* **Note:** *AIX, OS/2 and Windows NT platforms only.	• DB2 for MVS/ESA V3.1 and 4.1 • DB2 for OS/390 V5.1 • DB2 UDB for OS/390 V6.1 • DB2/400 V3.1 or later • DB2 Server for VM or VSE V5.1
No	TCP/IP	No	• DB2 Connect Personal Edition • DB2 Connect Enterprise Edition • DB2 UDB Enterprise Edition • DB2 UDB Extended Enterprise Edition	• DB2 for OS/390 V5.1 • DB2 UDB for OS/390 V6.1

No	SNA	Yes	• DB2 Connect Enterprise Edition* • DB2 UDB Enterprise Edition* • DB2 UDB Extended Enterprise Edition* **Note:** *AIX, OS/2 and Windows NT platforms only	• DB2 for MVS/ESA V3.1 and 4.1 • DB2 for OS/390 V5.1 • DB2 UDB for OS/390 V6.1 • DB2/400 V3.1 or later • DB2 Server for VM and VSE V5.1

Note:

For more information about DUOW refer to the DB2 Connect User's Guide.

For additional information about DB2 Connect two-phase commit support, as well as instructions for setting up for several popular TP monitors, please see the Administration Guide or 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", "SPM", "MTS", "CICS", and "ENCINA".

Part 5. Configuring Access to DB2 Universal Database Servers

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Chapter 19. Configuring Access to a Remote DB2 Server Using the Client Configuration Assistant

The information in this section describes how to use the Client Configuration Assistant to configure OS/2 and Windows 32-bit operating systems to access remote DB2 Universal Database servers.

To configure communications to remote DB2 Universal Database servers without using the Client Configuration Assistant, refer to the online *Installing and Configuring DB2 Clients* manual located in *x*:\doc*language*\html\db2iyx50.htm, where *x* is the letter that designates your CD-ROM and *language* is the two-character country code that represents your language (for example, EN for English). For more information on country codes, see Table 16 on page 264.

Use the Client Configuration Assistant to configure your OS/2 and Windows 32-bit operating systems to access remote DB2 servers. The Client Configuration Assistant provides three configuration methods:

- One method makes use of a server's access profile
- One method searches the network for databases
- One method requires that you enter the database name and the communication protocol parameters for the DB2 server.

Perform the following steps to configure your workstation to access remote servers:

1. Start the Client Configuration Assistant.

   For OS/2:
   Double-click on the **Client Configuration Assistant** icon, located in the **DB2 for OS/2** folder.

   For Windows 32-bit operating systems:
   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 a server profile, select the **Use an access profile** radio button and click on the **Next** push button.

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a. Click on the **Browse** push button and select the appropriate access profile.

b. You are presented with a list of systems, instances, and databases. Select the database that you want to add 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.

  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 a 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.

The **Other Systems (Search the network)** icon will only appear if the client's *DISCOVER* parameter is set to SEARCH (this is the default setting).

  c. If the system that contains the database that you want to add 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 a system to get a list of the instances and databases in 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 System** push button. Enter the required communication protocol parameters for the remote Administration Server and click on **OK**. For more information, click on the **Help** push button.

     Select the database that you want to add and proceed to Step 3.

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

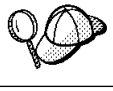
- The Administration Server *DISCOVER* configuration parameter on the remote system is set to DISCOVER=DISABLE.
- The *DB2COMM* registry value and the *DISCOVER_COMM* configuration parameter are not configured on the Administration Server of the remote system with a discovery protocol being used on the client (the client discovery protocol is specified by the *DISCOVER_COMM* configuration parameter in the client's configuration).
- The Administration Server is not running on the remote system.
- By default, the Discovery function will search the network for 40 seconds; this may not be long enough to detect the remote system. You can configure the *DB2DISCOVERYTIME* registry value to specify a longer period of time.
- The network that the Discovery request is running on may have been configured so that the Discovery request does not reach the remote system desired.
- If you are using NetBIOS as the Discovery protocol, you may need to configure the *DB2NBDISCOVERRCVBUFS* registry value to a larger value to enable the client to receive more concurrent Discovery replies.

- 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 and click on the **Next** push button. If you selected the **TCP/IP** or **APPC** radio button, select the radio button that corresponds to the type of system where the database that you are trying to connect to resides.

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

  c Enter the database alias name of the database that you want to connect to in the **Target database** field and click on the **Next** push button.



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

3 To specify a local database alias name or to add a description, click on the **Next** push button. If you do not want to specify a database alias name, or add a description, click on the **Done** push button. If you do not specify a database alias name, the default will be the same as the remote database alias 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:

   a. Select the **Register this database for ODBC** check box, if it is not pre-selected.

   b. Select the radio button that describes the type of data source that you want to register this database as. For more information, click on the **Help** push button.

   c. Click on the **Application** drop down box and select the application that you want to use.

   d. Click on the **Done** push button to finish using the Add Database SmartGuide and add the database that you selected.

6. The Confirmation window opens. Click on the **Test Connection** push button to test the connection to this 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 this database. If you want to access another database, click on the **Add Another** push button. To finish using the Add Database SmartGuide, click on the **Close** push button.

Part 6. Using DB2 Universal Database

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Chapter 20. 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.

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If the **sqlesact()** 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 24, “Controlling Your DB2 Environment” on page 165 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 21. Getting Started with DB2 Universal Database

This section describes how to use 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 142.
- "Working with the System Administrative Group" on page 143.
- "Software Registration" on page 144.
- "Upgrading from a Try-and-Buy License" on page 144.

Logging on to the System

To use DB2, log on with a valid DB2 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) must belong to the System Administrative (SYSDAM) group.

The *sysadm_group* parameter is not set when DB2 is first installed; therefore, the following criteria are used to determine default SYSADM authority:

OS/2
Any valid DB2 user ID which belongs to the UPM Administrator or Local Administrator group.

Windows 95 and Windows 98
Any Windows 95 or Windows 98 username that is a valid DB2 user ID.

Windows NT
Any valid DB2 user account which belongs to the local Administrators group.

See Appendix C, "Naming Rules" on page 269 for a list of naming restrictions.

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.

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Connecting to a Database

You need to connect to a 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. Depending on the authentication type and where the database resides, you connect to remote databases differently. While DCE authentication is an option, you cannot specify it when you create an instance. Refer to *Administration Guide* for more information on all authentication types.

Connecting to a local database

To connect to a local database called SAMPLE, enter the following command in the Command Center or the command line processor:

```
connect to sample
```

Connecting to a remote database

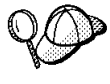
- To connect a client to a remote database called SAMPLE, using SERVER authentication, enter the following command in the Command Center or the command line processor:

  ```
  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 remote database called SAMPLE, using CLIENT authentication, enter 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* client, 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 provide 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 to run as a Windows NT service; however, it is not started automatically. To start the DB2 Security Service, enter the **net start db2ntsecserver** command.

When a successful connection is made, a message similar to the following is displayed:

```
Database product       = DB2/NT 5.2.0
SQL authorization ID   = USERID
Local database alias   = SAMPLE

Database Server        = DB2/6000 5.2.0
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.

Refer to the *Administration Guide* for more information on authentication.

Working with the System Administrative Group

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

OS/2
Any valid DB2 user ID which belongs to the Administrator or Local Administrator group.

Windows 95 and Windows 98
Any Windows 95 or Windows 98 user.

Windows NT
Any valid DB2 user account which belongs to the local Administrators group.

You can change the users who have SYSADM privileges for each DB2 instance by changing the *sysadm_group* parameter; but before you do, ensure that the group exists.

Granting Users Authorization

For applications to access databases, DB2 performs two types of checking:

Authentication Ensures that the user account and password are valid.

Authorization Ensures that the user has sufficient authority to perform a task.

This section discusses the authorization process used in a Windows NT domain environment. For more information on authentication and authorization, refer to the *Administration Guide*.

When performing administration tasks (such as cataloging the database directory or creating a database) System Administrative (SYSADM) authority is required. By default,

any user belonging to the Administrators group where the user account is defined has SYSADM authority.

In a Windows NT domain environment, only domain users that belong to the Administrators group at the Primary Domain Controller (PDC) have SYSADM authority. Adding a domain user to the local Administrators group on the server machine does not grant the domain user SYSADM authority, since DB2 always performs authorization at the machine where the account is defined. To avoid adding a domain user to the Administrators group of the Primary Domain Controller, perform the following steps:

1. Create a new global group. The name of the global group must be eight characters or less and comply with DB2's naming rule. For more information, see Appendix C, "Naming Rules" on page 269.
2. Add a domain user to this global group.
3. Grant SYSADM authority to this global group by entering the following command:

   ```
   db2 update database manager configuration using sysadm_group global_group_name
   ```

   where *global_group_name* is the name of the global group that you created.

Software Registration

The **Registration** icon, located in the **DB2** folder, is used to access and update the IBM Software Customer Profile and to register IBM Software with IBM.

1 Click on **Start**, and select **Programs->DB2 for Windows NT->Registration**.

The customer profile contains identification and demographic information about the user of each IBM software product. The software registration tool contains information and instructions on how to register IBM software by modem, telephone, Internet, FAX, or postal service.

2 Enter the appropriate information and complete the IBM Software Registration Smart Guide. Click on **Help** push button if you need assistance.

Upgrading from a Try-and-Buy License

Try-and-Buy versions are available for some DB2 products. If you install a product originally as Try-and-Buy, you do not need to reinstall the same product to upgrade the license. Simply add the license from the DB2 CD-ROM that comes in the product box.

If you install a DB2 product as Try-and-Buy, and you buy a different product, you must uninstall the Try-and-Buy product and then install the new one that you have purchased. For example, if you install DB2 Workgroup Edition as a Try-and-Buy and then purchase DB2 Enterprise Edition, you must uninstall DB2 Workgroup Edition and then install DB2 Enterprise Edition. At installation time, the program will automatically install the required license.

Note: *Your Proof of Entitlement* and *License Information* booklets identify the products for which you are licensed.

The following steps describe how to upgrade a license:

1. Click on **Start** and select **Programs**->**License Use Runtime**-> **Nodelock Administration Tool** to start the Nodelock Administration Tool.
2. Select **Products**->**New** from the menu toolbar.
3. Click on the **Import** push button.
4. Select the license file that corresponds to the specific product that you have purchased and installed on your system. It can be found in the `x:\db2\licence` directory, where `x:` represents the CD-ROM drive.

   db2conpr.lic DB2 Connect Personal Edition

   Click on **OK**.
5. Click on **OK** to return to the main screen.

Chapter 22. Running Your Own Applications

Various types of applications can access DB2 databases:

- Applications developed using the DB2 Software Developer's Kit 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 bind files to each database before they can be used with that database. In a network environment, if you are using multiple clients that run on different operating systems or are at different versions or service levels of DB2, you must bind the utilities once for each operating system and DB2-version combination.

