DB2® REXX SQL for VM/ESA®

Installation

Version 6 Release 1

GC09-2660-00

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Note!

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

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First Edition (December 1998)

This edition, GC09-2660, applies to Version 6 Release 1, of the IBM DB2® REXX SQL for VM/ESA®, which is a feature of the IBM DATABASE 2™ Server for VSE & VM Program 5648-A70-02, and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product. Changes or additions to the text and illustrations are indicated by a vertical line to the left of the change or addition.

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About This Manual

This manual describes how to install the DB2 REXX SQL for VM/ESA (DB2 RXSQL) program on a *Virtual Machine (VM)* system. The DB2 RXSQL software is a feature of the *DB2 Server for VM* relational *database manager*.

Who Should Use This Manual

This manual is for the person who installs DB2 RXSQL. It assumes you are familiar with *CMS commands* and *EXEC*s, and the Virtual Machine/Enterprise Systems Architecture (*VM/ESA*) system.

How This Manual Is Organized

Chapter 1, Before You Begin defines the prerequisites needed to install DB2 RXSQL.

Chapter 2, Installing DB2 RXSQL describes how to install DB2 RXSQL and verify the installation.

Chapter 3, Installing a REXX SQL NLS Language contains the information concerning the material and procedures associated with the installation of DB2 REXX SQL NLS Languages.

Chapter 4, Installing Preventive and Corrective Service provides instructions for installing preventive and corrective service.

Appendix A, Files Supplied by IBM lists the files supplied by IBM.

Appendix B, Installation and Service EXECs provides instructions for running the installation and service EXECs.

Appendix C, Online HELP Information describes the HELP information available with DB2 RXSQL.

Appendix D, Installation Messages provides a summary of the installation messages.

The **Glossary** contains definitions of DB2 RXSQL and DB2 Server for VM terms.

The **Bibliography** lists the full titles and order numbers of related publications.

Terminology

In the past, the term **database** was used in a general sense to refer to the *database management system* as well as stored objects and storage devices; however, using database in this way can be misleading in a distributed environment. From now on, the following terminology will be used:

Term	Meaning
application server	Refers to the database management system including the accumulated data.
application requester	Refers to the facility that transforms a request from the application into a form suitable for communicating with an *application server*.
database	Refers only to the collection of data.

Related Publications

Refer to the IBM publications mentioned throughout this document if you require additional information on related IBM products.

Only the short titles of the manuals are given in the text. For the long titles and their corresponding document numbers, refer to the “Bibliography” on page 107.

Highlighting Conventions

This manual observes the following text highlighting conventions.

Convention	Meaning
Italics	Italic type is used to denote the first occurrence of a term listed in the Glossary, titles of stand-alone documents, command variables, parameter values and their symbolic equivalents, and strings of*characters* referred to as such.
Boldface	Bold type is used for emphasis or for an important term that is being defined.
`Monospace Type`	Monospace type is used to indicate material that is entered at a display station, displayed on a screen, coded, or printed on a computer printing device.
ALL CAPS	Capital letters are used to indicate: • Acronyms and other all-cap abbreviations • Names of programs and other coded entities • Names of files, *tables*, libraries, logs, and so forth • Command, statement, and *parameter* names or *constants* • *Keyword* and option names • Data area and storage names.
“Quotation Marks”	Quotation marks (double) are used to enclose the headings of parts, chapters, and lesser sections of stand-alone documents when they are referenced.

Syntax Notation Conventions

Throughout this manual, syntax is described using the structure defined below.

- Read the syntax diagrams from left to right and from top to bottom, following the path of the line.

  The >>—— symbol indicates the beginning of a statement or command.

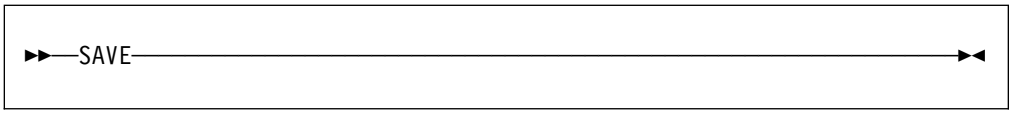
  The ——> symbol indicates that the statement syntax is continued on the next line.

The >—— symbol indicates that a statement is continued from the previous line.

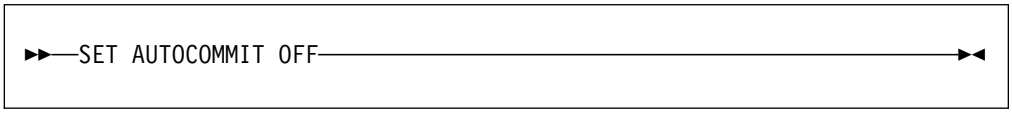
The ——>< symbol indicates the end of a statement.

Diagrams of syntactical units that are not complete statements start with the >—— symbol and end with the ——> symbol.

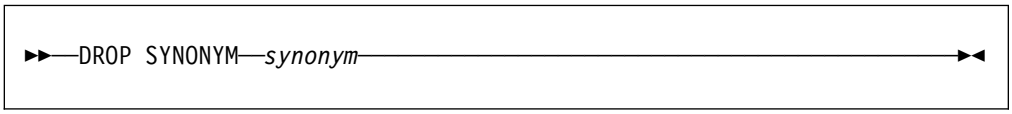
- Some SQL statements, Interactive SQL (ISQL) commands, or database services utility (DBS Utility) commands can stand alone. For example:



Others must be followed by one or more keywords or variables. For example:

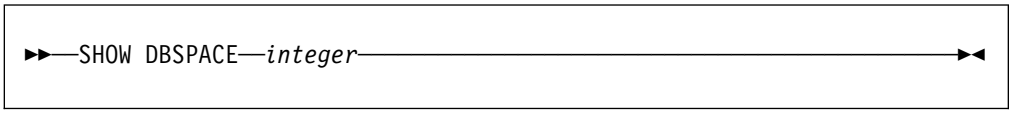


- Keywords may have parameters associated with them which represent user-supplied names or values. These names or values can be specified as either constants or as user-defined variables called *host_variables* (*host_variables* can only be used in programs).



- Keywords appear in either uppercase (for example, SAVE) or mixed case (for example, CHARacter). All uppercase characters in keywords must be present; you can omit those in lowercase.
- Parameters appear in lowercase and in italics (for example, *synonym*).
- If such symbols as punctuation marks, parentheses, or arithmetic operators

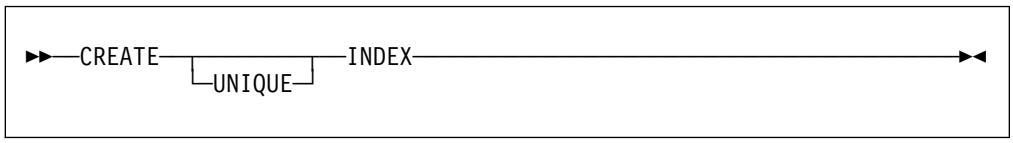
  are shown, you must use them as indicated by the syntax diagram.
- All items (parameters and keywords) must be separated by one or more blanks.
- Required items appear on the same horizontal line (the main path). For example, the parameter *integer* is a required item in the following command:



This command might appear as:

```
SHOW DBSPACE 1
```

- Optional items appear below the main path. For example:



This statement could appear as either:

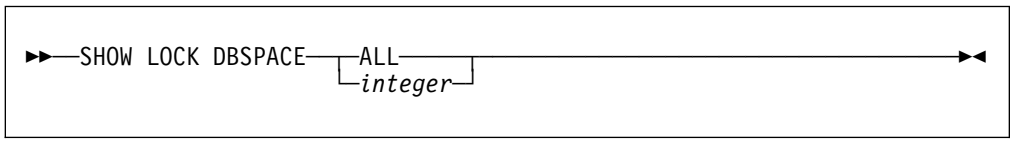
```
CREATE INDEX
```

or

```
CREATE UNIQUE INDEX
```

- If you can choose from two or more items, they appear vertically in a stack.

  If you must choose one of the items, one item appears on the main path. For example:



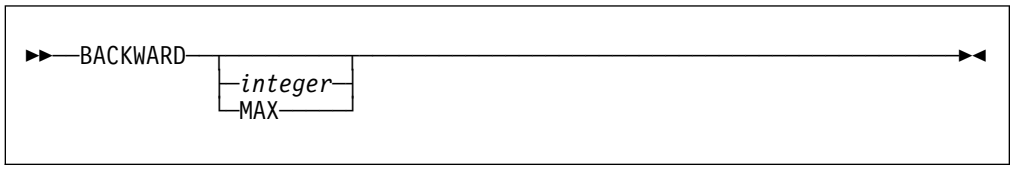
Here, the command could be either:

```
SHOW LOCK DBSPACE ALL
```

or

```
SHOW LOCK DBSPACE 1
```

If choosing one of the items is optional, the entire stack appears below the main path. For example:



Here, the command could be:

```
BACKWARD
```

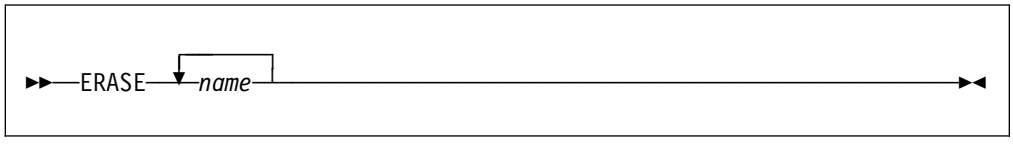
or

```
BACKWARD 2
```

or

```
BACKWARD MAX
```

- The repeat symbol indicates that an item can be repeated. For example:



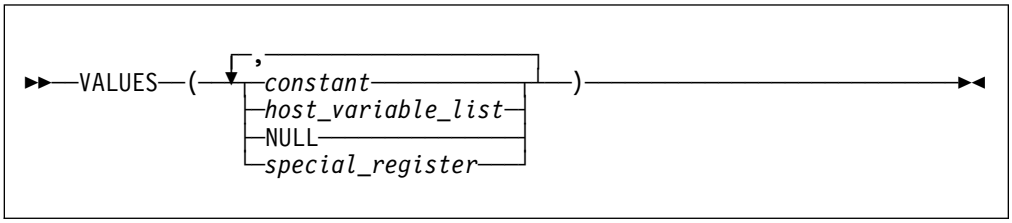
This statement could appear as:

```
ERASE NAME1
```

or

```
ERASE NAME1 NAME2
```

A repeat symbol above a stack indicates that you can make more than one choice from the stacked items, or repeat a choice. For example:

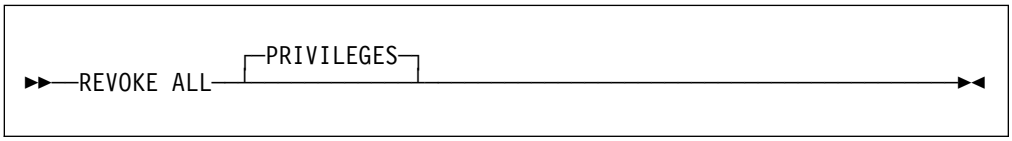


- If an item is above the main line, it represents a default, which means that it will be used if no other item is specified. In the following example, the ASC keyword appears above the line in a stack with DESC. If neither of these values is specified, the command would be processed with option ASC.

- When an optional keyword is followed on the same path by an optional default parameter, the default parameter is assumed if the keyword is not entered. However, if this keyword is entered, one of its associated optional parameters must also be specified.

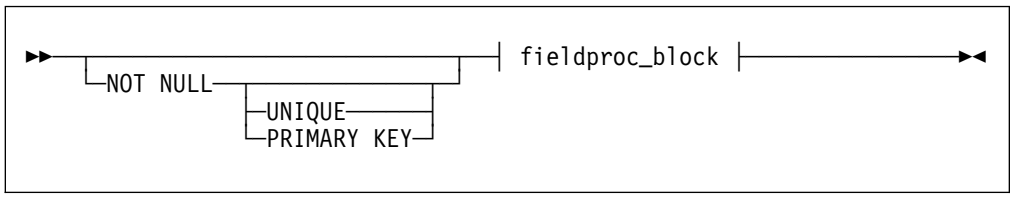
  elIn the following example, if you enter the optional keyword PCTFREE =, you also have to specify one of its associated optional parameters. If you do not enter PCTFREE =, the database manager will set it to the default value of 10.

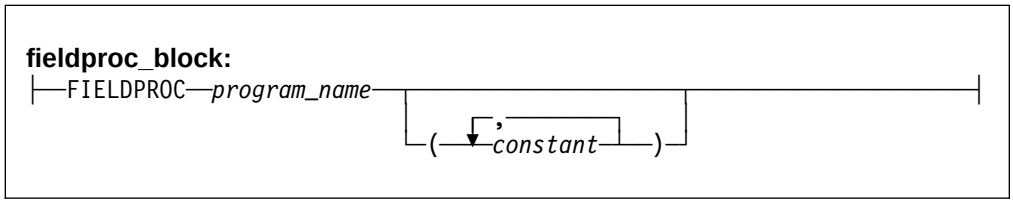
- Words that are only used for readability and have no effect on the execution of the statement are shown as a single uppercase default. For example:



  Here, specifying either REVOKE ALL or REVOKE ALL PRIVILEGES means the same thing.

- Sometimes a single parameter represents a fragment of syntax that is expanded below. In the following example, **fieldproc_block** is such a fragment and it is expanded following the syntax diagram containing it.





EXEC Conventions

When running the EXECs included with DB2 RXSQL, you might receive a message such as the following:

```
Do you want to use these values?
Enter 0 (NO) or 1 (YES) OR 111 (QUIT)
```

To answer no, type one of the following:

```
NO, No, no, N, n, 0.
```

To answer yes, type one of the following:

```
YES, Yes, yes, Y, y, 1.
```

To stop the EXEC and exit processing, type one of the following:

```
QUIT, Quit, quit, Q, q, 111.
```

Summary of Changes for DB2 Version 6 Release 1

This is a summary of the technical changes to the DB2 Server for VSE & VM Version 6 Release 1 database management system. All manuals are affected by some or all of the changes discussed here. This summary does not list incompatibilities between releases of the DB2 Server for VSE & VM product; see either the *DB2 Server for VSE & VM SQL Reference*, *DB2 Server for VM System Administration*, or the *DB2 Server for VSE System Administration* manuals for a discussion of incompatibilities. Version 6 Release 1 of the DB2 Server for VSE & VM database management system is intended to run on the Virtual Machine/Enterprise Systems Architecture (VM/ESA®) Version 2 Release 2 or later environment and on the Virtual Storage Extended/Enterprise Systems Architecture (VSE/ESA™) Version 2 Release 2 or later environment.

Enhancements, New Functions, and New Capabilities

DRDA® RUOW Application Requestor for VSE (Online)

DRDA Remote Unit of Work Application Requestor provides read and update capability in one location in a single unit of work.

This support provides CICS/VSE® online application programs with the ability to execute SQL statements to access and manipulate data managed by any remote application server that implements the DRDA architecture. Online application programs that access remote application servers need to be preprocessed to create a bind file and then bound (using CBND) to the remote application server. Online application programs that access a local application server are preprocessed as in previous releases.

See the following DB2 Server for VSE & VM manuals for further information:

- *DB2 Server for VSE System Administration*
- *DB2 Server for VSE & VM SQL Reference*
- *DB2 Server for VSE Database Administration*
- *DB2 Server for VSE Application Programming*
- *DB2 Server for VSE Installation*

Stored Procedures

The ability to use stored procedures provides distributed solutions that let more people access data faster.

A stored procedure is a user-written application program compiled and stored at the server. When the database is running in multiple user mode, local applications or remote DRDA applications can invoke the stored procedure. SQL statements are local to the server and issued by a stored procedure so they do not incur the high network costs of distributed statements. Instead, a single network send and receive operation is used to invoke a series of SQL statements contained in a stored procedure.

See the following DB2 Server for VSE & VM manuals for further information:

- *DB2 Server for VM System Administration*
- *DB2 Server for VM Database Administration*
- *DB2 Server for VSE & VM SQL Reference*
- *DB2 Server for VSE & VM Operation*

TCP/IP Support for DB2 Server for VM

TCP/IP support allows:

- VM applications to use SQLDS-private protocol to connect to VM databases over TCP/IP.
- VM applications to use DRDA protocol to connect to DB2 family databases (and any other database that supports DRDA connections) over TCP/IP.
- non-VM applications to use DRDA-protocol to access VM database over TCP/IP.

TCP/IP support for DB2 Server for VM integrated with the DB2 Server for VM application server means a system easier to configure and maintain.

The database manager will optionally secure TCP/IP connections using any external security manager that supports the RACROUTE interface.

New Code Page and Euro Symbol Code Page Support

The following CCSIDs are now supported:

- 1112: Latvian/Lithuanian
- 1122: Estonian
- 1123: Ukrainian
- 1130: Vietnamese
- 1132: Lao
- 1148: E-International
- 1140: E-English
- 1141: E-German
- 1144: E-Italian
- 1147: E-French

Additional support has been added for conversions from Unicode (UCS-2) to host CCSIDs.

For a complete list of CCSIDs supported refer to the *DB2 Server for VM System Administration* and *DB2 Server for VSE System Administration* manuals.

DataPropagator™ Capture

DataPropagator Capture is part of the DB2 Family of DataPropagator products. DataPropagator Capture is updated for Version 6 Release 1 compatibility.

QMF for VM, QMF for VSE, and QMF for Windows®

IBM Query Management Facility (QMF™) is now an separately priced feature of DB2 Server for VSE & VM. QMF is a tightly integrated, powerful, and reliable tool that performs query and reporting for IBM's DB2 relational database Management System Family. It offers an easy-to-learn, interactive interface. Users with little or no data processing experience can easily retrieve, create, update, insert, or delete data that is stored in DB2.

QMF offers a total solution that includes accessing large amounts of data and sharing central repositories of queries and enterprise reports. It also allows you to implement tightly-controlled, distributed, or client-server solutions. In addition, you can use QMF to publish reports to the World Wide Web that you can view with your favorite web browser.

Using QMF, users can access a wide variety of data sources, including operational or warehouse data from many platforms: DB2 for VSE, VM, OS/390® and Windows. Via IBM Data Joiner, you can access non-relational data, such as IMS™ and VSAM, as well as data from other vendor platforms.

RDS Above the Line

The RDS component will load and execute above the 16 megabyte line. This support frees up approximately 1.5 megabytes of storage below the 16 megabyte line (or approximately 2.5 megabytes, if DRDA is installed) when compared to Version 5 Release 1. No installation or migration changes are required for this support to be used (except for the definition of VM Shared Segments and for users who execute the database server with AMODE(24)). If sufficient storage is available, the RDS component will be automatically loaded above the 16 megabyte line. When using VM Shared Segments, the RDS Segment should be defined above the 16 megabyte line.

VM users who wish to run the database server in 24-bit addressing mode (i.e. use the AMODE(24) parameter) **must** use a virtual storage size no greater than 16 megabytes. See the *DB2 Server for VM System Administration* or *DB2 Server for VSE System Administration* for release to release incompatibility information.

Combining of NLS Feature Installation Tapes with Base Product Installation Tape

All available NLS features for DB2 Server for VSE, DB2 Server for VM, Control Center for VSE and REXX SQL for VM have been combined with the respective base product installation tape. Customers interested in an NLS feature language will no longer need to order an additional NLS feature tape because all NLS languages will be available to all customers. In all cases, the default language as shipped is American English. The installation and migration processes have been changed to allow you to choose the default language. Refer to the *DB2 Server for VM Program Directory*, *DB2 Server for VSE Installation*, *DB2 for VSE Control Center Installation and Operations Guide*, and *DB2 REXX SQL for VM/ESA Installation* for the details of how these changes affect the installation process and how you can choose to have a different default language.

Control Center Feature

DB2 Server for VSE & VM Version 6 Release 1 enhances the new Control Center feature as follows:

For both VM/ESA and VSE/ESA:

- Access to the Query Management Facility (QMF)

For VM/ESA:

- Compatibility with DB2 Server for VM Version 6 Release 1 initialization parameters and operator commands
- Shared File System Support (SFS) in a VM/ESA environment
- CA-DYNAM/T Interface Support in a VM/ESA environment
- Data Restore Incremental Backup Support in a VM/ESA environment

For VSE/ESA:

- Control Center code installation on any library
- Ability to use while viewing a list of tables online
- Ability to create, reorganize, unload, reload, move and copy tables in batch mode
- Ability to update table statistics in batch mode
- Ability to drop tables online

Data Restore Feature

The Data Restore feature provides archiving and recovery functions in addition to those provided in DB2 for VSE & VM. Data Restore is enhanced in Version 6 Release 1 with incremental database archiving support. The support allows you to archive only the areas of the database that have been updated since the last database archive, instead of having to archive the entire database. This can provide significant savings for customers with large databases which are updated infrequently, or where only a small fraction of the database is updated frequently.

DB2 REXX SQL Feature

The DB2 REXX SQL feature provides a REXX interface for VM customers to allow SQL calls to be executed from REXX programs. The DB2 REXX SQL feature is updated for Version 6 Release 1 compatibility.

Reliability, Availability, and Serviceability Improvements

Migration Considerations

Migration is supported from SQL/DS™ Version 3 and DB2 Server for VSE & VM Version 5. Migration from SQL/DS Version 2 Release 2 or earlier releases is not supported. Refer to the *DB2 Server for VM System Administration* or *DB2 Server for VSE System Administration* manual for migration considerations.

Library Enhancements

Some general library enhancements include:

- The following books have been removed from the library:
  - *DB2 Server for VM Operation*
  - *DB2 Server for VSE Operation*
  - *DB2 Server for VM Interactive SQL Guide and Reference*
  - *DB2 Server for VSE Interactive SQL Guide and Reference*
  - *DB2 Server for VM Database Services Utility*
  - *DB2 Server for VSE Database Services Utility*
- The following books have been added to the library:
  - *DB2 Server for VSE & VM Operation*
  - *DB2 Server for VSE & VM Interactive SQL Guide and Reference*
  - *DB2 Server for VSE & VM Database Services Utility*

Refer to the new *DB2 Server for VSE & VM Overview* for a better understanding of the benefits DB2 Server for VSE & VM can provide.

Chapter 1. Before You Begin

This chapter outlines the prerequisites for installing RXSQL on either CMS *minidisks* or in CMS *Shared File System directories (SFS directories)*. It also gives a brief description of the installation process, explains the DB2 RXSQL machine-readable material, and details the VM storage requirements.

Prerequisites for Running DB2 RXSQL

The following are the hardware and software requirements for running DB2 RXSQL.

Hardware Requirements

RXSQL requires the following hardware:

- A magnetic tape unit and a terminal supported by VM for installation and maintenance
- 3 megabytes of direct access storage to store the installation and runtime code.

Software Requirements

DB2 RXSQL requires the following software:

- IBM DATABASE 2 Server for VM Version 6 Release 1, Licensed Program 5648-A70, or later.

  It is assumed that the DB2 Server for VM relational database manager Version 6 Release 1 is installed using the *defaults* mentioned in this manual. If this is not the situation, you must substitute the values that your site used to install the DB2 Server for VM system for the defaults in this manual.

- The following operating system, either by itself or as the base of any system *package:*

  – VM/ESA Version 2 Release 2 or later, Licensed Program 5654-030

  The DB2 RXSQL and DB2 products do not support mixed CP and CMS releases, as supported by VM/ESA.

  In this manual, the VM/ESA environment will refer to VM/ESA Version 2 Release 2 or later. The term VM will be used to refer to the VM/ESA environment, unless there is a specific reference to a particular release.

  The VM/ESA environment supports the installation of DB2 RXSQL on CMS minidisks and SFS directories.

RXSQL Installation Prerequisites

The DB2 Server for VM system must be installed and operational before DB2 RXSQL can be installed. The recommended installation procedures for the DB2 system create:

- An DB2 database machine (SQLMACH, or its equivalent). A database called SQLDBA is generated on this machine. The DB2 database machine is described in the *DB2 Server for VM System Administration* manual.

- An DB2 Server for VM user machine (SQLUSER, or its equivalent). The DB2 user machine is described in the *DB2 Server for VM System Administration* manual.
- A production minidisk and a service minidisk, or a production SFS directory and a service SFS directory.

  If the DB2 system is installed on minidisks:

  – SQLMACH 195 is defined as the DB2 production minidisk
  – SQLMACH 193 is defined as the DB2 service minidisk.

  If the DB2 system is installed in SFS directories:

  – VMSYS:SQLMACH.SQL.PRODUCTION is defined as the DB2 production SFS directory

  – VMSYS:SQLMACH.SQL.SERVICE is defined as the DB2 service SFS directory.
- An *authorization ID* called SQLDBA that has *DBA authority* must exist on the DB2 Server for VM application server into which you are installing DB2 RXSQL.

Overview of the Installation Process

The DB2 RXSQL files are installed on production and service minidisks or in production and service SFS directories. All users must be linked to the RXSQL production minidisk or SFS directory for all DB2 RXSQL operations but the RXSQL service minidisk or SFS directory is only required for service activities or installation. The RXSQL production and service disks must be owned by the same *user ID*.

DB2 RXSQL consists of two modules:

- DB2 RXSQL, which loads a CMS nucleus extension
- EXECSQL, which passes control to DB2 RXSQL.

DB2 RXSQL also includes a DB2 RXSQL LOADLIB, which is loaded as a CMS nucleus extension.

The term **disk** will refer to both minidisks and SFS directories for the remainder of this manual.

You can install DB2 RXSQL files on the same disks that the DB2 Server for VM files, or other product files, are on. However, production files should be stored separately from service files. For example, you should not install DB2 RXSQL production files on the disk where DB2 Server for VM service files reside.

To install DB2 RXSQL files on disks, you require three virtual machines and their associated user IDs. In this manual, our suggested installation uses the MAINT, SQLUSER, and SQLMACH user IDs, but you can use any equivalent machine identifier (user ID).

The MAINT user ID is used to attach tapes, link the disks in write mode on which DB2 RXSQL files will be *loaded*, link the DB2 Server for VM disks, and issue VMFPLC2 commands. If you do not use the MAINT user ID, you must obtain a user ID with which you can perform these functions.

The SQLMACH user ID is the DB2 Server for VM *database machine*. In this manual, the SQLMACH user ID owns the DB2 RXSQL disks. If your installation does not use SQLMACH, substitute the name of your DB2 Server for VM database machine where SQLMACH is used.

The name of the database that is generated during the installation of the DB2 system is SQLDBA. SQLDBA is also the name of the application server in which the database is generated. In this manual, SQLDBA is the name of the application server in which DB2 RXSQL is installed if you are installing DB2 RXSQL into a DB2 application server. If your installation does not use the SQLDBA application server, substitute the name of your DB2 application server where SQLDBA is used.

The SQLUSER user ID is the DB2 Server for VM user machine. It is used to link the production and service files in read mode and to load the RXSQL package into the application server. If your installation does not use SQLUSER, substitute the name of your DB2 Server for VM user machine where SQLUSER is used.

The remainder of this section describes the four phases necessary for installation. The first two phases are done once. The next two are repeated for each application server into which RXSQL will be installed. The fourth phase is optional.

Phase 1. Preinstallation Setup

Before installing DB2 RXSQL, you must set up the disks and ensure there is enough free space for one of the following situations:

1. **If you are installing DB2 RXSQL on minidisks other than the DB2 Server for VM production and service minidisks**, you must define the DB2 RXSQL production and service minidisks to the DB2 Server for VM database machine (SQLMACH). You must grant read *access* to the DB2 RXSQL production minidisks to the DB2 Server for VM user machine (SQLUSER), as well as any other DB2 RXSQL users.
2. **If you are installing DB2 RXSQL in SFS directories other than the DB2 Server for VM production and service SFS directories**, you must create the DB2 RXSQL production and service SFS directories and grant read access to the DB2 RXSQL directories to the DB2 Server for VM user machine (SQLUSER), as well as any other DB2 RXSQL users.
3. **If you are installing DB2 RXSQL on the same minidisks or SFS directories** that contain the DB2 Server for VM production and service files, you must ensure that there is enough free space on the DB2 Server for VM minidisks or SFS directories. Space requirements for the DB2 RXSQL production and service files are discussed in “Virtual Machine Requirements” on page 7.

Free space on the work disks of the user ID that will be used to do the installation in VM (MAINT) and the user ID that will install the DB2 RXSQL package into the application servers (SQLUSER) is also required.

Phase 2. Installing DB2 RXSQL in VM

In this phase, DB2 RXSQL is installed in a VM environment. The product load library and the product module are also created on the DB2 RXSQL production minidisk or in the DB2 RXSQL production SFS directory.

When DB2 RXSQL is installed in a VM/ESA environment, the installation EXEC issues a prompt asking whether you want to install DB2 RXSQL on minidisks or in SFS directories.

If you are installing on the DB2 minidisks and the DB2 Server for VM database machine is running, you must shut down the database during this phase because you need exclusive write access. If you are not installing on DB2 Server for VM minidisks, it is not necessary to bring down the database.

Phase 3. Installing the DB2 RXSQL Package and HELP Tables into DB2 Server for VM Application Servers

This activity is done for each DB2 Server for VM application server in which DB2 RXSQL will be made available. The DB2 Server for VM database machine must be started before you can install the DB2 RXSQL package into an application server.

An authorization ID called SQLDBA that has DBA authority must exist on the DB2 Server for VM application server into which you are installing RXSQL.

The following is installed in each application server:

- DB2 RXSQL package

  Space is required in each application server for one DB2 RXSQL package. The installation process loads this package into an available *public dbspace* that has been reserved for packages.

- DB2 RXSQL HELP tables

  Note: You do not install HELP tables (and do not, therefore, have to acquire a *dbspace*) if you are upgrading to DB2 RXSQL Version 6 Release 1 and have an earlier version of the HELP tables in the application server. Instead, you must run the ELOSHLP EXEC to update your help files. See “The ELOSHLP EXEC” on page 83 for more information.

  In each application server in which you install DB2 RXSQL HELP tables, you should add or make available a dbspace with the following characteristics:

  – DBSPACETYPE=1
    - This *variable* allows the dbspace to be acquired as public.
    - NPAGES=256.

- The public dbspace must be created before installing the DB2 RXSQL HELP tables.

A manual verification procedure is part of this phase. It verifies the installation of DB2 RXSQL by testing some of its functions.

Phase 4. Installing the DB2 RXSQL Package into Non-DB2 Server for VM Application Servers Using the DRDA Protocol

To do this step, your DB2 Server for VM installation must have the ability to use the *Distributed Relational Database Architecture™ (DRDA®)* protocol, and you must have DBA authority.

In this phase, you load the DB2 RXSQL package into each non-DB2 Server for VM application server in which DB2 RXSQL is to be installed. This phase must be repeated for each application server in which DB2 RXSQL is to be available. The

DBS Utility package must be installed before installing DB2 RXSQL in a non-DB2 Server for VM application server.

The following is installed in each application server:

- DB2 RXSQL package

  Space is required in each application server for one DB2 RXSQL package.

  Note: The RXSQL HELP tables are not supported for non-DB2 Server for VM application servers.

DB2 RXSQL Machine-Readable Material

The DB2 RXSQL machine-readable material is provided on magnetic tape (reel or cartridge).

Basic Product Files

DB2 RXSQL can be ordered on its own distribution tape or on a tape that contains other products. In this manual, DB2 RXSQL tape files are referred to as tape file 1, tape file 2, and so on, and correspond to the sequence of DB2 RXSQL files on the distribution tape.

Tape file 1 Consists of the following CMS files, which are written to the work minidisk of the MAINT machine during the installation process:

I5648ELO 061004	Is the DB2 RXSQL System Identification File. It contains records describing the DB2 RXSQL release.
I5648ELO EXEC	Loads tape file 3 to the DB2 RXSQL production disk and tape file 4 to the DB2 RXSQL service disk, and performs the DB2 RXSQL system link-edit. After the I5648ELO EXEC loads the files, it positions the distribution tape at the end of the last DB2 RXSQL file on the tape.
ELOINLS EXEC	Loads desired NLS Language from the REXX SQL distribution tape to an NLS Product Minidisk or SFS Directory.
ELOUME TXTAMENG	Is a message repository with all system messages written in the default language, mixed case English.
ELOUME TXTUCENG	Is a message repository with all system messages written in Upper Case English.
ELOUME TXTFRANC	Is a message repository with all system messages written in French.

	ELOUME TXTHANZI	Is a message repository with all system messages written in Simplified Chinese.
	ELOUME TXTKANJI	Is a message repository with all system messages written in Japanese.
	ELOLANG EXEC	Sets up the DB2 RXSQL message repository.
	ELOLANMS EXEC	Displays messages during the installation process when the ELOLANG EXEC cannot set up the message repository.

Tape file 2 Contains one CMS file, I5648ELO MEMO, that is loaded to the MAINT machine's work minidisk. This is the *Memo to Users*, which contains a brief overview of the installation process.

Tape file 3 Contains executable product code files that are loaded by the I5648ELO EXEC to the DB2 RXSQL production disk during installation.

Tape file 4 Contains supplementary executable and nonexecutable files to support DB2 RXSQL. These CMS files are loaded by the I5648ELO EXEC to the DB2 RXSQL service disk during installation.

Tape file 5 Contains Upper Case English Help files loaded by ELOINLS to the NLS minidisk or SFS directory.

Tape file 6 Contains an exec and macro loaded to the REXX SQL service minidisk or SFS service directory. These files are used to enable and load the Upper Case English NLS language for REXX SQL.

Tape file 7 Contains the French Help files loaded by ELOINLS to the NLS minidisk or SFS directory.

Tape file 8 Contains an exec and macro loaded to the REXX SQL service minidisk or SFS service directory. These files are used to enable and load the French NLS language for REXX SQL.

Tape file 9 Contains Japanese or KANJI Help files loaded by ELOINLS to the NLS minidisk or SFS directory.

Tape file 10 Contains an exec and macro loaded to the REXX SQL service minidisk or SFS service directory. These files are used to enable and load the Japanese NLS language for REXX SQL.

Tape file 11 Contains Simplified Chinese or HANZI Help files loaded by ELOINLS to the NLS minidisk or SFS directory.

Tape file 12 Contains an exec and macro loaded to the REXX SQL service minidisk or SFS service directory. These files are used to enable and load the Simplified Chinese NLS language for REXX SQL.

Note: Do not change the CMS files supplied by IBM on the DB2 RXSQL production or service disks. They may be replaced by service updates.

More information on enabling an NLS Language for REXX can be found on Chapter 3, “Installing a REXX SQL NLS Language” on page 45.

Virtual Machine Requirements

Runtime DB2 RXSQL requires at least 500*K* (K is 1024 *bytes*) of storage.

The following disks are required for DB2 RXSQL:

- The DB2 RXSQL production disk
- The DB2 RXSQL service disk.

The DB2 RXSQL production disk must be available for all DB2 RXSQL operations during installation.

The DB2 RXSQL service disk is not required for normal DB2 RXSQL processing. The service disk must, however, be available for service activities or installation.

Both production and service disks must be owned by the same virtual machine.

MAINT Machine

This virtual machine exists in all VM environments. It is used to load information from the DB2 RXSQL distribution tape, including the EXECs supplied by IBM, to the work disk of the MAINT machine during installation.

Minidisk Requirements for Installation

The following information details the minidisk requirements for installing RXSQL on the MAINT machine:

- Use work minidisk 194 for installing DB2 RXSQL. Alternatively, minidisk 191 can be used.
- The MAINT machine needs read/write access to a minidisk with free space equal to at least 3 cylinders of an IBM 3380 storage device. Figure 1 shows the minimum free space required for this work minidisk.
- The space allocation in the FB-512 blocks applies to the following *DASD:*
  - 3370
  - 9332
  - 9335.

The minidisk block size is 4096 bytes, unless otherwise stated.

Minidisk	Virtual Address	Access Mode	3350 Cylinders	3375 Cylinders	3380 Cylinders	3390 Cylinders	9345 Cylinders	FB-512 Blocks
MAINT machine: Work minidisk for installation	194 or 191	A or C	4	5	3	3	4	3600

Figure 1. MAINT Machine Minidisk Free-Space Requirements for Installation

SQLMACH Machine

This virtual machine or its equivalent is in all VM environments that have the DB2 Server for VM relational database manager installed. SQLMACH is used to identify the DB2 Server for VM database machine that owns:

- The DB2 Server for VM production and service disks
- The database minidisks
- The RXSQL production and service files, whether they reside on DB2 Server for VM disks or on other disks.

DB2 RXSQL Minidisk or SFS Directory Requirements

The following information describes the free space requirements for installing DB2 RXSQL production and service files.

If you are installing RXSQL on the same minidisks or SFS directories as are used for the DB2 Server for VM files, there must be free space for the DB2 RXSQL files on the disks. Figure 2 on page 8 and Figure 3 on page 8 show the amount of free space that is required. You can then refer to "SQLUSER Machine" on page 9 to continue reading about DB2 RXSQL VM requirements.

If you are installing DB2 RXSQL on minidisks or SFS directories other than those used for the DB2 Server for VM files, you must modify the SQLMACH VM directory entries for minidisk installation, or use the MODIFY USER command for SFS installation. Figure 2 and Figure 3 show the amount of free space that needs to be defined.

Minidisks	Virtual Address	3350 Cylinders	3375 Cylinders	3380 Cylinders	3390 Cylinders	9345 Cylinders	FB-512 Blocks
SQLMACH machine: Production minidisk	198	3	4	2	2	2	2400
SQLMACH machine: Service minidisk	199	8	9	6	5	6	7500

Figure 2. Minimum Requirements for DB2 RXSQL SQLMACH Machine Minidisks

SFS Directories		Directory Name	4K Blocks
SQLMACH machine: directory	Production SFS	VMSYS:SQLMACH.RXSQL.PRODUCTION	300
SQLMACH machine: directory	Service SFS	VMSYS:SQLMACH.RXSQL.SERVICE	1000

Figure 3. Minimum Requirements for DB2 RXSQL SQLMACH Machine SFS Directories

For further information on the SQLMACH machine, refer to the *DB2 Server for VM Program Directory*.

SQLUSER Machine

This virtual machine or its equivalent exists in all VM environments that have the DB2 relational database manager installed. It is used to install the DB2 RXSQL package into application servers and to verify DB2 RXSQL installation.

If you are installing DB2 RXSQL on minidisks other than those used for the DB2 Server for VM files, the SQLUSER VM directory entries may be updated to automatically link the DB2 RXSQL minidisks to SQLUSER.

DB2 RXSQL Minidisk or SFS Directory Requirements

The free space requirements for installing RXSQL on the SQLUSER disk are shown in Figure 4 and Figure 5.

The SQLUSER machine needs read/write access to a minidisk with free space equal to at least 1 cylinder of an IBM 3380 storage device, or read/write authority to an SFS directory with free space equal to at least 150 blocks.

Minidisk	Virtual Address	Access Mode	3350 Cylinders	3375 Cylinders	3380 Cylinders	3390 Cylinders	9345 Cylinders	FB-512 Blocks	Block Size
SQLUSER machine: Work minidisk for installation	191	A	1	1	1	1	1	930	1024

Figure 4. SQLUSER Machine Minidisk Free-Space Requirements for Installation

SFS Directory	Directory Name	Access Mode	4K Blocks
SQLUSER machine: Work SFS directory for installation	VMSYSU:SQLUSER	A	150

Figure 5. SQLUSER Machine SFS Directory Free-Space Requirements for Installation

Chapter 2. Installing DB2 RXSQL

This chapter describes how to install DB2 RXSQL on minidisks or in SFS directories, and provides instructions for verifying the DB2 RXSQL installation.

For a description of the installation messages, refer to Appendix D, “Installation Messages” on page 91.

For a description of the *CP* commands used during installation of DB2 RXSQL, refer to the *VM/ESA: CP Command and Utility Reference* manual for your VM operating system. For a description of the CMS commands used during installation of DB2 RXSQL, refer to the *VM/ESA: CMS Command Reference* manual for your VM operating system.

Installing DB2 RXSQL on Minidisks

This section provides instructions for installing DB2 RXSQL on minidisks.

The installation process consists of four phases: preinstallation setup, installing DB2 RXSQL in VM, installing the DB2 RXSQL package and HELP tables into DB2 Server for VM application servers, and installing the DB2 RXSQL package into non-DB2 Server for VM application servers. Each phase contains several steps. For a summary of the installation steps, refer to the “DB2 RXSQL Installation Checklist for Minidisks” on page 11.

If you are installing DB2 RXSQL in SFS directories, refer to “Installing RXSQL in SFS Directories” on page 23 to begin your installation.

DB2 RXSQL Installation Checklist for Minidisks

The following checklist summarizes the steps required to install DB2 RXSQL on minidisks.

Notes:

- *Perform the steps in order.*
- *Mandatory steps are preceded by squares* (■).
- *Optional steps are preceded by circles* (○)
- *Page references are in parentheses.*

Phase 1: Preinstallation Setup

Skip this phase if installing DB2 RXSQL on DB2 Server for VM production and service minidisks.

__ ○ Log on to the MAINT virtual machine (13).
__ ○ Define required minidisks to SQLMACH (14).
__ ○ Grant SQLUSER access to required minidisks (14).
__ ○ Save the *directory* entry change (15).
__ ○ Disconnect or log off the MAINT machine (15).

Phase 2: Installing DB2 RXSQL in VM

__ ■ Log on to the SQLMACH database machine (16).
__ ■ Shut down the database (16).
__ ■ Log off the SQLMACH machine (16).

___ ■ Reconnect or log on to the MAINT machine (17).
___ ■ Load the first two tape files to the MAINT work minidisk (17).
___ ■ Load and link-edit the DB2 RXSQL minidisks (17).
___ ■ Disconnect or log off the MAINT machine (19).
___ ■ Log on to the SQLMACH database machine (19).
___ ■ Start the DB2 system in *multiple user mode* (19).
___ ■ Disconnect from the SQLMACH database machine (19).
___ ○ Install a new *date* or *time* exit (19).

Phase 3: Installing the DB2 RXSQL Package and HELP Tables into DB2 Server for VM Application Servers

___ ■ Log on to the SQLUSER machine (19).
___ ■ Access RXSQL and DB2 Server for VM disks (20).
___ ■ Install the DB2 RXSQL package and HELP tables into the DB2 Server for VM application server (21).
___ ■ Verify the DB2 RXSQL installation (33).
___ ■ Log off the SQLUSER machine (21).
___ ○ Reconnect or log on to the MAINT machine (22).
___ ○ Change the passwords in the VM directory (22).
___ ○ Disconnect or log off the MAINT machine (22).

Phase 4: Installing the DB2 RXSQL Package into Non-DB2 Server for VM Application Servers

___ ○ Log on to the SQLUSER machine (22).
___ ○ Access DB2 RXSQL and DB2 disks (22).
___ ○ Install DB2 RXSQL into the non-DB2 Server for VM application server (22).
___ ○ Verify the DB2 RXSQL installation (33).
___ ○ Log off the SQLUSER machine (22).

Phase 1: Preinstallation Setup

This phase of the installation sets up the environment needed to install RXSQL on minidisks. If you are installing DB2 RXSQL on DB2 Server for VM production and service minidisks, skip this phase and continue with “Phase 2: Installing DB2 RXSQL in VM” on page 15. Figure 6 on page 13 illustrates phase 1 of the installation process.

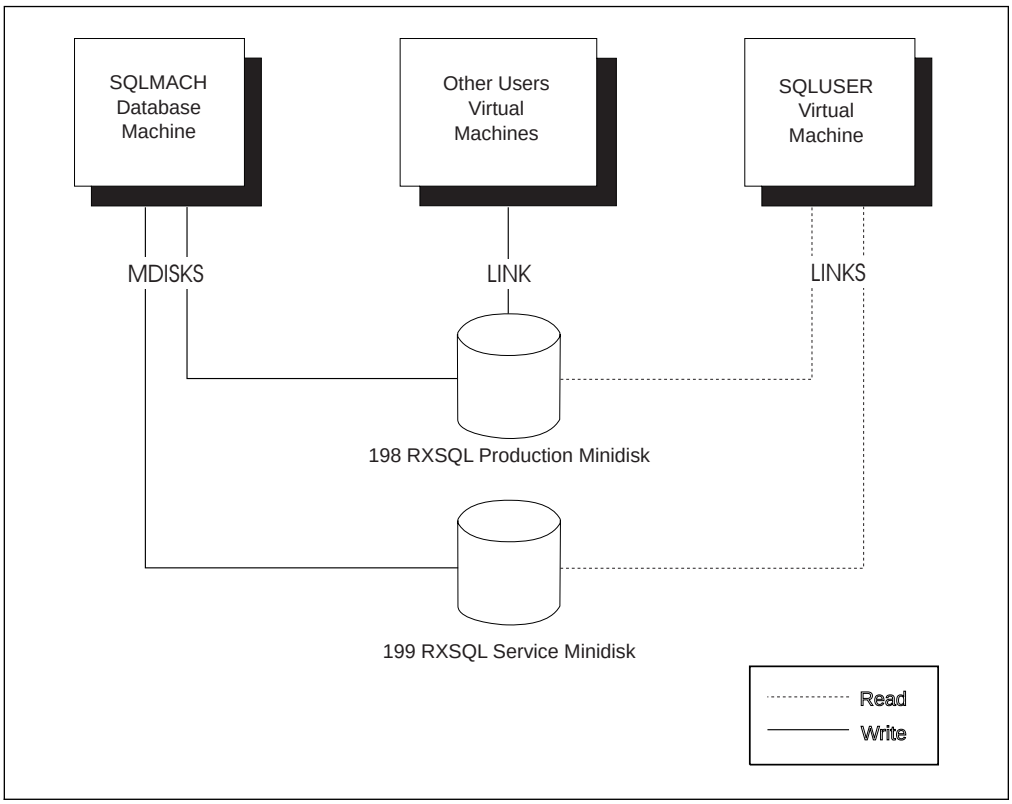


Figure 6. DB2 RXSQL Virtual Machine Minidisks for Installation

Notes:

1. Virtual address 198 of the SQLMACH virtual machine is defined as the DB2 RXSQL production minidisk.
2. Virtual address 199 of the SQLMACH virtual machine is defined as the DB2 RXSQL service minidisk.
3. DB2 RXSQL minidisks are linked to the SQLUSER virtual machine (in read mode).
4. The SQLMACH 198 production minidisks can also be linked to other user virtual machines, but in read-only mode.

Use the MAINT machine to add control *statements* to the VM directory entries for SQLMACH, SQLUSER, and all other DB2 RXSQL users.

Step 1.1 Define Required Minidisks to SQLMACH

Log on to the MAINT machine and add two control statements defining the new minidisks for DB2 RXSQL to the VM directory entry for SQLMACH. Figure 7 on page 14 shows a sample directory entry for SQLMACH with the two control statements that define the new minidisks. Use the device types applicable to your VM environment.

```
USER SQLMACH sqlmachpw 8M 8M G
ACCOUNT nnnnnnnn
OPTION MAXCONN 26
IUCV *IDENT SQLMACH GLOBAL
IUCV ALLOW
IPL CMS
CONSOLE 009 3215 T OPERATOR
SPOOL 00C 2540 READER *
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
MDISK 191 3380 cylr 010 volser W
MDISK 193 3380 cylr 060 volser R readpw writepw
MDISK 195 3380 cylr 024 volser RR readpw writepw multipw
1 MDISK 198 3380 cylr 002 volser RR readpw writepw
2 MDISK 199 3380 cylr 005 volser RR readpw writepw
MDISK 200 3380 cylr 064 volser R readpw writepw
MDISK 201 3380 cylr 022 volser R readpw writepw
MDISK 202 3380 cylr 212 volser R readpw writepw
```

Figure 7. Example of VM Directory Control Statements for the SQLMACH Machine

The following statements are specific to the installation of DB2 RXSQL:

1 MDISK 198 3380 cylr 002 volser RR readpw writepw

This control statement defines the DB2 RXSQL production minidisk with virtual device address 198 and the link access mode of read specified. Read(readpw) and write(writepw) passwords must be specified.

2 MDISK 199 3380 cylr 005 volser RR readpw writepw

This control statement defines the DB2 RXSQL service minidisk with virtual device address 199 and the link access mode of read specified. Read(readpw) and write(writepw) passwords must be specified.

Step 1.2 Grant SQLUSER Access to Required Minidisks

DB2 RXSQL production and service minidisks must be available to SQLUSER to perform the installation steps described in “Phase 3: Installing the DB2 RXSQL Package and HELP Tables into DB2 Server for VM Application Servers” on page 19. You can set up the SQLUSER environment to make these disks available in one of the following ways:

- Update the SQLUSER VM directory to have the disks linked in at logon
- Modify SQLUSER’s PROFILE EXEC to link to the minidisks
- Issue the CP LINK command from the CMS command line after you are logged on to SQLUSER.

Step 1.3 Save the Directory Entry Change

Type the following DIRM command to save the VM directory control statement change for SQLMACH:

```
DIRM REP SQLMACH
```

Disconnect or log off the MAINT machine.

Phase 2: Installing DB2 RXSQL in VM

Phase 1 prepared the environment for installing DB2 RXSQL files on minidisks. Phase 2 installs DB2 RXSQL in a VM environment.

The INSTFPP EXEC can be used instead of this phase. Refer to the appropriate VM installation guide for information on the INSTFPP EXEC. If you use the INSTFPP EXEC, ensure that you access the MAINT machine's work minidisk as *file mode* C, and that you access a read/write minidisk as file mode A.

Refer to Figure 8 on page 16 for an overview of the installation process.

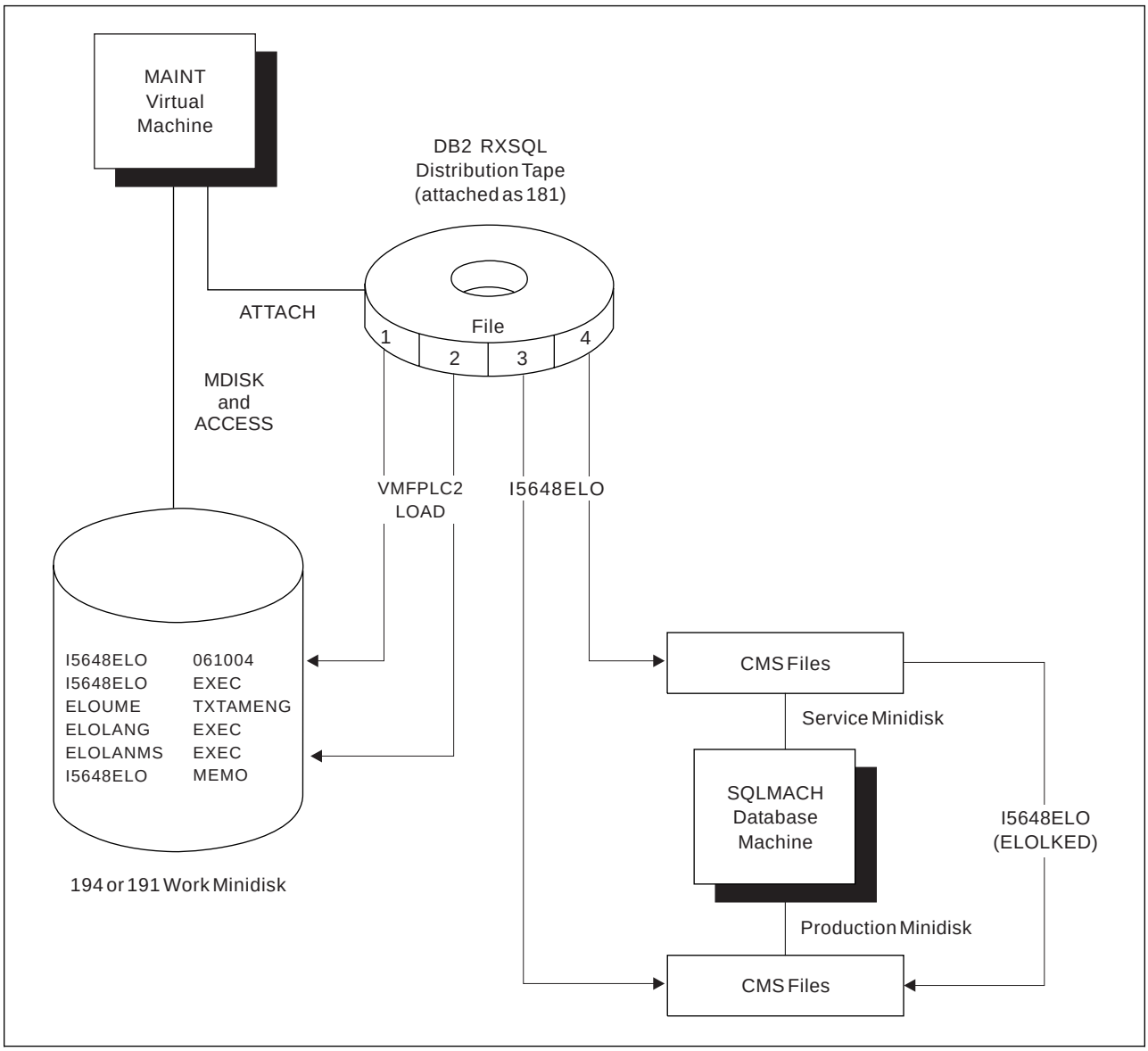


Figure 8. Summary of DB2 RXSQL Installation in VM

Step 2.1 Shut Down the DB2 Database

Log on to the SQLMACH database machine, and type the SQLEND command to shut down the DB2 database:

```
SQLEND NORMAL
```

This command finishes processing after all active *logical units of work* are completed. Log off the SQLMACH database machine:

```
LOGOFF
```

Step 2.2 Load the First Two Tape Files to the MAINT Machine's Work Minidisk

Log on to the MAINT machine to load the DB2 RXSQL files onto the production and service minidisks.

Access the MAINT machine's work minidisk as file mode A. Type the following statements to load the first two tape files to this minidisk:

- To identify the virtual device address (*cuu*) of the MAINT machine's work minidisk, type:

  ```
  ACCESS cuu A
  ```

  The *cuu* is usually specified as 194 or 191.

- To identify the real device number (*rdev*) of the tape device to be accessed as virtual tape address 181, type:

  ```
  ATTACH rdev TO MAINT AS 181
  ```

  The distribution tape must be mounted on the device defined as virtual address 181.

- To rewind the tape, type:

  ```
  VMFPLC2 REW
  ```

- To load tape files 1 and 2 from the distribution tape to the MAINT machine's A disk or work minidisk, type:

  ```
  VMFPLC2 LOAD * * A (EOF 2
  ```

  – Tape file 1 contains the I5648ELO EXEC, which will load the remaining DB2 RXSQL distribution tape.

  – Tape file 2 contains a *Memo to Users*, which contains an overview of the installation process. To print the *Memo to Users*, type the CMS PRINT command:

  ```
  PRINT I5648ELO MEMO A (CC
  ```

Step 2.3 Load the RXSQL Minidisks

The I5648ELO EXEC loads the DB2 RXSQL files onto the production and service minidisks. This step also links text files into a load library and creates a load module on the DB2 RXSQL production minidisk.

The I5648ELO EXEC

Before you run this EXEC, verify that:

1. The minidisk on which you plan to install the RXSQL production files is defined. The default is SQLMACH 198 if you are not installing on the DB2 Server for VM production minidisk.
2. The minidisk on which you plan to install the RXSQL service files is defined. The default is SQLMACH 199 if you are not installing on the DB2 Server for VM service minidisk.
3. No other users are linked to the production and service minidisks during installation.
4. You are not linked with write access to the minidisks on which you plan to install the DB2 RXSQL files.

5. There are enough free file modes to access the DB2 RXSQL and DB2 Server for VM minidisks. If you are installing DB2 RXSQL on the DB2 Server for VM minidisks, two free file modes are required. Otherwise, four free file modes are required for installing DB2 RXSQL.
6. There are enough free virtual device addresses to link the DB2 RXSQL and DB2 Server for VM minidisks. If you are installing DB2 RXSQL on the DB2 Server for VM minidisks, two free addresses are required. Otherwise, four free addresses are required for installing DB2 RXSQL. The free virtual device addresses must be between 001 and 499.
7. The write access passwords (writepw) assigned to the production and service minidisks on which you are installing RXSQL are available.
8. The read access passwords (readpw) assigned to the DB2 production and service minidisks are available if the DB2 system was installed on minidisks and you are not installing RXSQL on the DB2 Server for VM minidisks.
9. The user ID installing DB2 RXSQL must have the service and production minidisk linked with the virtual device address corresponding to the real device address. For example, SQLMACH 198 must be linked as 198.
10. The user ID installing RXSQL must have access to the files shown in Figure 9.

File Name	Location	DB2 Server for VM Components
DMSCSL	VM/ESA system minidisk.	Bootstrap for the callable services library.
ARIRVSTC	SQLMACH 195 minidisk or VMSYS:SQLMACH.SQL.PRODUCTION.	Bootstrap for the DB2 Server for VM system
ARIUXDT	SQLMACH 193 minidisk or VMSYS:SQLMACH.SQL.SERVICE SFS directory.	Date routine
ARIUXTM	SQLMACH 193 minidisk or VMSYS:SQLMACH.SQL.SERVICE SFS directory.	Time routine

Figure 9. VM and DB2 Server for VM Text Files

Running the I5648ELO EXEC

To run the I5648ELO EXEC, type:

```
I5648ELO
```

The I5648ELO EXEC usually takes approximately 5 minutes to run, depending on system capabilities and current load. Refer to “The I5648ELO EXEC” on page 73 for instructions on running this EXEC.

Check the final message returned by the installation EXEC. If it is a *return code* of 888, the installation is successfully completed. However, further instructions are needed to complete this installation. You must continue with “Step 2.4 Start the DB2 System in Multiple User Mode” on page 19.

If the DB2 RXSQL production and service minidisks were successfully loaded, but the DB2 RXSQL system link-edit was not completed successfully, run the ELOLKED EXEC to complete the system link-edit before performing the next step of the DB2 RXSQL installation procedure. Refer to “The ELOLKED EXEC” on page 81 for information on running the ELOLKED EXEC.

After the installation EXEC is finished, type the CP DETACH command to detach the tape device and rewind the tape:

```
DETACH 181
```

Disconnect or log off the MAINT machine as follows:

```
#CP DISCONNECT
```

Step 2.4 Start the DB2 System in Multiple User Mode

Log on to the SQLMACH database machine, and type the SQLSTART command to start the DB2 database:

```
SQLSTART DBNAME(SQLDBA)
```

If you usually specify additional parameters for SQLSTART, you should specify them in addition to the DBNAME parameter shown above.

Type the CP DISCONNECT command to disconnect from the SQLMACH machine:

```
#CP DISCONNECT
```

Step 2.5 Installing a New Date or Time Exit

In this optional step, you can customize the date or time formats by creating a new exit. If exits already exist, they were linked in when the I5648ELO EXEC was run. To create a new date or time exit:

1. Create a date (ARIUXDT TEXT) or time (ARIUXTM TEXT) exit as described in the *DB2 Server for VM System Administration* manual.
2. Use VMSES to store the customized ARIUXDT and ARIUXTM TEXT files.
3. Run the ELOLKED EXEC as described in “The ELOLKED EXEC” on page 81

You must ensure that your date and time exits match the date and time exits of any application server to which you are connecting.

Phase 3: Installing the DB2 RXSQL Package and HELP Tables into DB2 Server for VM Application Servers

In this phase, you load the DB2 RXSQL package into each application server into which DB2 RXSQL is to be installed. You also create and install the DB2 RXSQL secondary-level HELP tables with the HELP text in each application server in which DB2 RXSQL is to be installed, and give the public select authority on these tables.

Repeat this phase for each application server in which DB2 RXSQL is to be available. You will be using the SQLUSER machine to install the DB2 RXSQL package into each application server.

An authorization ID called SQLDBA that has DBA authority must exist on the DB2 application server into which you are installing RXSQL.

Step 3.1 Link and Access the DB2 RXSQL and DB2 Disks

Log on to the SQLUSER machine. To install DB2 RXSQL in an application server, you must have read access to the DB2 RXSQL production and service disks and the DB2 production disk. The disks you must access depends on whether or not DB2 RXSQL and the DB2 product were installed on the same disks, as shown in Figure 10.

Disks to Access	DB2 RXSQL Installed on DB2 Minidisks	DB2 RXSQL Installed on Separate Minidisks	
		DB2 Product is on Minidisk	DB2 Product is in SFS Directories
DB2 production minidisk	**X**	**X**	
DB2 service minidisk	**X**		
DB2 RXSQL production minidisk		**X**	**X**
DB2 RXSQL service minidisk		**X**	**X**

Figure 10. Accessing DB2 RXSQL and DB2 Disks When DB2 RXSQL Is on Minidisks

Note: You do not have to specify the CP LINK commands listed below if they are included in the SQLUSER VM directory entry or in the SQLUSER PROFILE EXEC.

DB2 RXSQL Was Installed on DB2 Minidisks: If DB2 RXSQL was installed on DB2 minidisks, specify the following commands to link and access the DB2 production and service minidisks:

- To link and access the DB2 production minidisk, SQLMACH 195, which also contains the DB2 RXSQL production files, type:

```
LINK SQLMACH 195 195 RR
ACCESS 195 Q
```

- To link and access the DB2 service minidisk, SQLMACH 193, which also contains the DB2 RXSQL service files, type:

```
LINK SQLMACH 193 193 RR
ACCESS 193 V
```

DB2 RXSQL Was Installed on Separate Minidisks

If DB2 RXSQL was not installed on DB2 minidisks, specify the following commands to link and access the DB2 RXSQL production and service minidisks and the DB2 production disk:

- To link and access the DB2 RXSQL production minidisk, SQLMACH 198, type:

```
LINK SQLMACH 198 198 RR
ACCESS 198 P
```

- To link and access the DB2 RXSQL service minidisk, SQLMACH 199, type:

```
LINK SQLMACH 199 199 RR
ACCESS 199 V
```

- You must also specify one of the following:

– If DB2 Server for VM was installed on minidisks, type the following to link and access the DB2 production minidisk, SQLMACH 195:

```
LINK SQLMACH 195 195 RR
ACCESS 195 Q
```

– If DB2 Server for VM was installed in SFS directories, type the following to access the DB2 production directory:

```
ACCESS VMSYS:SQLMACH.SQL.PRODUCTION Q
```

Step 3.2 Install the DB2 RXSQL Package and HELP Tables into a DB2 Application Server

To complete this step, you must:

- Know the connect password for the SQLDBA authorization ID.

  Note: The dbspace RXSQHELP will be dropped and recreated with the new RXSQL help tables if you are upgrading. The installation exec will acquire the necessary dbspace for the help tables if you are installing this feature for the first time.

To install DB2 RXSQL into a DB2 application server, type the following commands:

- To establish the DB2 Server for VM application server into which the DB2 RXSQL package will be installed, type:

  ```
  SQLINIT DBNAME(SQLDBA)
  ```

  If you usually specify additional parameters for the SQLINIT EXEC, you should specify them in addition to the DBNAME parameter shown above.

- To load the DB2 RXSQL package into a DB2 application server, type:

  ```
  ELOAMOD
  ```

  Refer to “The ELOAMOD EXEC” on page 78 for instructions on running this EXEC.

- To install DB2 RXSQL HELP tables, type the following:

  ```
  ELOHLPLD
  ```

- To update DB2 RXSQL HELP tables, type the following:

  ```
  ELOSHLP LANG(S001)
  ```

  The ELOHLPLD EXEC installs DB2 RXSQL secondary-level HELP tables in an DB2 application server. Refer to “The ELOHLPLD EXEC” on page 79 for instructions on running this EXEC.

  The ELOSHLP EXEC replaces the AMENG HELP text for releases of DB2 RXSQL Version 3 with the AMENG HELP text for DB2 RXSQL Version 6 Release 1. Refer to “The ELOSHLP EXEC” on page 83 for instructions on running this EXEC.

Step 3.3 Verify the DB2 RXSQL Installation

To verify the DB2 RXSQL installation, refer to “Installation Verification” on page 33. Log off the SQLUSER machine. Installation of DB2 RXSQL is now completed.

Step 3.4 Change the Passwords in the VM Directory

Although this step is optional, you should perform it for security purposes.

Use the MAINT machine to change the passwords in the VM directory.

If you used the default passwords supplied by RXSQL, change them when you have finished your installation to prevent unauthorized access of the RXSQL files.

Phase 4: Installing the DB2 RXSQL Package into Non-DB2 Application Servers Using the DRDA Protocol

In this phase, you load the DB2 RXSQL package into each non-DB2 Server for VM application server in which DB2 RXSQL is to be installed. This phase must be repeated for each application server in which DB2 RXSQL is to be available.

To do this step, your DB2 Server for VM installation must have the ability to use the DRDA protocol, and you must have DBA authority.

Before you can load the DB2 RXSQL package into a non-DB2 Server for VM application server, you must ensure that the DBS Utility package has been installed on the application server, and that you can run DBS Utility jobs from the SQLUSER machine using the DRDA protocol.

Step 4.1 Link and Access the DB2 RXSQL and DB2 Disks

Log on to the SQLUSER machine and link and access the appropriate disks as described in “Step 3.1 Link and Access the DB2 RXSQL and DB2 Disks” on page 20.

Step 4.2 Install DB2 RXSQL into the Non-DB2 Server for VM Application Server

To install DB2 RXSQL in a non-DB2 Server for VM application server, type the following commands:

- To establish the non-DB2 application server into which the DB2 RXSQL package will be installed using the DRDA protocol, type:

  ```
  SQLINIT DBNAME(server_name) PROTOCOL(DRDA)
  ```

- To load the DB2 RXSQL package into the non-DB2 application server, type:

  ```
  ELOAMOD
  ```

  Refer to “The ELOAMOD EXEC” on page 78 for instructions on running the ELOAMOD EXEC.

  Note: HELP table installation is not supported in non-DB2 Server for VM application servers.

Step 4.3 Verify the DB2 RXSQL Installation

For information about verifying the DB2 RXSQL installation, refer to “Installation Verification” on page 33. Log off the SQLUSER machine.

Installing RXSQL in SFS Directories

This section provides instructions for installing DB2 RXSQL in SFS directories.

The installation process consists of four phases: preinstallation setup, installing RXSQL in VM, installing the RXSQL package and HELP tables into DB2 Server for VM application servers, and installing the DB2 RXSQL package into non-DB2 Server for VM application servers. Each phase contains several steps. For a summary of the installation steps, refer to the “RXSQL Installation Checklist for SFS Directories” on page 23.

If you are installing DB2 RXSQL on minidisks, turn to “Installing DB2 RXSQL on Minidisks” on page 11 to begin your installation.

RXSQL Installation Checklist for SFS Directories

The following checklist summarizes the steps required for installation of DB2 RXSQL in SFS directories.

Notes:

- *Perform the steps in order.*
- *Mandatory steps are preceded by squares* (■).
- *Optional steps are preceded by circles* (○)
- *Page references are in parentheses.*

Phase 1: Preinstallation Setup

Skip this phase if installing DB2 RXSQL in DB2 Server for VM production and service SFS directories.

__ ○ Log on to the MAINT virtual machine (25).
__ ○ Increase the size of the SQLMACH SFS directory (25).
__ ○ Enroll users in the VMSYS file pool (25).
__ ○ Create the SFS directories (25).
__ ○ Grant read access to the DB2 RXSQL production SFS directory (25).
__ ○ Grant SQLUSER read access to the DB2 RXSQL service SFS directory (26).
__ ○ Disconnect or log off the MAINT machine (26).

Phase 2: Installing DB2 RXSQL in VM

__ ○ Reconnect or log on to the MAINT machine (27).
__ ■ Load the first two tape files to the MAINT work minidisk (27).
__ ■ Load and link-edit the DB2 RXSQL SFS directories (28).
__ ■ Grant SQLUSER read access to the DB2 RXSQL service files (29).
__ ■ Grant read access to the DB2 RXSQL production files (30).
__ ■ Disconnect or log off the MAINT machine (30).
__ ○ Log on to the SQLMACH database machine (30).
__ ○ Start the DB2 system in multiple user mode (30).
__ ○ Disconnect from the SQLMACH database machine (30).
__ ○ Install a new date or time exit (30).

Phase 3: Installing DB2 RXSQL into DB2 Server for VM Application Servers

__ ■ Log on to the SQLUSER machine (31).
__ ■ Access DB2 RXSQL and DB2 Server for VM disks (31).
__ ■ Install the DB2 RXSQL package and HELP tables into the DB2 Server for VM application server (32).

___ ■ Verify the DB2 RXSQL installation (33).
___ ■ Log off the SQLUSER machine (33).

Phase 4: Installing the DB2 RXSQL Package into Non-DB2 Server for VM Application Servers

___ ○ Log on to the SQLUSER machine (33).
___ ○ Access DB2 RXSQL and DB2 disks (33).
___ ○ Install DB2 RXSQL in the non-DB2 Server for VM application server (33).
___ ○ Verify the DB2 RXSQL installation (33).
___ ○ Log off the SQLUSER machine (33).

Phase 1: Preinstallation Setup

This phase of the installation sets up the environment required for installing DB2 RXSQL in SFS directories. If you are installing DB2 RXSQL in DB2 Server for VM production and service SFS directories, skip this phase and continue with “Phase 2: Installing RXSQL in VM” on page 26. Figure 11 on page 24 illustrates phase 1 of the installation process.

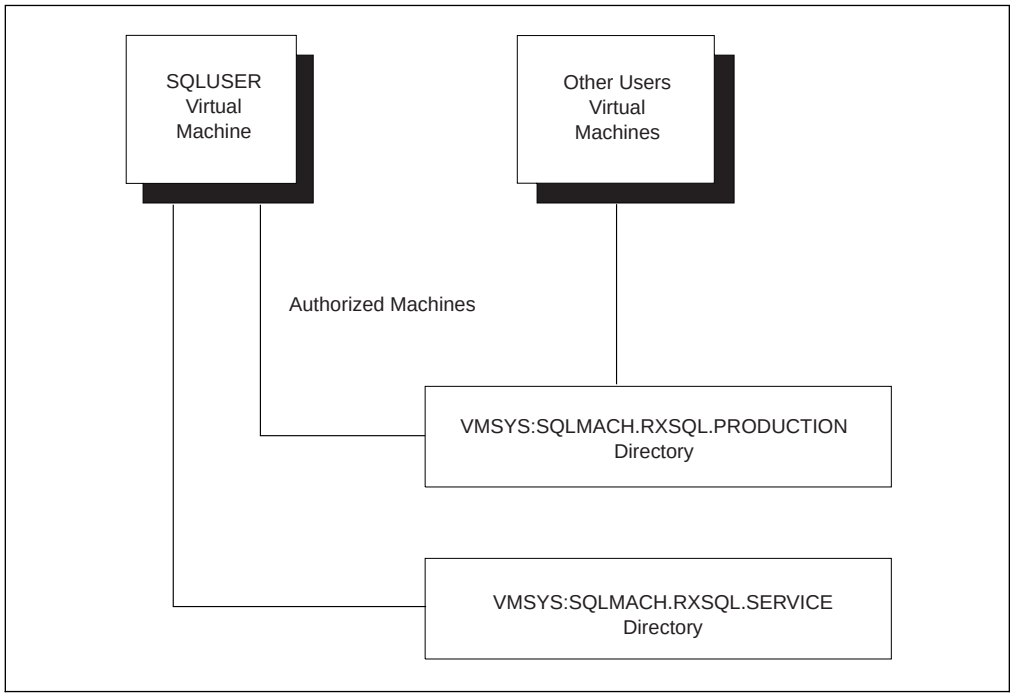


Figure 11. DB2 RXSQL Virtual Machine SFS Directories for Installation

Notes:

1. VMSYS is the default SFS file pool ID. Before continuing, determine the storage group in the VMSYS file pool to which DB2 RXSQL files will be assigned.
2. