

**EDBC™**

# Getting Started

**1.1**



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# Contents

## Chapter 1: Getting Started with EDBC!

- Welcome to EDBC! 1–1
  - Integrated Client Connectivity 1–2
  - Industry Standard API Access 1–2
  - Graphical Non-Relational Database Mapping 1–2
  - Intuitive Database Management 1–3
  - The EDBC Users 1–3
- What You Need to Know 1–3
- Conventions 1–4
  - Cross References 1–4

## Chapter 2: Installing EDBC!

- System Requirements 2–1
- Preparing for Installation 2–1
- Installing EDBC 2–2
  - Using the EDBC Setup Wizard 2–2
  - Selecting Installation Type 2–2
  - Selecting Custom Components and Tools 2–3
  - Starting the EDBC Client at System Startup 2–3
  - Selecting Installation Location 2–3
  - Installing Data Access Components 2–3
- Post-Installation Tasks 2–4
- Starting Up and Shutting Down the EDBC Client 2–5
  - EDBC Service Manager 2–5
- Configuring EDBC 2–6
  - EDBC Configuration Manager 2–6
- Uninstalling EDBC 2–7

## Chapter 3: Mapping Your Mainframe Data!

- The EDBC Data Mapping Tool 3–1
- Mapping Mainframe Data 3–1
  - Using the EDBC Data Mapping Tool Wizard 3–2

## Chapter 4: Managing Network Communications!

- Opening the EDBC Network Utility 4-1
- Adding a Vnode 4-2
  - Viewing Vnode Information 4-3
  - Refreshing Vnodes 4-4
- Working with Vnodes 4-4
  - Advanced Node Parameters 4-4
  - Testing Vnodes 4-5
  - Connecting to Vnodes or Gateways 4-5
- Closing the EDBC Network Utility 4-5

## Chapter 5: Managing Databases!

- Data Administration Utilities 5-1
  - Database Object Manager 5-1
  - SQL Test Utility 5-1
- Viewing and Manipulating Database Objects 5-1
  - Drill-Down Capability 5-3
  - Viewing Database Object Properties 5-4
  - Managing Databases 5-4
  - Creating Views 5-4
- Testing SQL Queries 5-5
- Exiting EDBC Data Administration Utilities 5-6

## Chapter 6: Using the ODBC Interface to EDBC!

- The CA ODBC Driver for EDBC 6-1
  - Configuring a Data Source 6-2
  - Connection String Keywords 6-4
  - Supported Functions 6-5
  - Unavailable Features 6-5

## Chapter 1

# Getting Started with EDBC!

Welcome to the EDBC Getting Started guide! This guide provides all the information you need to get a quick and productive start with EDBC. It is organized into the following chapters:

- **Chapter 1, Introduction**—Gives a general overview of the EDBC product and summarizes the types of EDBC users. This chapter also states the objectives of this guide.
- **Chapter 2, Installing EDBC**—Tells you everything you need to know about installing EDBC on Microsoft Windows platforms, including Windows NT, Windows 98, and Windows 95. Included are prerequisite requirements for installing EDBC, step-by-step installation instructions, information related to EDBC configuration, and instructions for uninstalling EDBC. It also explains how to start up and shut down your EDBC client.
- **Chapter 3, Mapping Your Mainframe Data**—Explains how the EDBC Data Mapping Tool is used to map non-relational mainframe data into relational data in equivalent EDBC tables.
- **Chapter 4, Managing Network Communications**—Describes the procedures involved in setting up the network communication definitions that enable a user to run an application or administer data.
- **Chapter 5, Managing Databases**—Provides an overview of the data administration facilities of EDBC, which are useful to database administrators and application developers.
- **Chapter 6, Using the ODBC Interface to EDBC**—Provides an overview of the ODBC driver provided with EDBC, used by applications to interface with your databases using SQL.

## Welcome to EDBC!

EDBC provides for the quick and flexible deployment of Windows client/server and Web-based applications that leverage your business investment in mainframe data. Full read/write access to all supported OS/390 data sources is available using a common interface. An application can be written once and then deployed against any EDBC data source.

Companies have countless years and dollars invested in developing and refining the critical mainframe enterprise information that they base their business on. As business becomes increasingly competitive, organizations are being forced to move towards web-based solutions that are flexible, intuitive, and entertaining. Historically, however, these web-based solutions have not been directly linked with mainframe data.

## Welcome to EDBC!

EDBC resolves this problem by providing the real-time high-performance read/write connectivity of OS/390 enterprise databases with Windows client/server and Internet, Intranet, and Extranet business applications. EDBC directly connects business applications to enterprise databases, such as DB2, IMS, CICS/VSAM, VSAM, CA-IDMS, and CA-Datacom on the OS/390 mainframe platform.

EDBC works within the existing OS/390 infrastructure, adding value without impacting existing business processes. EDBC offers users the following features:

- Integrated client connectivity
- Industry standard API access
- Intuitive database management
- Graphical non-relational database mapping

Refer to the *Installation and Operations Guide* for your particular EDBC data source for further information.

### Integrated Client Connectivity

EDBC uses TCP/IP to connect from the application running on the PC to the OS/390 mainframe. Users are able to access existing data stored in a variety of forms without knowledge of data structure or location. Developers are free to create client applications that are independent of hardware platform and operating systems.

The “Managing Network Communications” chapter details how to set up node definitions, allowing you to establish connectivity.

### Industry Standard API Access

EDBC supports several application program interfaces (APIs), enabling Windows client/server and Web-based applications to communicate through one of several options. These options include Microsoft Open Database Connectivity (ODBC), Microsoft Remote Data Service (RDO), ActiveX Data Objects (ADO), and Microsoft OLE DB. In addition, through the ADO API, EDBC can service Microsoft Internet Information Server (IIS) and Active Server Pages (ASP). This allows you to choose your favorite development tool, rather than being limited to tools from a single vendor.

### Graphical Non-Relational Database Mapping

EDBC also provides a Windows-based DBA tool that maps non-relational (non-SQL) IMS or VSAM databases into a relational form. The Data Mapper is a wizard-style GUI that converts existing data descriptions of non-relational data into SQL statements, while allowing database administrators to make their own adjustments. These statements can then be used to logically map the non-relational data into an EDBC database as relational tables.

See the “Mapping Your Mainframe Data” chapter for information on this tool.

### Intuitive Database Management

EDBC provides several Windows client/server applications that can be used to manage and query your OS/390 host SQL database from a Windows desktop. The Database Object Manager offers the application developer an intuitive, graphical solution for viewing and manipulating databases. The SQL Test utility provides the ability to perform SQL queries directly on your mainframe server data.

See the “Managing Databases” chapter for information on how to use these data administration tools.

### The EDBC Users

EDBC is designed for a variety of users, from users with little computer experience to application developers and database administrators. Although an individual can fill more than one of these functions, EDBC users are made up of four basic types:

- **Application User**—The application user may start the EDBC installation (unless it is set to start automatically at startup time), define a vnode to which to connect, define (if appropriate) the ODBC data source corresponding to the OS/390 data source, and run their application.
- **Windows Database Administrator**—The Windows database administrator is responsible for installing EDBC on Windows, and if the data source is VSAM or IMS, for assisting the mainframe DBA in the data mapping of mainframe data to EDBC equivalents. This person will also define (if appropriate) the ODBC data source corresponding to the OS/390 data source.
- **Application Developer**—The application developer creates customized applications to be run by application users. This user may need to examine the data on or run SQL queries against the mainframe during the course of developing their application. The EDBC tools provide point-and-click access to live data for this purpose.
- **Mainframe Database Administrator**—The mainframe DBA installs the OS/390 (MVS) components of the software. If the data source is VSAM or IMS, this user assists the Windows DBA in the data mapping of the mainframe data to EDBC equivalents. This type of user also defines a vnode to which to connect.

The EDBC user interfaces include tools for all these basic types of users.

### What You Need to Know

This guide is intended for all EDBC users, including application users, application developers, and database administrators. Some chapters assume you are already familiar with:

- Basic SQL and ODBC programming concepts
- Basic relational DBMS concepts

## Conventions

You must also be familiar with the Windows NT or Windows 98/95 operating system, including terminology, navigational techniques, and working with standard items, such as menus and dialog boxes.

### Conventions

This guide employs several conventions, described in this section, to make locating and identifying information easier.

### Cross References

The following conventions are used to refer you to other relevant parts of the documentation set:

- Guide name in *italic*:  
See the *OpenSQL Reference Guide*.
- Chapter name in double quotes:  
See “Managing Databases” in this guide.
- Section name as it appears within this guide:  
See the Post-Installation Tasks section.

### Operating Environment Differences

This guide documents ODBC for all platforms on which it is available.

The following symbol indicates differences that are evident within the Windows NT operating environment:



Information is specific to Microsoft Windows NT. 

## Chapter 2

# Installing EDBC!

This chapter provides system and pre-installation tasks for installing the EDBC client on Windows NT, Windows 98, or Windows 95, and guides you through the installation of the product on your system. It then discusses post-installation requirements, and contains procedures for starting up and shutting down EDBC, configuring EDBC, and instructions for uninstalling EDBC.

### System Requirements

Disk space requirements depend on the number of EDBC components installed. The requirements are displayed during installation. The system requirements needed to install and run the EDBC client are as follows:

System Component	Requirement
Processor	Pentium (100 MHz or above)
Windows NT	Version 4.0
Windows 98/95	—
Hard disk space	20 MB
RAM	32 MB

**Note:** The recommended hard disk space is the amount required for the full installation of EDBC client—partial installations will require less space.

### Preparing for Installation

EDBC uses the TCP/IP protocol to connect to the mainframe. Please ensure that TCP/IP is installed on the client PC and that a connection to the mainframe can be established using the ping utility.

### Installing EDBC

After you ensure that you satisfy the system requirements and complete the pre-installation requirements described previously, you can install EDBC.

To start the installation program:

1. Log on to your Windows NT, Windows 98 or 95 machine.
2. Insert the EDBC CD-ROM into the CD-ROM drive.

The autorun function on the EDBC installation CD-ROM runs and invokes the EDBC Setup Wizard.

---

NOTE: If the EDBC Setup Wizard does not appear automatically, double-click the CD-ROM drive letter in the My Computer dialog box and then double-click the install icon.

---

3. Follow the prompts on your screen to install EDBC, referring first to the next section, Using the EDBC Setup Wizard, for an overview of the wizard.

### Using the EDBC Setup Wizard

The EDBC Setup Wizard presents you with a series of dialogs that prompt you for information needed to install EDBC. Most of these dialogs are self-explanatory, however several of them are described further below; and online help is provided if you have any questions about specific options or steps.

Typically, you will click Next after completing each dialog. If you need to go back and change a parameter, click Back. To cancel at any time, click Cancel.

### Selecting Installation Type

The component selection dialog allows you to specify the type of installation—Typical, Complete, or Custom. By default, only the typical components are selected for installation.

To specify your installation type, in the component selection dialog box, select appropriately one of the installation types described below:

- **Typical**—This option installs most of the commonly-used components of EDBC, and is intended for users who will be running applications.
- **Complete**—This option installs **all** of the components of EDBC, and is intended for database administrators or application developers.
- **Custom**—This option installs only the selected components, and is intended for database administrators or application developers. Refer to the Selecting Custom Components and Tools section.

Additionally, on Windows NT you can select whether you want to start EDBC automatically as a service at system startup.

### Selecting Custom Components and Tools

If you selected the Custom installation option, the EDBC client component is selected for installation by default. To enable the installation of a particular EDBC component, simply select its corresponding check box in the component selection dialog.

The various EDBC components available in the installation are described below:

- **EDBC Client**—This option allows you to install the EDBC communications component, the CA ODBC driver, and Microsoft data access components, which provides the connectivity between your local applications or EDBC data administration utilities and the EDBC server mainframe data sources.
- **EDBC Data Administration Tools**—This option allows you to install the data administration tools, including the Database Object Manager, the SQL Test utility, and the Data Mapping Tool.
- **EDBC Online Documentation**—This option allows you to install the online documentation provided with EDBC, in PDF format.

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NOTE: If your machine does not have the disk space required to install all of the components you have selected, you will be prompted with a warning message.

---

### Starting the EDBC Client at System Startup

By default, the option to start the EDBC client automatically as a service when you start your Windows system is selected. You can choose to disable this option by disabling the Start EDBC Client Service Automatically at Service Startup check box. This will allow you to start EDBC manually through the EDBC Service Manager.

See the Starting Up and Shutting Down the EDBC Client section for more information.

### Selecting Installation Location

In the Installation Location dialog, you can choose where you want to install EDBC. The default directory is \EDBC on your first local drive (for example, C:\EDBC). To change the drive, click on the desired drive in the List of Drives on Your System list box.

To change the directory or create a new one, double-click on the directory name or click Browse. In the Destination Directory for EDBC dialog box, you can browse for the desired directory or enter the name of a new directory in the edit control. Click OK when you are finished.

### Installing Data Access Components

After installing EDBC, you will be prompted to install the Microsoft Data Access Components that are needed in order to use EDBC. These include ODBC, RDS, ADO, and OLE DB. Click Yes to install these components.

## Post-Installation Tasks

For information about how to configure a data source for use with the ODBC driver provided with EDBC, see the “Using the ODBC Interface to EDBC” chapter.

### Post-Installation Tasks

After installation, there are several steps you need to take:

1. Start and initialize the EDBC gateway on the mainframe. (See the *Installation and Operations Guide* for your data source for more information.)
2. On the client side, use the EDBC Network Utility to set up the proper configuration. An EDBC server node cannot be accessed until a virtual node (*vnode*) definition is provided on the client for that node. For more information on defining vnodes, see the “Managing Network Communications” chapter in this guide.

It is necessary to make the following entries for each vnode:

- **Virtual Node**—This is a user-defined name used to identify the EDBC server.
- **Node**—This is the host name of the OS/390 mainframe as known by the networking protocol, TCP/IP.
- **Protocol**—This is the network protocol that will be used by Net.
- **Listen Address**—This is determined by the installation on the mainframe. The default for OS/390 systems is 134. Contact your database administrator to determine the proper listen address.
- **User Name**—This is the name of the user recognized by the operating system on the OS/390 mainframe.
- **Password**—This is the operating system password for the specified user on the OS/390 mainframe.

### Starting Up and Shutting Down the EDBC Client

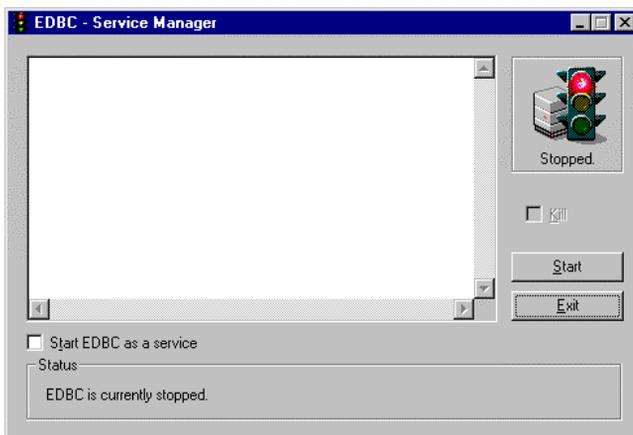
#### EDBC Service Manager

During installation, if you did not choose to start the EDBC client as an automatic service upon system startup, you can start EDBC manually either as a service or a process via the EDBC Service Manager dialog box.

To do so:

1. From the Windows Start menu, point to Enterprise Database Connectivity, and then choose EDBC Service Manager.

The EDBC Service Manager dialog box appears:



2. To start EDBC as a service, enable the Start EDBC as a Service check box. Alternatively, if you want to start EDBC as a process, leave this check box disabled.

---

NOTE: When started as a service, EDBC will remain running after the user logs off. Otherwise, EDBC will be stopped when the user logs off (although this is not the recommended method of shutting down, as discussed later in this section).

---

3. Click Start.

The EDBC installation will be started.

4. When you want to shut down EDBC, click Stop.
5. Click Exit to close the EDBC Service Manager.

EDBC can also be started as a service automatically or manually using the Services icon in the Windows Control Panel. If you choose the Automatic startup type, the Start EDBC as a Service check box will be enabled automatically. It can also be started as a process by typing **edbcstart** or **edbcstop** at the command prompt.

## Configuring EDBC

### Rules to Remember

When starting and stopping EDBC, the following rules apply:

- Once EDBC is started as a service, it is necessary to stop it as a service. The EDBC Service Manager will have registered the service as having been started and needs to be notified that the service has been shut down.
- Once EDBC is started as a process with either the EDBC Service Manager by clicking the Start button, or the edbcstart command, it must be stopped with its counterpart (that is, the Stop button or the edbcstop command).

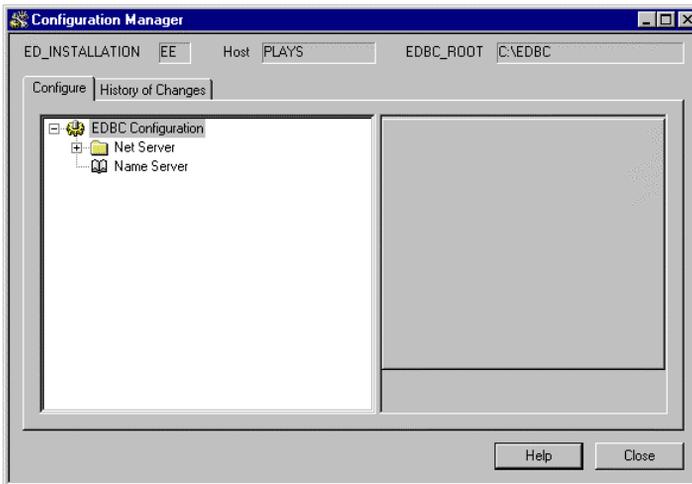
## Configuring EDBC

### EDBC Configuration Manager

The EDBC client is pre-configured for most applications. Should you need to alter the configuration, this is done in the EDBC Configuration Manager

To start the Configuration Manager, from the Windows Start menu, point to Programs, and then select EDBC Configuration Manager from the Enterprise Database Connectivity folder.

The Configuration Manager window is displayed:



### Configuring the Net and Name Servers

The EDBC client consists of two components that are configurable. In the majority of cases, the default configuration is sufficient. In some scenarios, such as a large Windows NT server running an active server page application, it may be advantageous to run multiple communication servers to support the high transaction volume. The Net server manages connection information and keeps track of load balancing for the communication servers.

## Uninstalling EDBC

The Configuration Manager can be used to set the parameters for the Name Server, including how long it waits between attempts to check for active servers and the maximum number of connections it can support. You can also set the parameters for the Net server, including the number of inbound and outbound sessions and the logging level.

The Configuration Manager also allows you to manage Net server instances and view the history of configuration changes. To see step-by-step procedures, click Help. All configuration procedures are listed in the Contents under Configuring Your Installation.

## Uninstalling EDBC

To uninstall EDBC:

1. Shut down the EDBC client. (For detailed instructions, refer to the Starting Up and Shutting Down the EDBC Client section.)
2. From the Windows Start menu, point to Programs, and then select the Uninstall Enterprise Database Connectivity program from the Enterprise Database Connectivity folder.

The EDBC Uninstaller wizard displays.

3. Click the Uninstall button to proceed.

The EDBC Uninstaller dialog box appears, and prompts you to continue:



4. Click Yes.

The wizard reflects the Uninstaller's progress and informs you when the process is completed.



## Chapter 3

# Mapping Your Mainframe Data!

This chapter provides an overview of the EDBC Data Mapping Tool and how it is used to map your VSAM or IMS mainframe non-relational data to relational tables.

## The EDBC Data Mapping Tool

The EDBC Data Mapping Tool provides a wizard-style GUI that imports existing data descriptions on non-relational data and converts those descriptions into “register table” SQL statements, which you can then modify according to your requirements. These register table SQL statements are used to logically map the non-relational data into an EDBC database as relational tables.

The following sections describe the EDBC Data Mapping Tool in more detail.

## Mapping Mainframe Data

To map your mainframe data into relational tables, follow these steps:

1. From the Start menu, point to Programs, and then select the EDBC Data Mapping Tool program from the Enterprise Database Connectivity folder.

Alternatively, you can use the following command at the command line. This method automatically connects to a database and runs the resultant script from the Data Mapping Tool:

```
edbcgwdm -database:mode::database
```

where *mode* and *database* are the names of the mainframe vnode and database on which you want to execute the script.

2. Follow the prompts on your screen to map your mainframe data, referring to the Using the EDBC Data Mapping Tool Wizard section for a description of the wizard.

An SQL script file that will be used to register the EDBC tables is created.

3. If not already done, create a vnode definition for the mainframe node to which you to connect and register the EDBC tables.

Refer to the “Managing Network Communications” chapter for more information on creating vnodes.

## Mapping Mainframe Data

4. If you did not use the `edbcgwdm` command to start the Data Mapping Utility, use the EDBC Terminal Monitor to execute the SQL script file.

For example, you could use the `edbcsql` command at the command line:

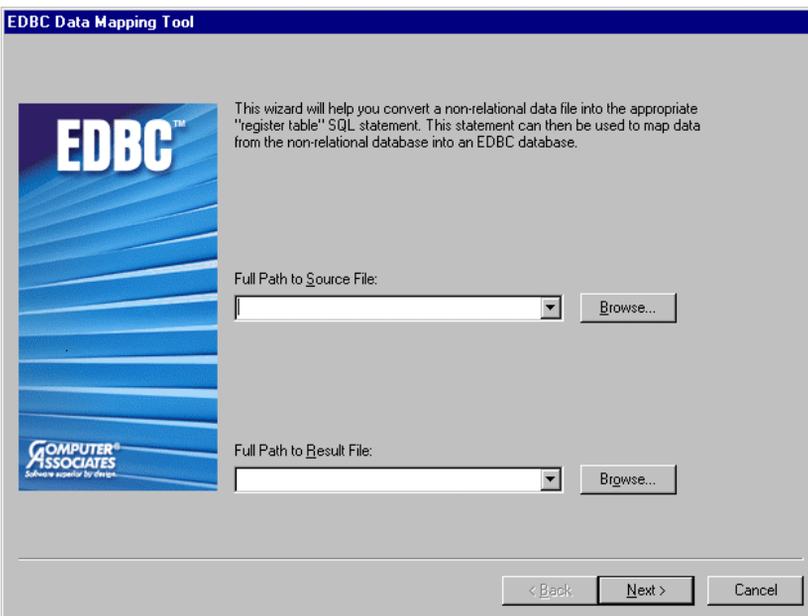
```
edbcsql vnode::database/ server_class <sqlscript.sql
```

where *vnode*, *database*, and *server\_class* are the names of the mainframe vnode, database, and server class (i.e., gateway, such as VSAM), respectively.

## Using the EDBC Data Mapping Tool Wizard

The EDBC Data Mapping Tool wizard presents you with a series of dialogs that prompt you for information that is necessary to map the mainframe data. Most of these dialogs are self-explanatory, although several of the dialogs are discussed in the following section.

When you start the EDBC Data Mapping Tool, you see the following dialog:



Initially, you are prompted to specify the full path to the COBOL copy book file (\*.CCB) source file that maps the data you want to access from EDBC. Additionally, you will need to supply the full path to the resulting SQL script that will be generated, which will be executed to create your relational tables.

If there are multiple logical records in the COBOL copy book file, a dialog appears that allows you to specify the tables you want to map, or *register*, on the mainframe.

## Mapping Mainframe Data

### Registering Table Columns

After specifying the tables you want to register, you can then select the columns you want to register for each EDBC table. The following dialog also enables you to edit the name of any table:

Please select the columns that you would like to register per table. If you do not want to register a particular table, then you will need to deselect all columns for that table.

EDBC Table Name:

COBOL Column Name	COBOL Data Type
<input checked="" type="checkbox"/> short_sku	PIC 9(08)
<input checked="" type="checkbox"/> store	PIC 9(04)
<input checked="" type="checkbox"/> qty_on_hand	PIC S9(07) COMP-3
<input checked="" type="checkbox"/> qty_reserved	PIC S9(07) COMP-3
<input checked="" type="checkbox"/> on_order	PIC S9(07) COMP-3
<input checked="" type="checkbox"/> intransit_all_units	PIC S9(07) COMP-3
<input checked="" type="checkbox"/> current_retail	PIC S9(05)V999 COMP-3
<input checked="" type="checkbox"/> current_cost	PIC S9(05)V9999 COMP-3
<input checked="" type="checkbox"/> intransit_avg_cost	PIC S9(05)V9999 COMP-3
<input checked="" type="checkbox"/> old_cost	PIC S9(05)V9999 COMP-3

## Mapping Mainframe Data

### Modifying Column Names and Data Types

Next, you have the option of evaluating the proposed column names for each EDBC table, as well as the internal and external data types that have been assigned to each column. You can also specify the key sequence of any column for each EDBC table.

The dialog that specifies this type of information is shown below:

EDBC Data Mapping Tool

By double-clicking on the appropriate entry in the "EDBC Column Name", "EDBC Int. Type", "EDBC Ext. Type", or "Key Seq." columns, you can edit the entry. Please examine the following values for each table.

EDBC Table Name:

COBOL Column Name	EDBC Column Name	EDBC Int. Type	EDBC Ext. Type	Ke
short_sku	short_sku	char(8)	offset(0)	
store	store	char(4)	offset(8)	
qty_on_hand	qty_on_hand	float4	offset(12) dec...	
qty_reserved	qty_reserved	float4	offset(16) dec...	
on_order	on_order	float4	offset(20) dec...	
intransit_all_units	intransit_all_units	float4	offset(24) dec...	
current_retail	current_retail	float4	offset(28) dec...	
current_cost	current_cost	integer	offset(32) dec...	
intransit_avg_cost	intransit_avg_cost	integer	offset(37) dec...	
old_cost	old_cost	integer	offset(42) dec...	
st_lcost_extended	st_lcost_extended	float	offset(47) dec...	
st_lcost_avg	st_lcost_avg	float	offset(53) dec...	

View COBOL Data Type Column

< Back   Next >   Cancel

---

NOTE: When modifying column names and data types, there are certain naming conventions and restrictions that apply. Refer to the *Installation and Operations Guide* for your particular data source for information on registering data.

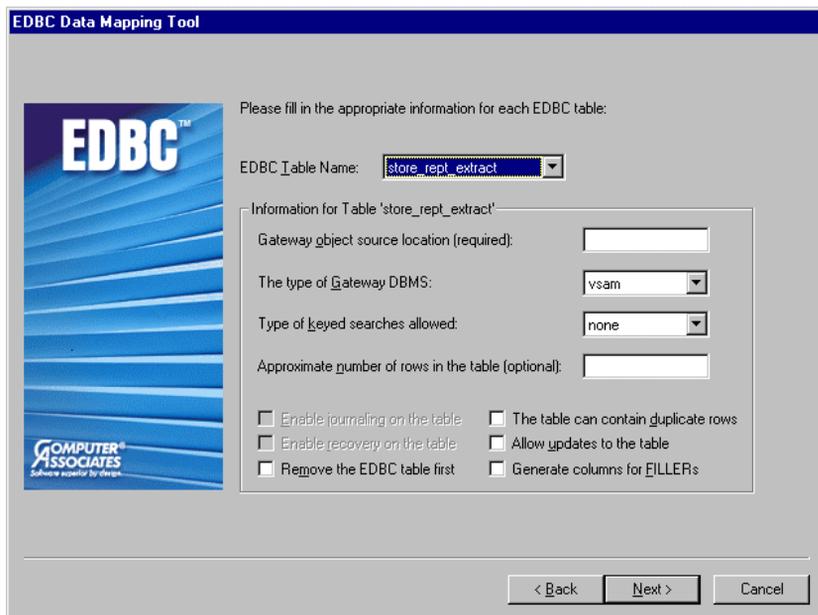
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## Mapping Mainframe Data

### Specifying EDBC Table Information

For each EDBC table, you must specify the location of the EDBC gateway data source and the type of gateway DBMS (such as VSAM). The remaining table specifications are optional.

The following dialog allows you to specify EDBC table information:



The screenshot shows the "EDBC Data Mapping Tool" dialog box. On the left is a blue graphic with the "EDBC" logo and "COMPUTER ASSOCIATES Software expert by design" text. The main area contains the following fields and options:

- EDBC Table Name:
- Information for Table 'store\_rept\_extract':
  - Gateway object source location (required):
  - The type of Gateway DBMS:
  - Type of keyed searches allowed:
  - Approximate number of rows in the table (optional):
- Options:
  - Enable journaling on the table
  - The table can contain duplicate rows
  - Enable recovery on the table
  - Allow updates to the table
  - Remove the EDBC table first
  - Generate columns for FILLERs

At the bottom are buttons for "< Back", "Next >", and "Cancel".

For information on each of the EDBC table specifications, see the *Installation and Operations Guide* for your particular data source.

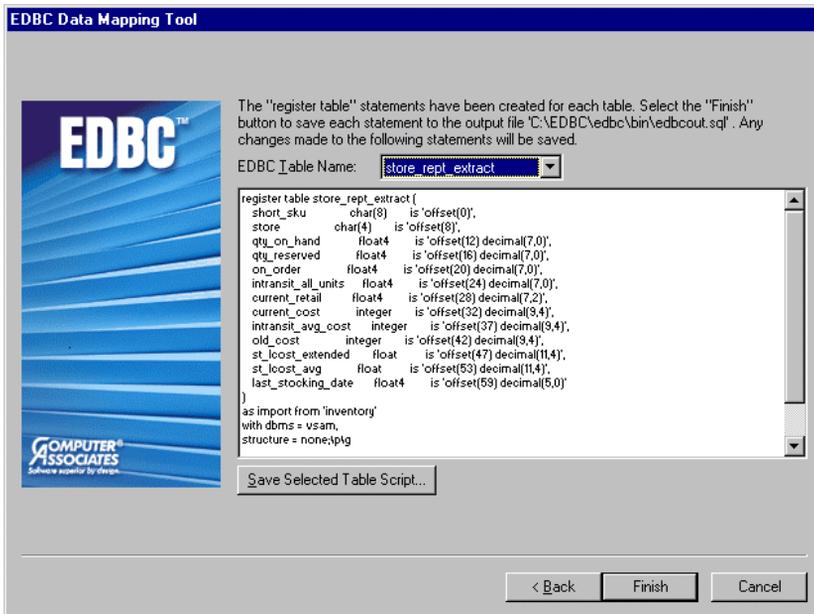
### Saving the SQL Script

At this point, the EDBC Data Mapping Tool has created all of the register table statements needed to map your data. This dialog will save all these statements in a single SQL script file. You have the opportunity to examine the column names and data types for each table once again in the register table statement, and modify them if necessary.

## Mapping Mainframe Data

You can also choose to save an individual table script in its own script file by clicking the Save Selected Table Script button.

An example of a table script is shown in the following dialog:



When you are done, click Finish to create the final SQL script.

## Chapter 4

# Managing Network Communications!

This chapter describes how connectivity is established between an EDBC client and an EDBC server installation on the mainframe. The EDBC Network Utility is used to create and maintain vnode definitions, with which you provide the necessary login and connection information to establish connections.

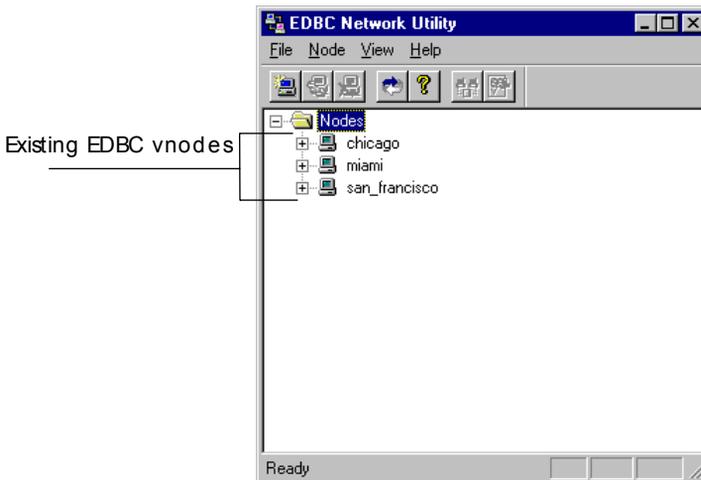
You will learn how to use the EDBC Network Utility to perform the following tasks:

- View vnode definitions
- Add, alter, and drop vnode definitions
- Refresh and test vnode definitions
- Connect to vnodes or gateways, and open one of two types of data administration windows where you can work with databases or test SQL queries

### Opening the EDBC Network Utility

To access the EDBC Network Utility, select the Windows Start menu, point to Programs, and then select the EDBC Network Utility program from the Enterprise Database Connectivity folder.

The EDBC Network Utility window appears:



The EDBC Network Utility window contains a menu bar, a toolbar, a status bar, and a tree structure. The branch in the tree structure labeled Nodes initially lists all the installations that have been defined to EDBC on the mainframe.

## Adding a Vnode

### Adding a Vnode

A vnode represents an EDBC server. A separate vnode has to be defined for each EDBC server to which the client needs to connect.

To add a new vnode, follow these steps:

1. Select the Nodes branch in the EDBC Network Utility window.
2. Click the Add toolbar button.

Alternatively, right-click and choose the Add command from the local pop-up menu.

The Add Virtual Node Definition dialog box appears:

The screenshot shows a dialog box titled "Add Virtual Node Definition". It has a close button (X) in the top right corner. The dialog is divided into two main sections: "Login Information" and "Connection Information".

**Login Information:**

- Virtual Node: [Empty text box]
- User Name: [Empty text box]
- Password: [Empty text box]
- Confirm Password: [Empty text box]
- Private:

**Connection Information:**

- Node: [Empty text box]
- Protocol: [wintcp (dropdown menu)]
- Listen Address: [134 (text box)]
- Private:

Buttons: OK, Cancel

3. Enter a unique name in the Virtual Node edit control (for example, **new\_york**).

The vnode name can be the same as the vnode's real address or node name. However, because the real names or addresses are often difficult to remember, other names are generally chosen for vnode names.

4. Keeping the Private check box in the Login Information group box enabled, specify the other options for the vnode, including user name, password, node name, networking protocol, and so on.

## Adding a Vnode

An example of a vnode specification is shown below:

The dialog box is titled "Add Virtual Node Definition". It contains the following fields and options:

- Virtual Node:
- OK button
- Cancel button
- Login Information:
  - User Name:
  - Private checkbox:
  - Password:
  - Confirm Password:
- Connection Information:
  - Node:
  - Private checkbox:
  - Protocol:   - Listen Address:

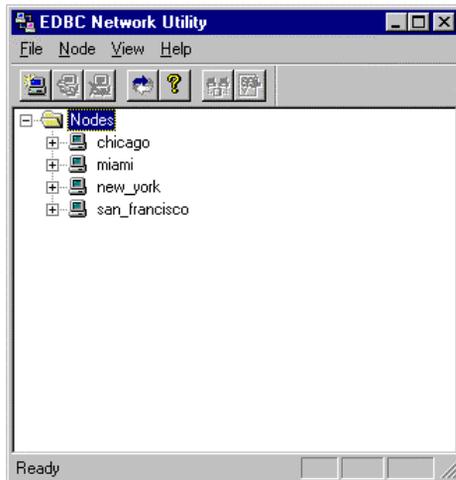
For detailed information about each of these options, see [Creating a Vnode](#) under Procedures in the Managing Vnodes section of the EDBC online help.

5. Click OK.

The new vnode definition is saved and added to the Nodes branch in the EDBC Network Utility window.

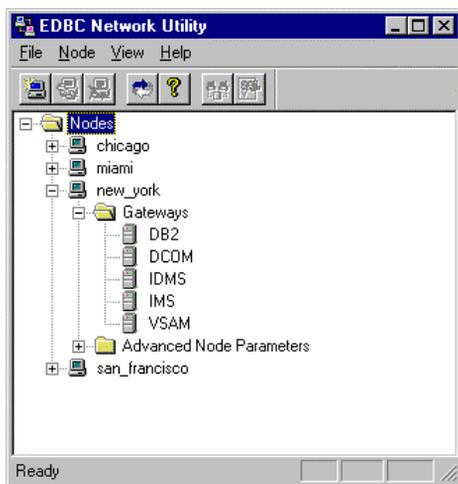
## Viewing Vnode Information

Initially, the EDBC Network Utility displays your currently-defined vnodes in a navigational tree structure. Beneath the root Nodes branch, the vnodes appear:



## Working with Vnodes

The tree structure is collapsible and expandable. By expanding any of the vnode branches, you can view and manage information for the vnode, including any active gateways on that vnode. In this example, the branch for the new vnode, `new_york`, has been expanded:



The branches beneath the Gateways branch indicate which gateways for your data sources have been installed on the EDBC mainframe.

### Refreshing Vnodes

You can do a refresh to update all branches in the EDBC Network Utility window (except the Gateways branches). To refresh, choose a vnode and either click the Force Refresh button or select Force Refresh from the Node menu.

### Working with Vnodes

In addition to adding vnodes, as described previously, you can:

- Alter vnodes
- Delete vnodes

Detailed steps for performing these procedures can be found under Procedures in the Managing Vnodes section of the EDBC online help. Refer to the appropriate help topic.

### Advanced Node Parameters

For any vnode, you can add, alter, or delete login definitions. You do this using the Advanced Node Parameters branch under the name of the vnode.

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NOTE: Node attributes are reserved for future use with EDBC.

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## Closing the EDBC Network Utility

Detailed steps for performing these procedures can be found under Procedures in the Managing Vnodes section of the EDBC online help. Refer to the Maintaining Logins for a Vnode topic.

### Creating Additional Logins for a Vnode

You can have up to two login definitions for each vnode. If the first definition has been defined as *private*, the other must be *global*—and vice versa. (A global definition is available to all users of the EDBC installation. A private definition is available only to the user who creates it.)

### Testing Vnodes

You can check to see if a connection to a selected vnode or gateway can be established. Choose the vnode and select the Test Node command from the Node menu. A message will tell you if the connection is successful.

### Connecting to Vnodes or Gateways

From any of the vnode or gateway branches, you can open a data administration window, which you can use to work with database information or test SQL queries. Opening a data administration utility window also establishes a physical connection to that vnode or gateway.

The detailed steps for establishing a connection and opening a window and can be found under Procedures in the Managing Vnodes section of the EDBC online help. Refer to the following topics:

- Opening a Database Object Manager Window
- Opening an SQL Test Window

Also, see all the procedures under Working in the Database Object Manager in the Performing Database Administration section of the EDBC online help.

Refer to the “Managing Databases” chapter for more information on the EDBC data administration utilities.

## Closing the EDBC Network Utility

When you have finished working in the EDBC Network Utility, choose the File Exit menu command. If you have opened a Database Object Manager or SQL Test window, it will stay open and the EDBC client will still be connected to the vnode or gateway. Only the EDBC Network Utility will close.



## Chapter 5

# Managing Databases!

This chapter presents an overview of two of the data administration utilities of EDBC. Its purpose is to help you gain an understanding of what features are available to you, as well as a familiarity with the basics of working in the utilities.

## Data Administration Utilities

EDBC provides the Database Object Manager and the SQL Test data administration utilities.

### Database Object Manager

The Database Object Manager window allows you to view and manipulate your non-SQL database objects. Within the Database Object Manager, a tree-like structure delineates database objects and their relationships. For example, the Database Object Manager allows you to select a database object (such as a table) and then create, drop, or view properties associated with it. You can open and simultaneously work with multiple databases and/or gateways in multiple windows.

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NOTE: If you are using a VSAM or IMS data source with EDBC, you must have completed the required step of mapping the non-relational data. The EDBC Data Mapping Tool maps mainframe data into an EDBC database as relational tables. Please see the *Installation and Operations Guide* for your particular data source for further information

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### SQL Test Utility

The SQL Test utility can be used to perform SQL queries against your mainframe databases. The SQL Test utility gives you quick, direct access to real mainframe data, eliminating the need to upload the data in order to test your queries in the Windows environment.

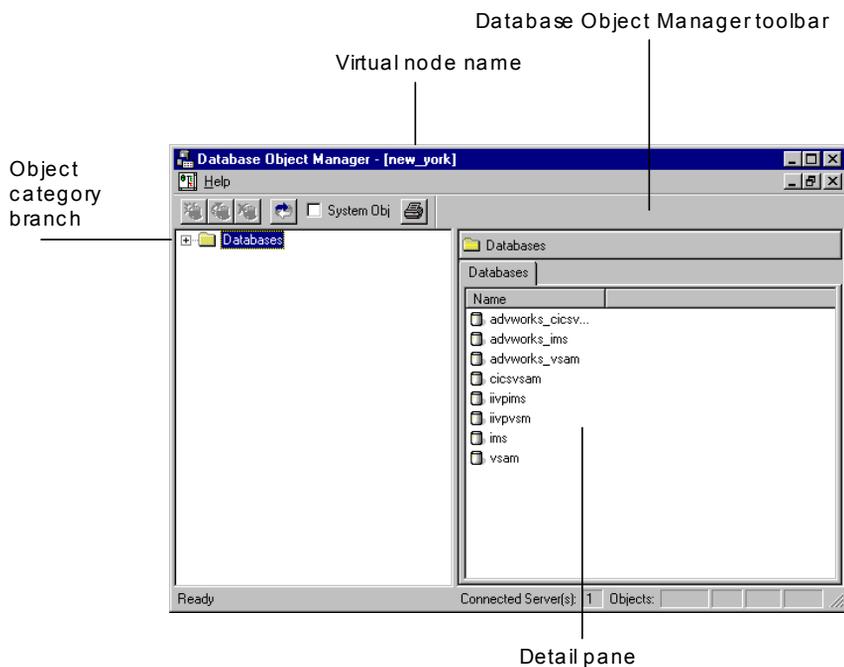
The following sections describe the EDBC database administration utilities in more detail.

### Viewing and Manipulating Database Objects

The Database Object Manager provides a convenient and organized way to view and manipulate database information.

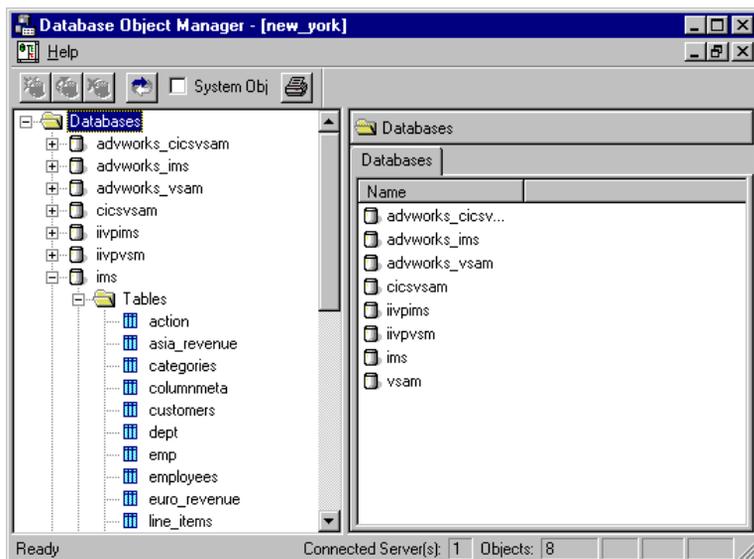
To open a Database Object Manager window, select the desired vnode or gateway branch in the Network Utility window and click the Database Object Manager toolbar button.

The Database Object Manager (DOM) window appears:



### Drill-Down Capability

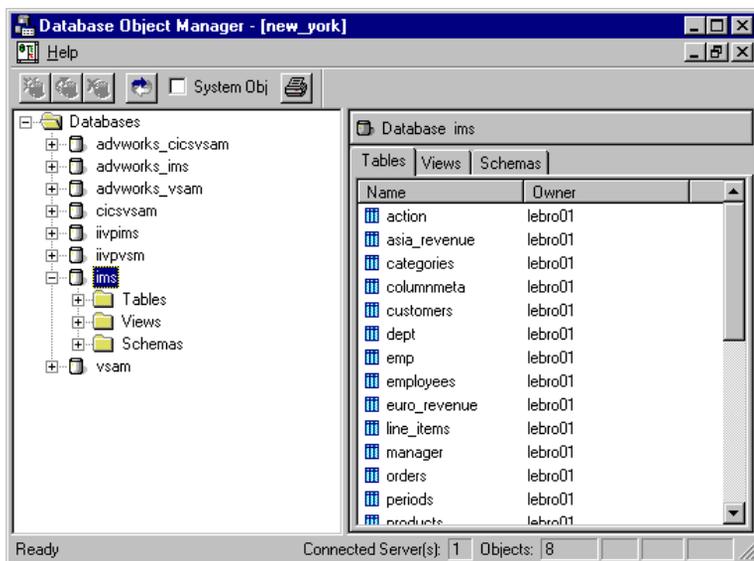
Initially, a Database Object Manager's tree structure displays the Databases object category branch. From this branch, you can select a database and expand the navigational tree, drilling down to the information you need. This example shows the Databases object category branch expanded to list all databases on the selected vnode, and one of the databases expanded to list its tables:



You can choose to display objects that are used internally by EDBC by enabling the System Obj check box, or you can refresh the data displayed by clicking the Force Refresh toolbar button. For detailed information about all of these Database Object Manager features, refer to the EDBC online help.

### Viewing Database Object Properties

The Database Object Manager displays the properties associated with a selected object in its detail pane (the right pane). In the following example, the ims database is selected and its tables are displayed in the detail pane:



The detail pane displays the information on three tabbed pages. Each tabbed page corresponds to a sub-branch in the tree of the database selected in the left pane. So if you want to view related information about the database's tables or views, you just click the Tables or Views tab.

**Buddy Tip:** *You can have more than one Database Object Manager window open at the same time, with each window connected to the same or to different vnodes or gateways. Just select another vnode or gateway branch in the Network Utility window and click the Database Object Manager toolbar button again.*

### Managing Databases

You can also use the Database Object Manager to create new database objects—namely views and possibly tables. In most cases, you will be viewing or manipulating data in tables that already exist. If you do need to create a table, see the EDBC online help for information.

### Creating Views

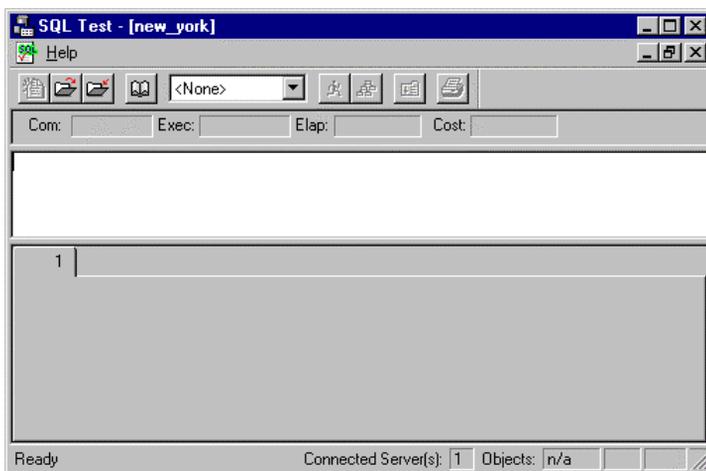
You can define a view, or *virtual table*, to limit access to specific columns in a table. For more information, see the Creating a View topic under Performing Data Administration Procedures in the EDBC online help

### Testing SQL Queries

EDBC allows you to use your favorite querying and reporting tools to access your mainframe data. You can also use the SQL Test window to perform simple SQL queries and troubleshoot your application code.

1. To open the SQL Test window, select a vnode or gateway in the Network Utility window and click the SQL Test toolbar button.

The SQL Test window appears:



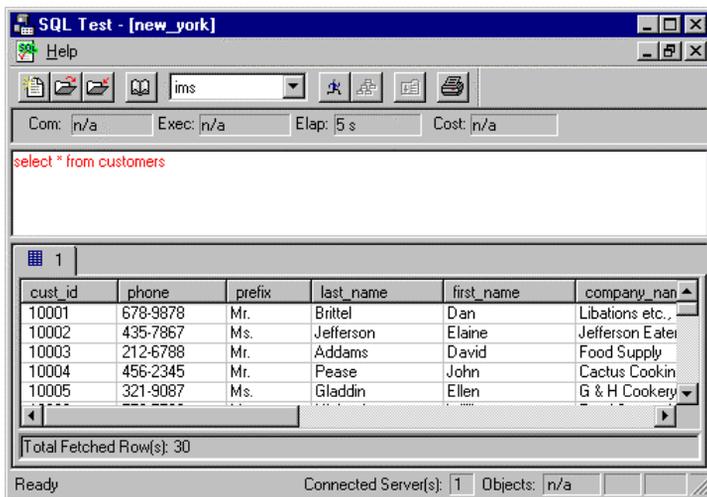
The database list box at the top of the window allows you to connect to a database. The toolbar contains a button for clearing the query editor pane, as well as buttons for opening, saving, and executing SQL queries.

**Buddy Tip:** Use the *SQL Assistant* button to invoke the *SQL Assistant*, an EDBC tool that builds an *SQL* query for you if you do not want to enter one manually.

## Exiting EDBC Data Administration Utilities

The SQL Test window is divided into two smaller panes tiled horizontally, so that—in the case of a select query—you can enter your query in the upper pane and view the results of the query's execution in the lower pane.

For example, after executing a select statement query on the ims database, the SQL Test window will look similar to this:



The SQL Test utility puts all the facts you need right at your fingertips. You can access and manipulate your mainframe data directly as you test your queries and debug your code, without leaving the Windows environment.

## Exiting EDBC Data Administration Utilities

When you have finished working in the EDBC data administration utility windows, you can close the individual windows using the Close command on the system menu. This terminates the connection.

## Chapter 6

# Using the ODBC Interface to EDBC!

**E**DBC provides an ODBC driver for interfacing with EDBC data sources. This chapter gives an overview of the driver and explains how to configure it to access the data source.

### The CA ODBC Driver for EDBC

The CA ODBC driver for EDBC (subsequently referred to as the ODBC driver) is compliant with Microsoft Open Database Connectivity (ODBC) interface specifications. ODBC is a specification for an application programming interface (API) that enables applications to access multiple database management systems using Structured Query Language (SQL).

ODBC permits maximum interoperability—a single application can access many different database management systems. This enables an ODBC developer to develop, compile, and deploy an application without targeting a specific type of data source. Users can then add the database drivers that link the application to the database management systems of their choice.

The ODBC driver is installed during the EDBC installation process. This section tells you how to configure a data source for use with the driver and gives you details about supported functions, unsupported features, and the connection string keywords.

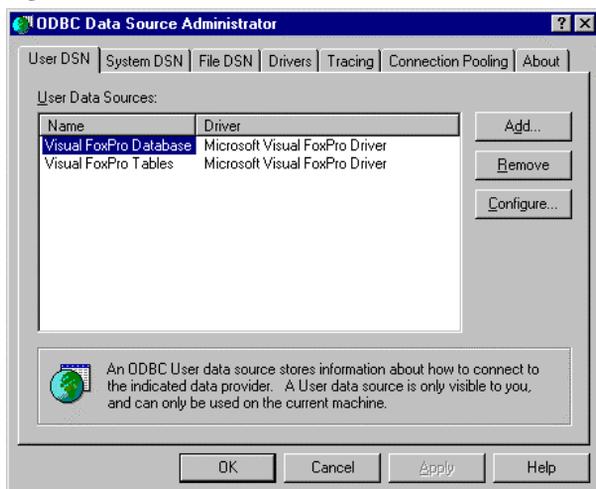
***Important!*** Microsoft's ODBC must be installed in order to use the ODBC driver for EDBC (release 2.5 or above of the ODBC Driver Manager is acceptable). ODBC is part of the Microsoft Data Access components (MDAC) that are installed with EDBC.

## Configuring a Data Source

A *data source configuration* is a collection of information that identifies the database you want to access via the ODBC driver. You must configure a data source before connecting to a database through ODBC.

To configure a data source:

1. Open the ODBC Data Source Administrator:



You can define one or more data sources for each installed driver. The data source name should provide a unique description of the data; for example, Payroll or Accounts Payable.

Data sources can be defined for the system or a user, depending on whether it should be visible to all users (and services) or only the current user.

2. Select the User DSN or the System DSN tab, depending on your requirements.
3. Click Add.

The Create New Data Source dialog box appears, which lists all the ODBC drivers installed on your system.

## The CA ODBC Driver for EDBC

- Click the driver named CA EDBC, then click Finish.

The CA EDBC ODBC Administrator dialog box appears:

The screenshot shows the 'CA EDBC ODBC Administrator' dialog box. It has three tabs: 'Data Source', 'Advanced', and 'About'. The 'Data Source' tab is selected. The dialog contains the following fields and controls:

- Data Source:** A text input field.
- Description:** A text input field.
- Server:** A group box containing:
  - Vnode:** A dropdown menu.
  - Database:** A text input field.
  - Type:** A dropdown menu with 'VSAM' selected.
- Connect Options:** A group box containing:
  - Prompt User ID and Password To Override VNODE Login
  - Enterprise Access (Gateway) WITH Options:** A text input field.
  - Role Name:** A text input field.
  - Role Password:** A text input field.

At the bottom of the dialog are buttons for 'Test', 'OK', 'Cancel', 'Apply', and 'Help'.

- Fill in the necessary information as required. The most common options are described below (click Help to get details about any option in the dialog box):

- **Data Source**—A string that identifies this EDBC data source configuration. Examples include “Accounting” or “EDBC-Serv1.”
- **Description**—An optional long description of a data source name. For example, “My Accounting Database” or “EDBC on Server number 1.”
- **Vnode**—The name of the virtual node that you defined and tested using the EDBC Network Utility. This virtual node defines which system to call, how to call it, and the user’s name and password.
- **Database**—The name of the database to which you want to connect by default.
- **Type**—The class of database you will be accessing. The default is VSAM, which indicates a VSAM database.

- Click OK to create the data source.

You are returned to the ODBC Data Source Administrator, where your newly defined data source appears in the Data Sources list.

## The CA ODBC Driver for EDBC

You can configure as many data sources as you require. Once defined, a data source is available for use by any application that uses ODBC. To modify an existing configuration, select it in the ODBC Data Source Administrator Data Sources list, and click Configure. To remove an existing configuration, select it in the ODBC Data Source Administrator Data Sources list, and click Remove.

### Connection String Keywords

If your application requires a connection string to connect to a data source, you must specify the data source name. Optionally, you can specify *attribute=value* pairs to override certain data source and vnode definitions. The connection string has the form:

```
DSN=data_source_name;attribute=value;attribute=value...
```

The following table gives the keyword for each connection string attribute, as well as a description:

<b>Keyword</b>	<b>Attribute Value Description</b>
DSN	Data source name.
DRIVER	Driver description as returned by <code>SQLDrivers()</code> .
UID	User ID to override vnode definition. If specified, PWD must also be specified.
PWD	Password to override vnode definition. If specified, UID must also be specified.
SERVER	Vnode name.
SERVERTYPE	Server type (for example, VSAM, IDMS, or DB2).
DATABASE	Database name as defined on the server.
DB	A synonym for database.
ROLENAME	Role name to override vnode definition.
ROLEPWD	Role password to override vnode definition.
GROUP	Group identifier for the session. Equivalent to the -G flag of the EDBC command-line flags.

## Supported Functions

The ODBC driver for EDBC supports all level one functions, as well as the following level two functions:

- `SQLExtendedFetch` (through Microsoft Cursor Library only)
- `SQLMoreResults`
- `SQLNumParam`
- `SQLProcedureColumns`
- `SQLProcedures`
- `SQLSetPos` (through Microsoft Cursor Library only)
- Multiple SQL statements in a single ODBC call

## Unavailable Features

The ODBC driver for EDBC does not provide the following features at this time:

- Executing functions asynchronously
- Translation DLL
- Support for EDBC SQL copy table command
- Support for EDBC SQL savepoint command