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

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The bind files are grouped together in different `.lst` files in the `bnd` directory, under the installation directory (typically `sqllib\win` on Windows 3.x systems and `sqllib` for OS/2, and Windows 32-bit operating systems). 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/bnd/@ddcsmvs.lst blocking all sqlerror continue
        messages mvs.msg grant public
connect reset
```

where *path* corresponds to the *DB2PATH* registry value. 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 and Windows 32-bit 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, which is `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. Enter the following commands in the Command Center or the command line processor:

   ```
   "bind @db2ubind.lst messages bind.msg grant public"
   "bind @db2cli.lst messages clibind.msg grant public"
   ```

   In this example, `bind.msg` and `clibind.msg` are the output message files, and EXECUTE and BINDADD privileges are granted to *public*.

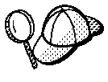
4. Reset the connection to the database by entering the following command:

   ```
   connect reset
   ```

   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.
3. If you have BINDADD authority, the first time you use the DB2 CLI or ODBC driver, the DB2 CLI packages will be bound automatically.



If the applications that you are using require binding to the database, you can use the 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 Application Enablers 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 147 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 database (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 **Local** icon.) 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.x, 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.x 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. A unique index should be created 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 select 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.

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.x, Windows 95, Windows 98, and Windows NT Client Access to DB2 using CLI/ODBC" on page 151
- "OS/2 Client Access to DB2 using CLI/ODBC" on page 153

Windows 3.x, Windows 95, Windows 98, 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 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 218 for more details.

   For more information refer to the on-line help in the CCA (or the **CATALOG DATABASE** and **CATALOG NODE** commands in the *Command Reference*).

2. Verify that the Microsoft ODBC Driver Manager and the DB2 CLI/ODBC driver are installed. On Windows 32-bit operating systems they are both installed with DB2 unless the ODBC component is manually unselected during the install. On Windows 3.x 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 32-bit operating systems, **odbcadm.exe** on Windows 3.x.

   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 on Windows 32-bit operating systems, or double-click on the **Install ODBC Driver** icon in the DB2 program group in Windows 3.x.

3. Register the DB2 database with the ODBC driver manager as a *data source*. On Windows 32-bit operating systems 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 32-bit operating systems you can use the radio buttons to add the data source as either a user or system data source.
- Using the Microsoft **32-bit 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 32-bit operating systems 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 32-bit operating systems 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.

  The *Command Reference* contains more information on the CATALOG command:

  ```
  CATALOG [ user | system ] ODBC DATA SOURCE
  ```

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.
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 32-bit operating systems.

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.

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 218.

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.
   d. Click on the **Advanced** push button. You can set the configuration keywords in the window that appears. 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.
4. 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 150 should provide you with all of the information you require. *Installing and Configuring DB2 Clients* includes additional information on setting up and using DB2 CLI and ODBC applications. (The online *Installing and Configuring DB2 Clients* manual is located in the directory *x*:\doc\EN\html, where *x* is the letter that designates your CD-ROM and EN is the two-character country code that represents your language, for example EN for English.) This information is useful where DB2 tool support is not available, and for administrators who require more detailed information.

The following topics are covered in the *Installing and Configuring DB2 Clients* manual:

- How to Bind the DB2 CLI/ODBC Driver to the Database
- How to Set CLI/ODBC Configuration Keywords
- Configuring db2cli.ini

Running Java Programs

You can develop Java programs to access DB2 databases with the appropriate Java Development Kit (JDK) on AIX, HP-UX, OS/2, SCO UnixWare, Solaris, or Windows 32-bit operating systems. The JDK includes Java Database Connectivity (JDBC), a dynamic SQL API for Java.

DB2 JDBC support is provided by the DB2 Client Application Enabler (DB2 CAE). With DB2 JDBC support you can build and run JDBC applications and applets. These contain dynamic SQL only, and use a Java call interface to pass SQL statements to DB2.

The DB2 Software Developer's Kit (DB2 SDK) provides support for Java embedded SQL (SQLJ). With DB2 SQLJ support and DB2 JDBC support you can build and run SQLJ applications and applets. These contain static SQL and use embedded SQL statements that are bound to the DB2 database.

Java can also be used on the server to create JDBC and SQLJ stored procedures and user-defined functions (UDFs).

Building and running different types of Java programs requires support from different components of DB2:

- JDBC applications do not require any other component of DB2 on the client to be built. To run JDBC applications requires the DB2 Client Application Enabler (CAE) to connect to DB2.

- To build SQLJ applications requires the DB2 SDK. To run SQLJ applications requires the DB2 CAE to connect to DB2.
- JDBC applets do not require any other DB2 component on the client to be built or run.
- SQLJ applets require the DB2 SDK to be built. They do not require any other DB2 component to be run on the client.

For detailed information on building and running JDBC and SQLJ programs on UNIX platforms see *Building Applications for UNIX Environments*. Detailed information on building and running JDBC programs on Windows and OS/2 can be found in *Building Applications for Windows and OS/2 Environments*. Building and running SQLJ programs on Windows and OS/2 is explained in the *What's New* book. For more information on DB2 programming in Java, refer to the *Embedded SQL Programming Guide*, chapter 15, "Programming in Java". This covers creating and running JDBC applications, applets, stored procedures and UDFs. Information on SQLJ applications, applets, stored procedures and UDFs can be found in the *What's New* book.

For the latest, updated DB2 Java information, visit the Web Page at:

`http://www.software.ibm.com/data/db2/java`

Configuring the Environment

To build and run DB2 Java programs, you need to install and configure the appropriate version of the Java Development Kit (JDK) on your development machine:

AIX: The Java Development Kit (JDK) Version 1.1 for AIX from IBM.

HP-UX: The HP-UX Developer's Kit for Java Release 1.1 from Hewlett-Packard.

OS/2: The Java Development Kit (JDK) Version 1.1 for OS/2 from IBM.

SCO UnixWare: No installation necessary: Java Development Kit (JDK) Version 1.1.3 for SCO UnixWare is already installed in `/usr/java`.

Solaris: The Java Development Kit (JDK) Version 1.1.4 for Solaris, and the Solaris Native Thread pack, from Sun Microsystems.

Windows 32-bit operating systems: The Java Development Kit (JDK) Version 1.1 for Win32 from Sun Microsystems.

For information on installing and configuring any of the above JDKs, please refer to:

`http://www.software.ibm.com/data/db2/java`

For all supported platforms, you must also install and configure the DB2 Client Application Enabler for your platform from the DB2 Client Pack. It must be Version 2.1.2 or later, except for SCO UnixWare which must be Version 5.2 or later.

To run DB2 Java stored procedures or UDFs, you also need to update the DB2 database manager configuration to include the path where the JDK version 1.1 is installed on your development machine. You can do this by entering the following on the command line:

```
db2 update dbm cfg using JDK11_PATH /home/smith/jdk11
```

where `/home/smith/jdk11` is the path where the JDK version 1.1 is installed.

You can check the DB2 database manager configuration to verify the correct value for the `JDK11_PATH` field by entering the following command:

```
db2 get dbm cfg
```

You may want to pipe the output to a file for easier viewing. The `JDK11_PATH` field appears near the beginning of the output. For more information on these commands, see the *Command Reference*.

Note: On Solaris, some Java Virtual Machine implementations do not work well in programs that run in a "setuid" environment. The shared library that contains the Java interpreter, `libjava.so`, may fail to load. As a workaround, you can create symbolic links for all needed JVM shared libraries in `/usr/lib`, with a command similar to the following (depending on where Java is installed on your machine):

```
ln -s /opt/jdk1.1.3/lib/sparc/native_threads/*.so /usr/lib
```

For more information on this and other workarounds available, please visit:

`http://www.software.ibm.com/data/db2/java/v5/faq.html`

To run Java programs, the following environment variables are automatically updated during DB2 installation on Windows and OS/2, and during instance creation on UNIX platforms.

On UNIX platforms:

- CLASSPATH includes "." and the file `sqllib/java/db2java.zip`
- On AIX, SCO UnixWare, and Solaris: LD_LIBRARY_PATH includes the directory `sqllib/lib`; on HP-UX: SHLIB_PATH includes the directory `sqllib/lib`
- On Solaris only: THREADS_FLAG is set to "native"

On Windows and OS/2 platforms:

- CLASSPATH includes "." and the file `%DB2PATH%\java\db2java.zip`

In order to build and run SQLJ programs, CLASSPATH is also automatically updated to include these files:

On UNIX platforms:

- `sqllib/java/sqlj.zip` (required to build SQLJ programs)
- `sqllib/java/runtime.zip` (required to run SQLJ programs)

On Windows and OS/2 platforms:

- `%DB2PATH%\java\sqlj.zip` (required to build SQLJ programs)
- `%DB2PATH%\java\runtime.zip` (required to run SQLJ programs)

Java Applications

Start your application from the desktop or command line by running the Java interpreter on the executable program with this command:

```
java prog_name
```

where `prog_name` is the name of the program.

The DB2 JDBC driver handles the JDBC API calls from your application and uses the DB2 CAE to communicate the requests to the server and receive the results.

Note: An SQLJ application must be bound to the database before it is run.

Java Applets

Because Java applets are delivered over the web, a web server must be installed on your DB2 machine (server or client).

To run your applet, make sure your `.html` file is properly configured. Start the JDBC applet server on the TCP/IP port specified in the `.html` file. For example, if you specified:

```
param name=port value='6789'
```

then you would enter:

```
db2jstrt 6789
```

You must ensure that your working directory is accessible to your web browser. If it is not, copy your applet's `.class` and `.html` files into a directory that is accessible. For SQLJ applets, you must also copy the profile `.class` and `.ser` files as well.

Copy the `sqllib/java/db2java.zip` file into the same directory as these other files. For SQLJ applets, also copy the `sqllib/java/runtime.zip` file into this directory.

Then on your client machine start your web browser (which supports JDK 1.1) and load the `.html` file.

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.

Note: An SQLJ applet must be bound to the database before it is run.

Chapter 23. 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 OS/2 or Windows 32-bit operating systems. Otherwise, you can enter commands in the command line processor or at a system command prompt.

Task: Entering DB2 commands, SQL statements, and operating system commands	
Operating System	**Tools**
OS/2	• Command Center • command line processor • command prompt
Windows 3.x	• command line processor
Windows 32-bit operating systems	• Command Center • command line processor • command window

Using the Command Center

On OS/2 and Windows 32-bit 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 SQL statements and DB2 commands in a results window. You can scroll through the results and save the output to a file.
- Save a sequence of SQL statements and DB2 commands to a script file. You can then schedule the script to run as a job. When a saved script is modified, all jobs dependent on the saved script inherit the new modified behavior.
- Recall and run a script file.
- See the execution plan and statistics associated with a SQL statement before execution. You do this by invoking Visual Explain in the interactive window.
- Get quick access to database administrative tools 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.

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To invoke the Command Center on OS/2:

1. Double-click on the **DB2 for OS/2** folder.
2. Double-click on the **Command Center** icon.

To invoke the Command Center on Windows 32-bit operating systems:

1. Click on **Start**, and select **Programs->DB2 for Windows-> Command Center**.

The Command Center contains a large input area in which you type your commands. To run the commands you have entered, select the **Start or stop execution** icon from the menu toolbar, or use CTRL+Enter.

It is no longer necessary to enter the commands with a `db2` prefix; instead, enter the command as follows:

```
list node directory
```

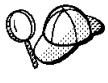
To enter operating system commands in interactive mode, precede the operating-system command with an exclamation mark (!). For example:

```
!dir
```

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

After you enter a command, the Command Center displays the Results window, which informs you how the commands are proceeding.

To recall commands that you have entered, select the **Script** Tab, click on the drop down box, and select a command. To save commands as scripts, select **Script**->**Save as** from the menu bar.



If you want to store commonly used SQL statements or DB2 commands as scripts, click on the **Script Center** icon from the main tool bar.

Using the Command Line Processor

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

Interactive Input Mode	You can enter operating systems commands, 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 operating system commands, DB2 commands, or SQL statements and view their output.
File Input Mode	Refer to the *Command Reference* 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 on the **DB2 for OS/2** folder.
  2. Double-click on the **Command Line Processor** icon.
- On Windows 32-bit operating systems:
  1. Click on **Start** and select **Programs** ->**DB2 for Windows**->**Command Line Processor**.
- On Windows 3.x use one of the following methods:
  - From a DOS full screen, enter the **win db2clpw** command.
  - From Windows:
    1. Double-click on 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 **db2cmd** command followed by the **db2** command at a command prompt. In interactive input mode, the prompt looks like this:

```
db2 =>
```

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

```
db2 => list node directory
```

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

```
db2 => !dir
```

Windows 3.x 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 empno, lastname, birthdate, from \
db2 (cont.) => employee where sex='F' order by empno desc
```

Note: You do not need to use a line continuation character when entering long commands in interactive input mode on Windows 3.x workstations.

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

For more information on advanced topics using the command line processor, refer the *Command Reference*.

Command Line Mode

On OS/2, you can enter 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 32-bit 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 meaning on the operating system you are using, you will need to enter the command in quotation marks to ensure that it is run properly. For example, the following command will successfully retrieve all the information from the *employee* table, even if the * character has a special meaning on the operating system:

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

2. The command line mode is not available on Windows 3.x systems.

For more information on using the command line processor, refer to the *Command Reference*.

Chapter 24. 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 166.
- To set DB2 environment variables, see:
  - “Setting Your Environment on OS/2” on page 167.
  - “Setting Your Environment on Windows 32-Bit Operating Systems” on page 168.
  - “Setting Your Environment on Windows 3.x” on page 169.
- To set database manager configuration parameters on a client instance, see “Configuration Parameters” on page 177.

Prior to the introduction of the DB2 profile registry in Version 5, changing your DB2 environment on OS/2 or Windows 32-bit operating systems required you to change your system's environment variables.

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: There is no DB2 profile registry on Windows 3.x. See “Setting Your Environment on Windows 3.x” on page 169 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 170 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*.

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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 machine global variable settings. Any variable not defined at the node or instance levels will be evaluated at this level.

To modify registry variable values, enter the **db2set** command.

The syntax of the **db2set** command is as follows:

- To set a parameter, enter:

  ```
  db2set parameter=value
  ```

  This command will set the parameter that you specify at the default level for that parameter.

- To set a parameter's value for a specific instance, enter:

  ```
  db2set parameter=value -i instance_name
  ```

- To set a parameter's value for a specific DB2 instance and node, enter:

  ```
  db2set parameter=value -i instance_name node_number
  ```

- To set a parameter at the global profile level, enter:

  ```
  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; for example, *DB2SYSTEM* and *DB2INSTDEF*.

- 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 instance level, enter:

  ```
  db2set parameter= -g instance
  ```

- To delete a parameter's setting and to restrict its use, if it is defined at a higher profile level, enter:

  ```
  db2set parameter= -null -i instance
  ```

  This command will delete the setting for the parameter you specify and restrict high level profiles from setting this parameter (in this case, the DB2 global-level profile).

However, the parameter you specify could still be set by a lower level profile (in this case, the DB2 node-level profile).

- To view the current session's parameter's value, enter:

  ```
  db2set parameter
  ```

- To view the parameter's value at all levels, enter:

  ```
  db2set parameter -all
  ```

- To view a list of all values defined in the profile registry, enter:

  ```
  db2set -all
  ```

For more information on the **db2set** command and the administration 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, there are three system environment variables that are not stored in the DB2 profile registry: *DB2INSTANCE*, *DB2PATH*, and *DB2INSTPROF*. *DB2INSTANCE* and *DB2PATH* are set when DB2 is installed; *DB2INSTPROF* can be set after installation. The environment variable *DB2PATH* must be set; this environment variable 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 determine the setting of an environment variable, enter:

```
set variable
```

To change the setting of an environment variable, enter the following command:

```
set variable=value
```

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 32-Bit Operating 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, and the workstation will have to be rebooted in order for the variable values to take effect.

Windows 32-bit operating systems 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:

```
set variable
```

To set system environment variables, do the following:

On Windows 95 and Windows 98:
Edit the 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 window, 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 value that you would like this parameter to take, 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 change or append, for example *DB2INSTANCE*.

2. Change the **Value** field to the value that you would like this parameter to take, for example, *db2inst*.

c. Click on the **Set** push button.

d. Click on **OK**.

4. You may have to reboot your system for these changes to take effect.

Setting Your Environment on Windows 3.x

The DB2 environment on Windows 3.x is not controlled by profile registries. Instead, Windows 3.x clients define environment keywords in the file `db2.ini` file (typically found in `C:\windows` directory).

On Windows 3.x, the parameters that control the DB2 environment are called environment keywords. However, because many Windows 3.x 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.x client environment keywords. Within this 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
```

The following is a sample `db2.ini` file:

```
[DB2 Client Application Enabler]
; This is for my Windows 3.x Client
DB2PATH=C:\SQLLIB\WIN
DB2INSTANCE=DB2
DB2INSTPROF=C:\SQLLIB
DB2TRACEON=N
```

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 semicolon 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).

This file is located in the Windows product directory.

On Windows 3.x, the Client Application Enabler for DB2 Version 2.x, Version 4, 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.x, enter the following command:

```
db2set -lr
```

Note: Windows 3.x clients define environment variables in the file `db2.ini`. See "Setting Your Environment on Windows 3.x" on page 169 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 *DB2 Connect User's Guide* for details.
DB2BIDI	All	Default: (not set)	Enables bi-directional CCSID processing by UDB. Refer to the *DB2 Connect User's Guide* for details.

Parameter	Operating System	Values	Description
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 *db2codepage* unless explicitly stated in DB2 documents, or asked to do so by DB2 service. Setting *DB2CODEPAGE* to a value not supported by the operating system can produce unexpected results. Normally, you do not need to set *DB2CODEPAGE* 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 applications, 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 not set.
DB2DBMSADDR	Windows 32-bit operating systems	Default= (not set), value for Windows 95 and Windows 98: (90000000), value for Windows NT: (20000000)	Specifies the default database manager shared memory address in hexadecimal format. If a shared memory address collision occurs, this value can modified to force the database manager instance to allocate its shared memory at a different address. Use the DB2DMSADDR registry profile variable to assign an address value in the range of x'20000000' to x'B0000000' on Windows NT or x'80000000' to x'B0000000' on Windows 95 using increments of x'40000000'. Use the **db2set** command to change the shared memory address. For example, to set DB2DBMSADDR to x'84000000, use the following command: `db2set DB2DBMSADDR=84000000`
DB2DISCOVERYTIME	OS/2 and Windows 32-bit operating systems	Default: (default time of 40 seconds is used when this parameter is not set)	Specifies the amount of time that a SEARCH discovery will search for DB2 systems.

Parameter	Operating System	Values	Description
DB2DMNBCKCTLR	Windows NT	Default: (not set)	If DB2 is installed on a backup domain controller, setting DB2DMNBCKCTLR=DOMAIN_NAME allows DB2 to use the security database on the backup domain controller, thereby reducing LAN traffic. (DOMAIN_NAME must be in upper case.) **Note:** A backup domain controller shadows the security database on the primary domain controller.
DB2INCLUDE	All	Default: (not set)	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 *Embedded SQL Programming Guide* for descriptions of how *db2include* is used in the different precompiled languages.
DB2INSTDEF	OS/2 and Windows 32-bit operating systems	Default=DB2 (on OS/2 and Windows 32-bit operating systems)	Sets the default instance to be used if *DB2INSTANCE* is not defined.
DB2OPTIONS	All	Default: (not set)	Sets command line processor options.
DB2SLOGON	Windows 3.x	Default (not set), Values: Y, N	Enables a secure logon in DB2 for Windows 3.x . If *db2slogon*=YES DB2 does not write user IDs and passwords to a file, but instead uses a segment of memory to maintain them. When *db2slogon* is enabled, the user must logon each time Windows 3.x is started.
DB2TIMEOUT	Windows 3.x and Macintosh	Disabled	Used to control the timeout period for Windows 3.x 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 *db2timeout* is set to a value between 1 and 30, the default minimum value will be used. If *db2timeout* is set to a value of 0, or a negative value, the timeout feature is disabled. This feature is disabled by default.

Parameter	Operating System	Values	Description
DB2TRACENAME	Windows 3.x and Macintosh	Default (not set)	On Windows 3.x and Macintosh, specifies the name of the file where trace information is stored. The default on Windows 3.x is *db2tracename*=DB2WIN.TRC, and is saved in your current instance directory (for example, \sqllib\db2). The default on Macintosh is *db2tracename*=DB2MAC.TRC. We strongly recommend that you specify the full path name when naming the trace file.
DB2TRACEON	Windows 3.x and Macintosh	Default (not set), Values: Y, N	On Windows 3.x and Macintosh, turn 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 *Troubleshooting Guide* for information on using the trace facility with DB2 Client Application Enabler.
DB2TRCFLUSH	Windows 3.x and Macintosh	Default (not set), Values: Y, N	On Windows 3.x and Macintosh, *db2trcflush* can be used in conjunction with *db2traceon*=Y. *db2trcflush*=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 *db2trcflush*=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	Windows 3.x and Macintosh	Default: (not set), Values: Y, N	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.

Parameter	Operating System	Values	Description
DB2YIELD	Windows 3.x	Default (not set), Values: Y, N	Specifies the behavior of the Windows 3.x client while communicating with a remote server. When `N` is set, the client will not yield the CPU to other Windows 3.x 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 *db2yield*=`YES`. If your system crashes, you will need to set *db2yield*=`NO`. 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=*DB2INSTDEF* on OS/2 and Windows 32-bit operating systems	The environment variable used to specify the instance that is active by default. On UNIX, users must set the environment variable *DB2INSTANCE*.
DB2INSTPROF	OS/2, Windows 3.x, and Windows 32-bit operating systems	Default (not set)	The environment variable used to specify the location of the instance directory on OS/2 and Windows 32-bit operating systems if different than *DB2PATH*.
DB2PATH	OS/2, Windows 3.x, and Windows 32-bit operating systems		The environment variable used to specify the directory where the product is installed on OS/2 and Windows 32-bit operating systems. By default it is set to `x:\sqllib\win` on Windows 32-bit operating systems; where `x:` is the install drive.
Communications			
DB2COMM	All, server only	Default (not set), 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.

Parameter	Operating System	Values	Description
DB2NBADAPTERS	OS/2 and Windows 32-bit operating systems	Default=0, Range: 0-15, Multiple values should be separated by commas	Used on the server to specify which local adapters to use for DB2 NetBIOS LAN communications. Each local adapter is specified using its logical adapter number. You can set *DB2NBADAPTERS* on the client if you want to perform a NetBIOS discoery on an adapter other than the default adapter 0. **Note:** On Windows 95 and Windows 98 *DB2NBADAPTERS* is only used for discovery.
DB2NETREQ	Windows 3.x	Default=3, Range: 0-25	Specifies the number of NetBIOS requests that can be run concurrently on Windows 3.x clients. The default value is 3. The number can range from 0 to 25. The higher you set this value, the more memory below the 1MB level will be used. When the concurrent number of requests to use NetBIOS services reaches the number you have set, subsequent incoming requests for NetBIOS services are held in a queue and become active as the current requests complete. If you enter 0 (zero) for *db2netreq*, the Windows database client issues NetBIOS calls in synchronous mode using the NetBIOS wait option. In this mode, the database client allows only the current NetBIOS request to be active and does not process another one until the current request has completed. This can affect other application programs. The 0 value is provided for backwards compatibility only. It is strongly recommended that 0 not be used.

Parameter	Operating System	Values	Description
DCE Directories			
DB2DIRPATHNAME	OS/2 and UNIX	Default: (not set)	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 *db2dirpathname* 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	Default: (not set)	Specifies a temporary override of the DFT_CLIENT_COMM parameter value in the database manager configuration file. If both DFT_CLIENT_COMM and *db2clientcomm* 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.
DB2CLIENTADPT	OS/2	Default: (not set), range: 0-15	Specifies the client adapter number for NETBIOS protocol on OS/2 operating systems. The *db2clientadpt* value overrides the DFT_CLIENT_ADPT parameter value in the database manager configuration file.
DB2ROUTE	OS/2 and UNIX	Default: (not set)	Specifies the name of the Routing Information Object the client uses when it connects to a database with a different database protocol. The *db2route* value overrides the ROUTE_OBJ_NAME parameter value in the database manager configuration file.

Configuration Parameters

Configuration parameters are values that affect the operating characteristics of a database or database management system.

Database manager configuration parameters exist on servers and clients; however, only certain database manager 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, or remotely from the Control Center.

For information on setting database or database manager 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 or Windows 32-bit operating systems, 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 32-bit operating systems:
  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.

To modify a configuration parameter:

1. Select the tab that corresponds to the type of configuration parameter that you want to modify.
2. Select the configuration parameter that you want to modify from the **Parameter** window.
3. Select the value for this parameter from the **Value** window.

4. Click on **OK**.

For more information, refer to the online help.

- For information on using Client Configuration Assistant, see Chapter 28, “Using the Client Configuration Assistant” on page 217.

Chapter 25. 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.

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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 181. 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 182. 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 184.
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 183. 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 181
- "Logging On at the Command Prompt" on page 181
- "Adding a New User ID and Password" on page 182
- "Changing or Deleting a User ID" on page 183
- "Logging Off" on page 184
- "Managing UPM Groups" on page 184

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**.

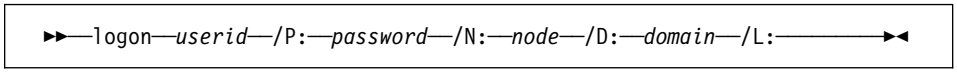
Logging on to UPM with Multiple IDs

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:



userid — Identifies the user logging on. If *userid* is not specified, the Logon window is displayed so you can enter the user ID.

/P:*password* — Allows you to specify a password. If you enter a password, UPM tries to log on using the *password* specified. If no *password* 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.

/P is ignored if *userid* was not specified.

/N:*node* — Specifies the node to be used the next time a node must be accessed. If you use /N, the user ID and password are not validated until the program attempts to connect to the node.

If no *node* 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 185.

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 185.

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 185).
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 entering 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, ADMINS, 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 12 on page 186.

Table 12. 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

Part 7. Advanced Installation and Configuration

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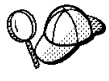
Chapter 26. Unattended DB2 Installation on OS/2 or Windows 3.x Operating Systems

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. 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 or Windows 3.x operating systems:

- Locally, from a CD-ROM (refer to “Installing DB2 Products from a Hard Disk or CD-ROM”).
- Remotely, across a network connection from a hard disk/CD-ROM (refer to “Installing DB2 Products from a Hard Disk or CD-ROM”).
- Remotely, using the Netfinity server, if it is installed on your system (refer to “Installing DB2 Products Remotely Using TME Netfinity Server” on page 195).

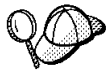


If you need to install the same DB2 product on several machines, you can use unattended installation's "response file" feature to create a customized configuration, save the customized response file, then reuse it as a template for each installation.

Installing DB2 Products from a Hard Disk or CD-ROM

To install DB2 products on local or remote workstations, from a hard disk or CD-ROM, perform the steps in the following sections:

- “Step 1. Make DB2 Files Available for Installation” on page 190
- “Step 2. Create a Response File for Unattended Installation” on page 191
- “Step 3. Run the CMD/BAT File from the Remote Workstation” on page 193



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).

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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 Client Pack 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 hard disk instead.

- If installing from a hard disk, you must copy the required files from the CD-ROM directories to the hard disk. At the command prompt, use the **xcopy** command with the **/s** option.

  – For OS/2, the syntax for the two commands required is:

    ```
    xcopy x:\db2\os2\language e:\clients\os2\language /s
    xcopy x:\db2\os2\common e:\clients\os2\common /s
    ```

    where:

    - *x:* represents the CD-ROM drive
    - *language* is the two-character code that represents your language (for example, `EN` for English). Table 16 on page 264 lists the code for each available language.
    - *e:* represents the destination drive

  – For Windows 3.x, the command syntax is:

    ```
    xcopy x:\db2\windows\language\client\*.*  e:\clients\windows /s
    ```

    where:

    - *x:* represents the CD-ROM drive
    - *language* is the two-character code that represents your language (for example, `EN` for English). Table 16 on page 264 lists the code for each available language.
    - *e:* represents the destination drive

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/BAT File from the Remote Workstation" on page 193.

To edit the sample response file:

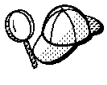
1. Find the correct sample response files for the platform you are installing to, and for the product you want to install. Copy the files to a local directory.

   If installing directly from the CD-ROM, substitute *x:**os2* or *x:**windows* (depending on the target workstation's operating system), where *x:* represents the CD-ROM drive for `e:\clients` in the directory names below.

   - For OS/2, edit
     - `e:\clients\os2\`*language*`\db2conpr.rsp` for DB2 Connect Personal Edition

     where *language* is the two-character country code that represents your language (for example, `EN` for English). Table 16 on page 264 lists the codes for each available language.
   - For Windows 3.x, use :
     - `e:\clients\windows\db2pconw.rsp` for DB2 Connect Personal 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 170, 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/environment variable, 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.

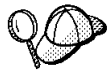
An example section of a response file appears below:

```
...
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.x 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.

- *AUTOSTART_CONTROL_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 a local drive.

Step 3. Run the CMD/BAT File from the Remote Workstation

A command (CMD) or batch (BAT) 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 or BAT file.

If installing directly from the CD-ROM, substitute x:\os2 or x:\windows (depending on the target workstation's operating system) for `e:\clients\os2\` in the directory names below.

- For OS/2, the CMD files are available in the `e:\clients\os2\`*`language`* directory where *language* is the two-character country code that represents

your language (for example, EN for English). Table 16 on page 264 lists the codes for each available language. For example:

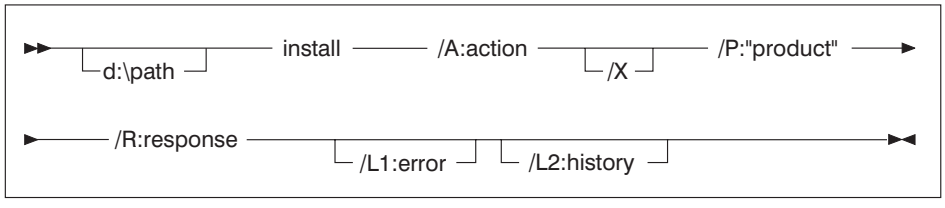
  - db2conpr.cmd for DB2 Connect Personal Edition

- For Windows 3.x, the BAT file is:
  - e:\clients\windows\db2pconw.bat for DB2 Connect Personal Edition

2 Edit the command in the file, to fill in the information needed for the installation.

- For OS/2:

  a You must 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\os2\language\install\install /A:I /X
   /P:"IBM DB2 Client Application Enabler"
   /R:e:\clients\os2\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 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.

3. Save and exit the CMD or BAT file.

   If you are installing directly from the CD-ROM, you must rename the CMD or BAT file, store it on a local drive, and use that file name in the next step.

4. Start the installation by entering the CMD or BAT file's name on the command line. The DB2 Client Application Enabler is now ready to install on the target workstation.

5. When installation is complete, check the error and history logs for any errors or problems.

To configure your client to access remote servers, go to Chapter 19, “Configuring Access to a Remote DB2 Server Using the Client Configuration Assistant” on page 133.

Installing DB2 Products Remotely Using TME Netfinity Server

To install a DB2 product in a Netfinity Server environment, perform the steps in the following sections:

- “Step 1. Copy the DB2 Install Files to the Code Server” on page 196
- “Step 2. Add the DB2 Product to the Software Library” on page 196
- “Step 3. Configure the DB2 Product” on page 197
- “Step 4. Install DB2 Products on the Remote Workstation” on page 197

Note: The following are the required levels of Netfinity:

Netfinity Server Product: IBM TME 10 Netfinity Server - Manager Version 4
Product Number: 5697-288, Feature 0000
Must have component: Software Distribution Server at service level 00000003
Netfinity Server cannot be used for Windows 3.x workstations.

Netfinity Client Product: IBM TME 10 Netfinity Server - Client Version 4
Product Number: 5697-288, Feature 0000
Must have component: Software Distribution Client at service level 00000003

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.

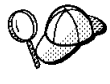
   The syntax for the two commands required is:

   ```
   xcopy x:\db2\os2\language e:\cid\img\language /s
   xcopy x:\db2\os2\common e:\cid\img\common /s
   ```

   where

   - *x:* represents the CD-ROM drive
   - *language* is the two-character code that represents your language (for example, `EN` for English. Table 16 on page 264 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 Netfinity Server.
2. Double-click on the **Netfinity Server 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:
  - `db2conpr.adf` for DB2 Connect Personal Edition

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 Netfinity Server resides.

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 Netfinity Server documentation.

After installation, you must reboot the workstation before using DB2.

To configure your client to access remote servers, go to Chapter 28, “Using the Client Configuration Assistant” on page 217.

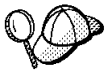
Chapter 27. Unattended DB2 Installation on Windows 32-bit Operating Systems

During a regular installation, you interact with the install program, filling in a series of panels to set up and configure DB2.

In an unattended installation, you supply the setup and configuration data in a response file you create before running the installation.

You can use this feature to install DB2 products on Windows 32-bit operating systems operating systems:

- Locally, from a CD-ROM (see “Installing DB2 Products from a Hard Disk or CD-ROM”)
- Remotely, across a network connection from a hard disk or CD-ROM (see “Installing DB2 Products from a 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 (see “Installing DB2 Remotely Using SMS” on page 207).



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 Hard Disk or CD-ROM

To install DB2 products for Windows 32-bit operating systems, from a 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 200
- “Step 2. Create a Response File for Unattended Installation” on page 202
- “Step 3. Run Setup from the Workstation” on page 206

You can also use this procedure to perform an *interactive* remote install instead of an unattended remote one. Follow the instructions below.

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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 and Windows 98

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 C, “Naming Rules” on page 269.

Windows NT

You need to have a username that will be used to install DB2. The username may belong to the Domain or local Administrators group.

On clients, this username will be removed from the system when the installation is complete.

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 Client Pack CD-ROM into the drive.
  2. Ensure that the CD-ROM remains in the drive for as long as the installation requires it. If the drive is often used for other tasks as well, consider installing from the hard disk instead.
- If installing from a code server, you must copy the required files from the CD-ROM directories to the 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 **cpysetup.bat** command to copy the files necessary for a particular language install to a code server.

   The command syntax is:

   ```
   x:\db2\winnt95\common\cpysetup.bat q:\db2prods language
   ```

   where:

   - *x:* represents your CD-ROM drive
   - *q:* represents the code server's disk.
   - *language* is the two-character country code that represents your language (for example, `EN` for English). See Table 16 on page 264

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 and Windows 98, 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 interact with the install program, filling in a series of panels to set up and configure the DB2 product. During an unattended installation, you supply the setup and configuration data in a response file you create before running the installation. DB2's install package includes a number of ready-to-use sample response files, with default entries already in place.

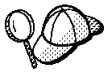
The sample response files are located in the *x*:\db2\winnt95\common directory,

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 206.

Edit the sample response file. For example, you can use Notepad or WordPad.

1. Open the sample response file for the package you want to install.
   - db2conpr.rsp for DB2 Connect Personal 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 170, 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/environment variable, 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 32-bit operating systems 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 restart 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 Custom Keywords (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.PORT_NUMBER        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:

  – `CONNECT_PERSONAL` for DB2 Connect Personal Edition

  Note: You can use this parameter more than once.

- *COMP*

  Specifies the components you want installed. The installation program automatically installs components that are required for a product, and ignores requested components that are not available.

  Note: Component selections have no effect unless you specify a `custom` installation.

  The following table lists *COMP* keywords and the components they represent.

Table 13 (Page 1 of 2). Component Keywords for Windows 32-bit Operating Systems Unattended Install

Keyword	Component
Product Components	
GRAPHICAL_TOOLS	Graphical Tools
CLIENT_CONFIGURATION_ASSISTANT	Client Configuration Assistant
CONTROL_CENTER	Control Center
WEB_CONTROL_CENTER	Web Control Center
PERFORMANCE_MONITOR	Performance Monitor
VISUAL_EXPLAIN	Visual Explain
ODBC_DRIVER	DB2 ODBC Driver
SAMPLE_APPLICATIONS [1]	Sample Applications
THIN_CLIENT_CODE_SERVER	Thin Client Code Server
DB2 Books	
API_REFERENCE [1]	API Reference
ADMINISTRATION_GUIDE	Administration Guide

Table 13 (Page 2 of 2). Component Keywords for Windows 32-bit Operating Systems Unattended Install

Keyword	Component
ADMINISTRATION_GETTING_STARTED	Administration Getting Started
DB2_PROGRAMMING_GETTING_STARTED [1]	Road Map to DB2 Programming
BUILDING_OS2_WIN_APPLICATIONS [1]	Building Applications for Windows and OS/2 Environments
CLI_GUIDE_REFERENCE [1]	CLI Guide and Reference
COMMAND_REFERENCE	Command Reference
SQL_PROGRAMMING_GUIDE [1]	Embedded SQL Programming Guide
GLOSSARY	Glossary
MASTER_INDEX	Master Index
MESSAGES_REFERENCE	Messages Reference
SQL_GETTING_STARTED	SQL Getting Started
SQL_REFERENCE	SQL Reference
SYSTEM_MONITOR_GUIDE	System Monitor Guide and Reference
TROUBLESHOOTING_GUIDE	Troubleshooting Guide

Note:

1. Software Developer's Kit only

- *AUTO_CTRL_CENTER*

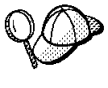
  Specifies whether or not to automatically start the Control Center each time the system is rebooted.

  Note: By default the Control Center starts automatically 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 starts automatically unless this parameter is set to `NO`.



- 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 200 for more information.

2. If performing a remote install, connect to the shared directory of the 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 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:

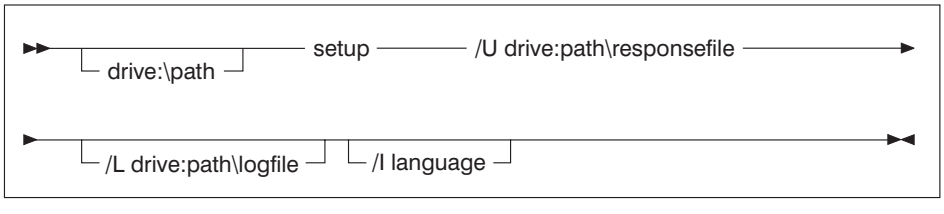
   ```
   net use e: \\codeserv\db2nt
   ```

   Based on the example set up in previous steps, this points to `q:\db2prods` on the code server.

3. Run the setup program:

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

   b. 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 start the program. For example:

   ```
   e:\setup /U d:\db2\common\db2setup.rsp /L db2log.log /I language
   ```

   where:

   /U Specifies the fully qualified response file name. If you changed and renamed the sample response file provided, make sure that this parameter matches the new name.

/L 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.

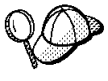
/I Specifies the two-character country code that represents your language (for example, `EN` for English). Table 16 on page 264 lists the code for each available language.

If you do not specify the language, setup will determine the system language, and launch the appropriate DB2 install for that language.

c Click on **OK** to start the setup program.

d 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 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` file is located in the `x:\db2log` directory; where x: is the drive on which your operating system is installed.

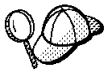
5 Following installation, you must reboot the workstation before using DB2.

Note: If you specified *REBOOT*=`yes` in your response file, the workstation will reboot automatically.

To configure your DB2 software to access remote DB2 servers, go to Chapter 28, “Using the Client Configuration Assistant” on page 217 .

Installing DB2 Remotely Using SMS

With Microsoft Systems Management Server (SMS), you can install DB2 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 using SMS, perform the steps in the following sections:

- "Step 1. Make DB2 Files Available for Installation" on page 209
- "Step 2. Create a Response File for Unattended Installation" on page 210
- "Step 3. Import the DB2 Install Files into SMS" on page 213
- "Step 4. Distribute the DB2 Installation Package Using SMS" on page 214
- "Step 5. Run the Installation on the SMS Client" on page 215

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 DB2 and its components.

Creating a Username for Installing DB2

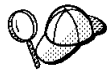
Windows 95 and Windows 98

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 C, "Naming Rules" on page 269.

Windows NT

You need to have a username that will be used to install DB2. The username may belong to the Domain or local Administrators group.



On clients, this username will be removed from the system when the installation is complete.

SMS Requirements

You must already have SMS 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 210.

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 remains in the drive for as long as the installation requires it. If the drive is often used for other tasks as well, consider installing from the hard disk instead.

- If installing from a code server, you must copy the required files from the CD-ROM directories to the 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 **cpysetup.bat** command to copy the files necessary for a particular language install to a code server.

     The command syntax is:

     ```
     x:\db2\winnt95\common\cpysetup.bat q:\db2prods language
     ```

     where:

     – *x:* represents your CD-ROM drive
     – *q:* represents the code server's disk.
     – *language* is the two-character country code that represents your language (for example, `EN` for English). Table 16 on page 264

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 and Windows 98, 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 interact with the install program, filling in a series of panels to set up and configure DB2. During an unattended installation, you supply the setup and configuration data in a response file you create before running the installation. 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 the *x*`:\db2\winnt95\common` directory,

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 214.

Edit the sample response file. For example, you can use Notepad or WordPad.

1. Open the sample response file for the package you want to install.
   - `db2conpr.rsp` for DB2 Connect Personal 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 170, 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/environment variable, 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 32-bit operating systems 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 Custom Keywords (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.PORT_NUMBER        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:

  – CONNECT_PERSONAL for DB2 Connect Personal Edition

  Note: You can use this parameter more than once.

- *COMP*

  Specifies the components you want installed. The installation program automatically installs components that are required for a product, and ignores requested components that are not available.

  Note: Component selections have no effect unless you specify a custom installation.

  Table 13 on page 204 lists *COMP* keywords and the components they represent.

- *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 starts automatically 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 starts automatically unless this parameter is set to `NO`.

- Install DB2 only on a drive that 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 From the **Start** button select **Programs**, then **Systems Management Server**, and then **SMS Administrator**. The SMS Administrator window opens.

3 Open the Package Properties window. The first time you start the SMS Administrator program you will see a dialog box prompting you to open an SMS Window. You can select the Packages option from there. Otherwise, select **File**->**New** from the menu bar.

4 Click on the **Import** push button. The **File Browser** opens.

5 In the **File Name** field, select the `db2.pdf` file.

The server `db2.pdf` file for DB2 Universal Database is located in the

```
x:\db2\common directory (for DB2 Server)
x:\db2\winnt95\common directory (for DB2 CAE or DB2 SDK)
```

where `x:` 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 (for example, `q:\db2prods`).
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 you want to install a different language, use the */l* parameter to specifies the two-character code that represents your language (for example, `EN` for English). Table 16 on page 264 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 208 for more information.
2. Select **Start->Programs -> Systems Management Client** and then click on **Package Command Manager**. The Package Command Manager window opens.
3. 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.
4. 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.

To configure your DB2 software to access remote DB2 servers, go to Chapter 28, “Using the Client Configuration Assistant” on page 217 .

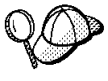
Chapter 28. Using the Client Configuration Assistant

Use the information in this section to use the Client Configuration Assistant (CCA) to perform administration tasks on OS/2 and Windows 32-bit operating systems.

Read this section if:

- You have an OS/2 or Windows 32-bit operating systems.
- You have installed the Client Configuration Assistant option and want to administer your clients.
- You want to configure DB2 Connect Personal Edition to act as a DB2 client and access information from a DB2 Universal Database server.

This section describes how you configure DB2 Connect Personal Edition to act as a DB2 client and access information from remote DB2 servers. If you do not intend to use this feature, you can ignore this section.



The CCA can be installed on OS/2 and Windows 32-bit operating systems. If it is not installed on your system, you can rerun the setup program and select 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 databases to be configured as CLI or 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.
- Change your password.

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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."
- Searching the network for databases, see "Searching the Network for Databases" on page 221.
- Adding database connections manually, see "Manually Configure a Connection to a DB2 Database" on page 226.

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 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 a DB2 server system, it includes server instances that have the *discover_inst* configuration parameter and databases with the *discover_db* configuration parameter set to *ENABLE*. The *discover* parameter in the Administration Server's configuration file must be set to either *SEARCH* or *KNOWN* to generate a profile for a server system.

For information on setting the *discover_inst*, *discover_db* and *discover* configuration parameters, see "Setting Discovery Parameters" on page 225.

Generating a Server Profile: To generate an access profile, perform the following steps:

1. Click on **Start** and select **Programs**->**DB2 for Windows NT**->**Administration Tools**->**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 this 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. Click on **Start** and select **Programs**->**DB2 for Windows NT**->**Client Configuration Assistant**.
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 and select the profile for the server that you want to access.
5. Select a database to be added and click on the **Next** push button.
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 another client using the:

- Add function, which allows you to selectively process the database connection data in the client profile and add it to a new client. (This function invokes the Add Database SmartGuide.)
- Import function, which allows you to selectively process database connection data, client configuration settings, and CLI or 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.

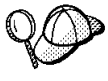
The information contained in a client profile is determined during the export process. Depending on the settings chosen, it can contain the existing client's:

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

The Export function can be used to generate a customized profile that can be imported on another client to set it up, or update it.

To export a profile from the client, configure the client for communications and do the following:

1. Enter the **db2cca admin** command at a command prompt to start the Client Configuration Assistant in administrator mode. (You must belong to the local Administrator group 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 permanently in administrator mode by modifying the **Client Configuration Assistant** icon to add the parameter *admin* to the startup. To add the parameter *admin* to the CCA startup:

1. Select the **CCA** icon and click on the right mouse button.
2. Select the **Properties** option.
3. Add the *admin* parameter to the:
   - **Parameters** field on OS/2
   - **Target** field (located on the **Security** tab) on Windows 32-bit operating systems.

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.

   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.

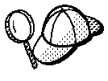
Importing a Client Profile:: Perform these steps at the client that you want to set up.

1. Click on **Start** and select **Programs**->**DB2 for Windows NT**->**Client Configuration Assistant**.
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 messages used by the *Search* method of discovery are not filtered by your network, and that the installation defaults on the client and the server have not been changed. To run the following scenario, you must ensure that the *discover* parameter in the database manager configuration file on the client, and the *discover* parameter in the Administration Server configuration file on the server are set to *SEARCH*. Also, the *discover_comm* parameter must be set to the search protocols used on the client and Administration Server.

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 a 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 a 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.

Note: Discovery cannot retrieve information about pre-Version 5 DB2 systems.

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.

  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 servers.

The TCP/IP host name returned to a client by Search discovery is the same host name that is returned by your DB2 server system when you enter the **hostname** command. On the client, the IP address that this host name maps to is determined by either the TCP/IP domain name server (DNS) configured on your client machine or, if a DNS is not configured, a mapping entry in the client's `hosts` file. If you have multiple adapter cards configured on your DB2 server system, you must ensure that TCP/IP is configured on the server to return the correct hostname, and that the DNS or local client's `hosts` file, maps the hostname to the IP address desired.

Search may appear to be a simpler discovery method. However, in larger networks, network routers and bridges can filter the messages that *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.

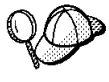
To have the server support Known discovery, set the *discover* parameter in the Administration Server configuration file to *KNOWN*. To have it support Search discovery, set this parameter to *SEARCH* (which also supports all the facilities of Known discovery). To prevent discovery of a server, and all 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** push button. When the *discover* parameter is set to *KNOWN*, the CCA will not be able to search the network.

Search Enables all the facilities of Known discovery, and enables network searching.

Disable Disables discovery. In this case, the **Search the network** option is not available in the Add Database SmartGuide.



The *discover* parameter defaults to *SEARCH* on all client and server instances. The *discover* parameter defaults to *SEARCH* on all Administration Servers except Administration Servers installed in a UNIX Extended Enterprise Edition environment, where *discover* defaults to *KNOWN*.

Additional Settings for Search Discovery

Search discovery requires that the *discover_comm* parameter be set on both the server (in the Administration Server's configuration file) and the client (in the database manager configuration file).

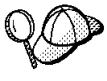
The *discover_comm* parameter is used to control the communication protocols that the server will listen to for search requests from clients, and that clients will use to send out search requests. The *discover_comm* parameter can be any combination of TCP/IP and NetBIOS; the protocols supported by Search discovery.

On the Administration Server, the values specified for *discover_comm* must be equal to, or a subset of, the values set for *db2comm*.

To avoid problems with the Control Center and the Client Configuration Assistant, ensure that the *DB2COMM* parameter is set in the DB2 registry using the `db2set` command. It is not recommended that you use any other mechanism to set the *DB2COMM* value.

On the server, the *discover_comm* parameter is set in the Administration Server's configuration file. On the client (or a server acting as a client), *discover_comm* is set in the database manager configuration file.

Note: When using Search discovery, at least one protocol specified by the *discover_comm* parameter on the client must match those specified by the *discover_comm* parameter on the Administration Server. If there is no match, the server will not respond to the client's requests.



Check the settings for the *db2comm* registry value by entering the **db2set DB2COMM** command. For more information, see Chapter 24, “Controlling Your DB2 Environment” on page 165.

In addition, there are two DB2 profile registry values that can be used to tune Search discovery via NetBIOS 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 configuration file on the server system, and in the database manager configuration file on the client. Set these parameters as follows:

- On the Administration Server:

  Update the Administration Server's configuration file, in the command processor, as follows:

  ```
  update admin cfg using discover [ DISABLE | KNOWN | SEARCH ]
  update admin cfg using discover_comm [ NETBIOS,TCPIP ]
  ```

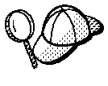
  Stop and restart the Administration Server by entering the following commands:

  ```
  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 the parameters that you want to modify from the **Parameters** window.
  5. Select a value for the parameter that you want to modify from the **Value** box.
  6. Click on the **OK** push button to close the **Client Settings** window. A DB2 message window opens.
  7. Click on the **OK** push button and restart your applications so that your changes can take affect.



If the *discover_comm* includes *NETBIOS*, you must ensure that the Workstation name (*nname*) configuration 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. Click on the **[+]** sign beside the **Systems** icon to get a list of systems.

3. Click on the **[+]** sign beside a system icon to get a list of instances on it.
4. Select the instance that you want to configure and click on the right mouse button.
5. Select the **Configure** option from the pop-up menu. The Configuration Instance window opens.
6. Select the **Environment** tab and select the *discover_inst* parameter from the **Parameters** box.
7. Select the desired value from the **Value** box and click on **OK**.
8. Click on the **[+]** beside an instance icon to get a list of databases in it.
9. Select the database that you want to configure and click on the right mouse button.
10. Select the **Configure** option from the pop-up menu. The Configuration Database window opens.
11. Select the **Environment** tab and select the *discover_db* parameter.
12. Select the desired value from the **Value** box and click on **OK**.

db2discoverytime 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 60 seconds, enter the following command:

  ```
  db2set db2discoverytime=60
  ```

  This specifies that Search discovery should wait 60 seconds for a response from servers.

- To set the *db2nbdiscoverrcvbufs* registry value to 20, enter the following command:

  ```
  db2set db2nbdiscoverrcvbufs=20
  ```

  This specifies the number of NetBIOS buffers that will be allocated for concurrent 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 and click on the **Next** push button.
5. Enter the required protocol parameters and click on the **Next** push button.
6. In the **Target database** panel, enter the name of the remote database alias in the **Target Database** field.

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

7. If desired, you can select the **Alias** and **ODBC** tabs at the top of the panel to specify a local database alias name or select **CLI/ODBC** options for the remote 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.

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

For example, if you used TCP/IP to add the database to your system, the instance name could be *TCP0000*.

Part 8. Configuring DRDA Hosts

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Chapter 29. 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.

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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 233.
- 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 240.
- DB2 host configuration steps (see “Configuring DB2 for OS/390” on page 237, or “Configuring DB2 for MVS/ESA” on page 238). 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 233. For TCP/IP names, see “Configuring TCP/IP for DB2 for OS/390” on page 240.

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 233, or:
2. Configure TCP/IP - see “Configuring TCP/IP for DB2 for OS/390” on page 240, or:
3. Configure DB2 for OS/390 or DB2 for MVS/ESA - see “Configuring DB2 for OS/390” on page 237, or “Configuring DB2 for MVS/ESA” on page 238.

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 240).

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.)
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 12 on page 234:

```
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 12. Network Element Names Used in the VTAM Examples

Sample VTAM APPL Definition for OS/390

Figure 13 on page 235 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 13. Sample VTAM APPL Definition for DB2 for OS/390 or DB2 for MVS/ESA

Note: Continuations must begin in column 16, with continuation marks in column 72.

Sample VTAM PU and LU Definitions for DB2 Connect

Figure 14 on page 236 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 14. 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 15 on page 237 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'060200000000000000122F00'    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'060200000000000000000300'    LU6.2 LU TYPE
```

Figure 15. 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','O');
```

Result:

```
COLUMN               EXAMPLE              REMARK
======               =======              ======
LUNAME               NYX1GW01             Name of the DB2 Connect LU
SECURITY_OUT            P
ENCRYPTPSWDS            N
USERNAMES               O
```

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.

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 `\tcpip\etc\services`.
  - On Windows NT, the location of this file may be `\winnt\system32\drivers\etc\services` or `\tcpip\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 `\tcpip\etc\hosts`.

– On Windows NT, the location of this file may be `\winnt35\system32\drivers\etc\hosts`, `\winnt\system32\drivers\etc\hosts`, or `\tcpip\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 14, to plan *each* TCP/IP connection between DB2 Connect and a DRDA host server.

Example Worksheet

Table 14 (Page 1 of 2). 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	

Table 14 (Page 2 of 2). Example Worksheet for Planning TCP/IP Connections to DB2 for OS/390

Ref.	Description	Sample Value	Your Value
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*.

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 dbs2inst1c
   ```

   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/bnd/@ddcsmvs.lst blocking all
     sqlerror continue messages ddcsmvs.msg grant public
disconnect all
```

where *path* corresponds to the *DB2PATH* registry value.

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

        Relational          Remote
Option  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 15. 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

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Appendix A. 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 access product information online, you can use the Information Center. You can view task information, DB2 books, troubleshooting information, sample programs, and DB2 information on the Web. See “Information Center” on page 261 for details.

SmartGuides

SmartGuides help you complete some administration tasks by taking you through each task one step at a time. SmartGuides are available through the Control Center. The following table lists the SmartGuides.

Note: Not all SmartGuides are available for the partitioned database environment.

SmartGuide	Helps you to...	How to Access...
Add Database	Catalog a database on a client workstation.	From the Client Configuration Assistant, click on **Add**.
Create Database	Create a database, and perform some basic configuration tasks.	From the Control Center, click with the right mouse button on the **Databases** icon and select **Create**->**New**.
Performance Configuration	Tune the performance of a database by updating configuration parameters to match your business requirements.	From the Control Center, click with the right mouse button on the database you want to tune and select **Configure performance**.
Backup Database	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**.
Restore Database	Recover a database after a failure. It helps you understand which backup to use, and which logs to replay.	From the Control Center, click with the right mouse button on the database you want to restore and select **Restore**->**Database using SmartGuide**.

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SmartGuide	Helps you to...	How to Access...
Create Table	Select basic data types, and create a primary key for the table.	From the Control Center, click with the right mouse button on the **Tables** icon and select **Create**->**Table using SmartGuide**.
Create Table Space	Create a new table space.	From the Control Center, click with the right mouse button on the **Table spaces** icon and select **Create**->**Table space using SmartGuide**.

Online Help

Online help is available with all DB2 components. The following table describes the various types of help. You can also access DB2 information through the Information Center. For information see “Information Center” on page 261.

Type of Help	Contents	How to Access...
Command Help	Explains the syntax of commands in the command line processor.	From the command line processor in interactive mode, enter: **?** *command* where *command* is a keyword or the entire command. For example, **? catalog** displays help for all the CATALOG commands, while **? catalog database** displays help for the CATALOG DATABASE command.
Control Center Help	Explains the tasks you can perform in a window or notebook. The help includes prerequisite information you need to know, and describes how to use the window or notebook controls.	From a window or notebook, click on the **Help** push button or press the F1 key.

Type of Help	Contents	How to Access...
Message Help	Describes the cause of a message, and any action you should take.	From the command line processor in interactive mode, enter: **?** *XXXnnnnn* where *XXXnnnnn* is a valid message identifier. For example, **? SQL30081** displays help about the SQL30081 message. To view message help one screen at a time, enter: **?** *XXXnnnnn* **| more** To save message help in a file, enter: **?** *XXXnnnnn* > *filename.ext* where *filename.ext* is the file where you want to save the message help.
SQL Help	Explains the syntax of SQL statements.	From the command line processor in interactive mode, enter: **help** *statement* where *statement* is an SQL statement. For example, **help** *SELECT* displays help about the SELECT statement.
SQLSTATE Help	Explains SQL states and class codes.	From the command line processor in interactive mode, enter: **?** *sqlstate* or **?** *class-code* where *sqlstate* is a valid five-digit SQL state and the *class-code* is first two digits of the SQL state. For example, **? 08003** displays help for the 08003 SQL state, while **? 08** displays help for the 08 class code.

DB2 Books

The table in this section lists the DB2 books. They are divided into two groups:

Cross-platform books These books contain the common DB2 information for UNIX-based and Intel-based platforms.

Platform-specific books These books are for DB2 on a specific platform. For example, for DB2 on OS/2, on Windows NT, and on the UNIX-based platforms, there are separate *Quick Beginnings* books.

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.

If you want to read the English version of the books, they are always provided in the directory that contains the English documentation.

You can obtain DB2 books and access information in a variety of different ways:

View See "Viewing Online Books" on page 258.
Search See "Searching Online Books" on page 259.
Print See "Printing the PostScript Books" on page 259.
Order See "Ordering the Printed DB2 Books" on page 260.

Book Name	Book Description	Form Number File Name
	Cross-Platform Books	
Administration Getting Started	Introduces basic DB2 database administration concepts and tasks, and walks you through the primary administrative tasks.	S10J-8154 db2k0x50
Administration Guide	Contains information required to design, implement, and maintain a database to be accessed either locally or in a client/server environment.	S10J-8157 db2d0x51
API Reference	Describes the DB2 application programming interfaces (APIs) and data structures you can use to manage your databases. Explains how to call APIs from your applications.	S10J-8167 db2b0x51
CLI Guide and Reference	Explains how to develop applications that access DB2 databases using the DB2 Call Level Interface, a callable SQL interface that is compatible with the Microsoft ODBC specification.	S10J-8159 db2l0x50
Command Reference	Explains how to use the command line processor, and describes the DB2 commands you can use to manage your database.	S10J-8166 db2n0x51

Book Name	Book Description	Form Number File Name
DB2 Connect Enterprise Edition Quick Beginnings	Provides planning, migrating, installing, configuring, and using information for DB2 Connect Enterprise Edition. Also contains installation and setup information for all supported clients.	S10J-7888 db2cyx51
DB2 Connect Personal Edition Quick Beginnings	Provides planning, installing, configuring, and using information for DB2 Connect Personal Edition.	S10J-8162 db2c1x51
DB2 Connect User's Guide	Provides concepts, programming and general using information about the DB2 Connect products.	S10J-8163 db2c0x51
DB2 Connectivity Supplement	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 db2h1x51
Embedded SQL Programming Guide	Explains how to develop applications that access DB2 databases using embedded SQL, and includes discussions about programming techniques and performance considerations.	S10J-8158 db2a0x50
Glossary	Provides a comprehensive list of all DB2 terms and definitions. **Note:** Available in HTML format only.	No form number db2t0x50
Installing and Configuring DB2 Clients	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 db2iyx51
Master Index	Contains a cross reference to the major topics covered in the DB2 library. **Note:** Available in PostScript format and hardcopy only.	S10J-8170 db2w0x50
Messages Reference	Lists messages and codes issued by DB2, and describes the actions you should take.	S10J-8168 db2m0x51
DB2 Replication Guide and Reference	Provides planning, configuring, administering, and using information for the IBM Replication tools supplied with DB2.	S95H-0999 db2e0x52
Road Map to DB2 Programming	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

Book Name	Book Description	Form Number File Name
SQL Getting Started	Introduces SQL concepts, and provides examples for many constructs and tasks.	S10J-8156 db2y0x50
SQL Reference	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 db2s0x51
System Monitor Guide and Reference	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
Troubleshooting Guide	Helps you determine the source of errors, recover from problems, and use diagnostic tools in consultation with DB2 Customer Service.	S10J-8169 db2p0x50
What's New	Describes the new features, functions, and enhancements in DB2 Universal Database, Version 5.2, including information about Java-based tools.	S04L-6230 db2q0x51
	Platform-Specific Books	
Building Applications for UNIX Environments	Provides environment setup information and step-by-step instructions to compile, link, and run DB2 applications on a UNIX system.	S10J-8161 db2axx51
Building Applications for Windows and OS/2 Environments	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
DB2 Personal Edition Quick Beginnings	Provides planning, installing, migrating, configuring, and using information for DB2 Universal Database Personal Edition on OS/2, Windows 95, and the Windows NT operating systems.	S10J-8150 db2i1x50
DB2 SDK for Macintosh Building Your Applications	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
DB2 SDK for SCO OpenServer Building Your Applications	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
DB2 SDK for SINIX Building Your Applications	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

Book Name	Book Description	Form Number File Name
Quick Beginnings for OS/2	Provides planning, installing, migrating, configuring, and using information for DB2 Universal Database on OS/2. Also contains installing and setup information for all supported clients.	S10J-8147 db2i2x50
Quick Beginnings for UNIX	Provides planning, installing, configuring, migrating, and using information for DB2 Universal Database on UNIX-based platforms. Also contains installing and setup information for all supported clients.	S10J-8148 db2ixx51
Quick Beginnings for Windows NT	Provides planning, installing, configuring, migrating, 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
DB2 Extended Enterprise Edition for UNIX Quick Beginnings	Provides planning, installing, configuring, and using information for DB2 Universal Database Extended Enterprise Edition for UNIX. This book supercedes the *DB2 Extended Enterprise Edition Quick Beginnings for AIX* book, and is suitable for use with all versions of DB2 Extended Enterprise Edition that run on UNIX-based platforms.	S99H-8314 db2v3x51
DB2 Extended Enterprise Edition for Windows NT Quick Beginnings	Provides planning, installing, configuring, and using information for DB2 Universal Database Extended Enterprise Edition for Windows NT.	S09L-6713 db2v6x51

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	Japanese	J
Bulgarian	U	Korean	K
Czech	X	Norwegian	N
Danish	D	Polish	P
English	E	Russian	R
Finnish	Y	Simp. Chinese	C
French	F	Slovenia	L
German	G	Spanish	Z
Greek	A	Swedish	S
Hungarian	H	Trad. Chinese	T
Italian	I	Turkish	M

2. For late breaking information that could not be included in the DB2 books:
   - On UNIX-based platforms, see the `Release.Notes` file. This file is located in the `DB2DIR/Readme/%L` directory, where `%L` is the locale name and DB2DIR is:

  - /usr/lpp/db2_05_00 on AIX
  - /opt/IBMdb2/V5.0 on HP-UX, Solaris, SCO UnixWare 7, and SGI.
- On other platforms, see the RELEASE.TXT file. This file is located in the directory where the product is installed.

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, and provides hypertext links to related information. It also makes it easier to share the library across your site.

You can use any HTML Version 3.2-compliant browser to view the online books.

To view online books:

- If you are running DB2 administration tools, use the Information Center. See "Information Center" on page 261 for details.
- Use the open file function of your Web browser. The page you open contains descriptions of and links to DB2 books:
  - On UNIX-based platforms, open the following page:

    file:/*INSTHOME*/sqllib/doc/*%L*/html/index.htm

    where *%L* is the locale name.
  - On other platforms, open the following page:

    sqllib\doc\html\index.htm

    The path is located on the drive where DB2 is installed.

    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.

    Note: The **DB2 Online Books** icon is only available if you do not install the Information Center.

Setting up a Document Server

By default the DB2 information is installed on your local system. This means that each person who needs access to the DB2 information must install the same files. To have the DB2 information stored in a single location, use the following instructions:

1. Copy all files and sub-directories from \sqllib\doc\html on your local system to a web server. Each book has its own sub-directory containing all the necessary HTML and GIF files that make up the book. Ensure that the directory structure remains the same.

2. Configure the web server to look for the files in the new location. For information, see *Setting up DB2 Online Documentation on a Web Server* at:

   `http://www.software.ibm.com/data/pubs/papers/db2html.html`

3. If you are using the Java version of the Information Center, you can specify a base URL for all HTML files. You should use the URL for the list of books.
4. Once you are able to view the book files, you should bookmark commonly viewed topics such as:
   - List of books
   - Tables of contents of frequently used books
   - Frequently referenced articles like the *ALTER TABLE* topic
   - Search form.

For information about setting up a search, see the *What's New* book.

Searching Online Books

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. See "Information Center" on page 261 for details.

Printing the PostScript Books

If you prefer to have printed copies of the manuals, you can decompress and print PostScript versions. For the file name of each book in the library, see the table in "DB2 Books" on page 254.

Note: Specify the full path name for the file you intend to print.

On OS/2 and Windows platforms:

1. Copy the compressed PostScript files to a hard drive on your system. The files have a file extension of `.exe` and are located in the `x:\doc\language\books\ps` directory, where x: is the letter representing the CD-ROM drive and *language* is the two-character country code that represents your language (for example, EN for English).

2. Decompress the file that corresponds to the book that you want. The result from this step is a printable PostScript file with a file extension of `.psz`.
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.psz
   ```

On UNIX-based platforms:

1. Mount the CD-ROM. Refer to your *Quick Beginnings* manual for the procedures to mount the CD-ROM.
2. Change to `/cdrom/doc/%L/ps` directory on the CD-ROM, where */cdrom* is the mount point of the CD-ROM and *%L* is the name of the desired locale. The manuals will be installed in the previously-mentioned directory with file names ending with `.ps.Z`.
3. Decompress and print the manual you require using the following command:
   - For AIX:

     ```
     zcat filename | qprt -P PSPrinter_queue
     ```

   - For HP-UX, Solaris, or SCO UnixWare 7:

     ```
     zcat filename | lp -d PSPrinter_queue
     ```

   - For Silicon Graphics IRIX and SINIX:

     ```
     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
   ```

Ordering the Printed DB2 Books

You can order the printed DB2 manuals either as a set, or individually. There are three sets of books available. The form number for the entire set of DB2 books is `SBOF-8915-00`. The form number for the set of books updated for Version 5.2 is `SBOF-8921-00`. The form number for the books listed under the heading "Cross-Platform Books" is `SBOF-8914-00`.

Note: These form numbers only apply if you are ordering books that are printed in the English language.

You can also order books individually by the form number listed in “DB2 Books” on page 254. 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.

Information Center

The Information Center provides quick access to DB2 product information. You must install the DB2 administration tools to obtain 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
- Help menu of the Control Center
- **db2ic** command.

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 some search capabilities so you can look for specific topics, and filter capabilities to limit the scope of your searches.

For a full text search, follow the *Search DB2 Books* link in each HTML file, or use the search feature of the help viewer.

The HTML search server is usually started automatically. If a search in the HTML information does not work, you may have to start the search server via its icon on the Windows or OS/2 desktop.

Refer to the release notes if you experience any other problems when searching the HTML information.

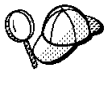
Appendix B. National Language Support (NLS)

This section 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 unalike 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.

Code Page and Language Support

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 your regional settings are set correctly. DB2 may not produce the expected results if the country, code page, or regional settings are incorrect for the intended language.

Table 16 on page 264 shows the languages into which the DB2 messages are translated.

Note: The code page values in the table that follows are also used as directory names on DB2 CD-ROMs. For example, a reference to *x*:*language*\win32\install would be *x*:\en\win32\install for English. For more detailed information on the languages and code pages support, refer to the *Administration Guide*.

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Table 16. Languages and Code Pages			
Country Code	**Language**	**Country Code**	**Language**
BG	Bulgarian	HU	Hungarian
BR	Brazilian Portuguese	IL	Hebrew
CN	Simplified Chinese (PRC)	IT	Italian
CZ	Czech	JP	Japanese
DE	German	KR	Korean
DK	Danish	NO	Norwegian
EN	English	PL	Polish
ES	Spanish	RU	Russian
FI	Finnish	SE	Swedish
FR	French	SI	Slovenian
GR	Greek	TR	Turkish
		TW	Traditional Chinese (Taiwan)

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 17. Workstation Code Page to Host CCSID Conversion

Host CCSIDs	Code Page	Countries
037, 273, 277, 278, 280, 284, 285, 297, 500, 871, 1140-1149	437, 819, 850, 858, 860, 863, 1004, 1051, 1252, 1275	Albania, Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Latin America, Netherlands, New Zealand, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, UK, USA
423, 875	737, 813, 869, 1253, 1280	Greece
870	852, 912, 1250, 1282	Croatia, Czech Republic, Hungary, Poland, Romania, Serbia/Montenegro (Latin), Slovakia, Slovenia
1025	855, 866, 915, 1251, 1283	Bulgaria, FYR Macedonia, Russia, Serbia/Montenegro (Cyrillic)
1026	857, 920, 1254, 1281	Turkey
424	862, 916, 1255	Israel - see note 3 below
420	864, 1046, 1089, 1256	Arabic countries - see note 3 below
838	874	Thailand
930, 939, 5026, 5035	932, 942, 943, 954, 5039	Japan
937	938, 948, 950, 964	Taiwan
933, 1364	949, 970, 1363	Korea
935, 1388	1381, 1383, 1386	People's Republic of China
1112, 1122	921, 922	Estonia, Latvia, Lithuania
1025	915, 1131, 1251, 1283	Belarus
1123	1124, 1125, 1251	Ukraine

Notes:

1. Code page 1004 is supported as code page 1252.
2. 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, and for some newer single-byte code pages, characters that do not exist is both the source and the target may be mapped to substitution characters and then lost when the data is converted back to the original code page.
3. For bidirectional languages, a number of special "BiDi CCSIDs" have been defined by IBM and are supported by DB2 Connect Version 5.2.

   If the bidirectional attributes of the database server are different from those of the client you can use these special CCSIDs to manage the difference.

   Refer to the *Administration Guide* for details of these special CCSIDs. Refer to the Release Notes for DB2 Connect Version 5.2 for detailed information about how to set them up for DRDA host connections.

Bidirectional CCSID Support

The following BiDi attributes are required for correct handling of Bidirectional data on different platforms:

```
- Text type (LOGICAL vs VISUAL)
- Shaping (SHAPED vs UNSHAPED)
- Orientation (RIGHT-TO-LEFT vs LEFT-TO-RIGHT)
- Numeral shape (ARABIC vs HINDI)
- Symmetric swapping (YES or NO)
```

Since defaults on different platforms are not the same, problems appear when DB2 data is sent from one platform to another. For example, Windows platforms use LOGICAL UNSHAPED data, while data on OS/390 is usually in SHAPED VISUAL format. Therefore, without any support for these attributes data sent from DB2 for OS/390 to DB2 UDB on a Windows 32-bit operating systems workstation displays incorrectly.

Bidirectional-specific CCSIDs

The following bidirectional Coded Character Set Identifiers (CCSID) have been defined and are implemented with DB2 UDB:

CCSID -	Code - Page	String - Type
00420	420	4
00424	424	4
08612	420	5
08616	424	6
12708	420	7
X'3F00'	856	4
X'3F01'	862	4
X'3F02'	916	4
X'3F03'	424	5
X'3F04'	856	5
X'3F05'	862	5
X'3F06'	916	5
X'3F07'	1255	5
X'3F08'	1046	5
X'3F09'	864	5
X'3F0A'	1089	5
X'3F0B'	1256	5
X'3F0C'	856	6
X'3F0D'	862	6
X'3F0E'	916	6
X'3F0F'	1255	6
X'3F10'	420	6
X'3F11'	864	6
X'3F12'	1046	6
X'3F13'	1089	6
X'3F14'	1256	6
X'3F15'	424	8
X'3F16'	856	8
X'3F17'	862	8
X'3F18'	916	8
X'3F19'	420	8
X'3F1A'	420	9
X'3F1B'	424	10
X'3F1C'	856	10
X'3F1D'	862	10
X'3F1E'	916	10
X'3F1F'	1255	10
X'3F20'	424	11
X'3F21'	856	11
X'3F22'	862	11
X'3F23'	916	11
X'3F24'	1255	11

Where CDRA String Types are defined:

String Type	Text Type	Numerical Shape	Orientation	Shaping	Symmetrical Swapping
4	Visual	Arabic	LTR	Shaped	OFF
5	Implicit	Arabic	LTR	Unshaped	ON
6	Implicit	Arabic	RTL	Unshaped	ON
7(*)	Visual	Arabic	Contextual(*)	Unshaped-Lig	OFF
8	Visual	Arabic	RTL	Shaped	OFF
9	Visual	Passthru	RTL	Shaped	ON
10	Implicit		Contextual-L		ON
11	Implicit		Contextual-R		ON

Note: Field orientation is left-to-right (LTR) when the first alphabetic character is a Latin one, and right-to-left (RTL) when it is a bidirectional (RTL) character. Characters are unshaped, but LamAlef ligatures are kept, and not broken into constituents.

Appendix C. Naming Rules

Go to the section that describes the naming rules that you require information on:

- "General Naming Rules"
- "Database, Database Alias, and Catalog Node Names" on page 270
- "Object Names" on page 270
- "Usernames, Group Names, and Instance Names" on page 271
- "DB2SYSTEM Naming Rules" on page 272
- "Workstation Names (nname)" on page 272
- "Password Rules" on page 272

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*.

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Database, Database Alias, and Catalog Node 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 269.

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 269.

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 these rules.

Usernames, Group Names, and Instance Names

Usernames are the identifiers assigned to individual users. When naming users, groups, or instances, see "General Naming Rules" on page 269.

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 32-bit operating systems, use any case.

Workstation Names (nname)

A workstation name is 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 *workstation nname*. When naming workstations, see “General Naming Rules” on page 269.

In addition, the name you specify:

- Can contain 1 to 8 characters;
- Cannot include &, #, and @;
- Must unique within the network.

DB2SYSTEM Naming Rules

DB2SYSTEM names are used by DB2 to identify a physical DB2 machine, system, or workstation within a network. On OS/2, you must specify the *DB2SYSTEM* name during install. On Windows 32-bit operating systems, you do not need to specify a *DB2SYSTEM* name; the DB2 setup program detects the NT Computer name and assigns it to *DB2SYSTEM*.

When creating a *DB2SYSTEM* name, see “General Naming Rules” on page 269.

In addition, the name you specify:

- Must be unique within a network;
- Can contain a maximum of 21 characters.

Password Rules

When determining passwords on OS/2 and Windows 3.x, the password 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 D. 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 and in the DB2 Data Sources Setup tool (included in DB2 Connect Personal Edition) choose 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 32-bit operating systems, and AIX systems can use the **ddcspkgn** command to determine the package name for 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:

```
/sqllib/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 32-bit operating systems
xMz Clients for Macintosh
xSz Clients for SCO OpenServer
xGz Clients for Silicon Graphics

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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 18 (Page 1 of 2). DRDA Bind Files and Packages

Component	Bind File Name	Package Name	MVS	VM/VSE	OS/400
DB2 Call Level Interface					
Isolation level CS	db2clics.bnd	sqll1*xyz*	yes	yes	yes
Isolation level RR	db2clirr.bnd	sqll2*xyz*	yes	yes	yes
Isolation level UR	db2cliur.bnd	sqll3*xyz*	yes	no	yes
Isolation level RS	db2clirs.bnd	sqll4*xyz*	no	no	yes
Isolation level NC	db2clinc.bnd	sqll5*xyz*	no	no	yes
Using MVS table names	db2clims.bnd	sqll7*xyz*	yes	no	no
Using OS/400 table names (OS/400 3.1 or later)	db2clias.bnd	sqlla*xyz*	no	no	yes
Using VSE/VM table names	db2clivm.bnd	sqll8*xyz*	no	yes	no
Command Line Processor					
Isolation level CS	db2clpcs.bnd	sqlc2*xyz*	yes	yes	yes
Isolation level RR	db2clprr.bnd	sqlc3*xyz*	yes	yes	yes
Isolation level UR	db2clpur.bnd	sqlc4*xyz*	yes	yes	yes
Isolation level RS	db2clprs.bnd	sqlc5*xyz*	no	no	yes
Isolation level NC	db2clpnc.bnd	sqlc6*xyz*	no	no	yes
REXX					
Isolation level CS	db2arxcs.bnd	sqla1*xyz*	yes	yes	yes
Isolation level RR	db2arxrr.bnd	sqla2*xyz*	yes	yes	yes
Isolation level UR	db2arxur.bnd	sqla3*xyz*	yes	yes	yes
Isolation level RS	db2arxrs.bnd	sqla4*xyz*	yes	yes	yes

Table 18 (Page 2 of 2). DRDA Bind Files and Packages					
Component	**Bind File Name**	**Package Name**	**MVS**	**VM/VSE**	**OS/400**
Isolation level NC	db2arxnc.bnd	sqla5*xyz*	no	no	yes
Utilities					
Export	db2uexpm.bnd	sqlub*xyz*	yes	yes	yes
Import	db2uimpm.bnd	sqluf*xyz*	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.

Appendix E. Changing Your MVS Password

DB2 Connect now provides an ability to change user passwords. This facility is especialy usefull for situations where host security service such as RACF is used to authenticate users. Previously changing host password would require users to log in to a TSO session to change their password. With the new password maintenace support provided by the DB2 Connect products users can issue SQL CONNECT statement from DB2 Command Line Processor (CLP), use PASSWORD button on DB2 Client Configuration Assistant (CCA), or press CHANGE button on the ODBC login dialog to change their host password.

Changing MVS passwords from DB2 Connect workstations connected to DB2 for OS/390 V5.1 via TCP/IP does not require special set up on either MVS host or the DB2 Connect workstation. Changing of MVS passwords on host systems conencted via SNA, however, does require that a special password expiration management program be set up on the host and that DB2 Connect workstation be configured to comunicate with this host program.

The host password expiration management program is provided as part of the following MVS program products:

- MVS/ESA SP Version 4.2 or higher (password expiration management is a part of the APPC/MVS component)
- 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:

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- *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

Once the host password expiration management transaction program is configured you will need to configure your DB2 Connect workstation to communicate with the host program. This configuration involves two steps:

1. Define a symbolic destination name for the host password maintenance program in the SNA subsystem on your DB2 Connect workstation.
2. Record this symbolic destination name in the DCS directory for the databases that reside on this host system.

Step 1. Define Symbolic Destination Name

How you define symbolic destination name for the host password expiration management program depends on what SNA subsystem you are using:

- If you are using an SNA subsystem that can be configured by the DB2 Client Configuration Assitant (CCA) then you should use CCA to configure this symbolic destination name. You will need to obtain the LU name for the password expiration management program from your MVS administrator.
- If your SNA subsystem can not be configured using DB2 CCA you should follow documentation provided with your SNA subsystem to configure the symbolic destination name. You will need to obtain the following information from your MVS administrator:
  - Network name for the host that you are connecting to
  - LU name for the host password expiration management program

  When configuring symbolic destination name you will also need to specify x'06F3F0F1' (hexadecimal number) for the Transaction Program (TP) name and

set security to "NONE". You can specify mode such as #INTER or any other mode that your MVS may sugest to you.

Step 2. Record Symbolic Destination Name in the DCS Directory

If you are running DB2 Connect on a platform that provides DB2 CCA then you should use DB2 CCA to update your DCS directory with the symbolic destination name for the host password expiration management program. You should be able to do this regardless of the SNA subsystem on your DB2 Connect workstation.

You can also use `catalog dcs database` command (from DB2 CLP) to record the symbolic destination name in the DCS directory. For example:

```
catalog dcs database db1 as dsn_db_1 parms ",,,,,,,CHGPWD_SDN=pempgm"
```

records "pempgm" as the symbolic destination name that is to be used when users request to change passwords for database "db1".

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Contacting IBM

This section lists ways you can get more information from IBM.

If you have a technical problem, please take the time to review and carry out the actions suggested by the *Troubleshooting Guide* before contacting DB2 Customer Support. Depending on the nature of your problem or concern, this guide will suggest information you can gather to help us to serve you better.

For information or to order any of the DB2 Universal Database products contact an IBM representative at a local branch office or contact any authorized IBM software remarketer.

Telephone

If you live in the U.S.A., call one of the following numbers:

- 1-800-237-5511 to learn about available service options.
- 1-800-IBM-CALL (1-800-426-2255) or 1-800-3IBM-OS2 (1-800-342-6672) to order products or get general information.
- 1-800-879-2755 to order publications.

For information on how to contact IBM outside of the United States, see Appendix A of the IBM Software Support Handbook. You can access this document by accessing the following page:

`http://www.ibm.com/support/`

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Note that in some countries, IBM-authorized dealers should contact their dealer support structure instead of the IBM Support Center.

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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.)

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ftp.software.ibm.com

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comp.databases.ibm-db2, bit.listserv.db2-l

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CompuServe
GO IBMDB2 to access the IBM DB2 Family forums

All DB2 products are supported through these forums.

To find out about the IBM Professional Certification Program for DB2 Universal Database, go to http://www.software.ibm.com/data/db2/db2tech/db2cert.html

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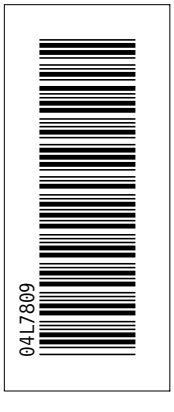

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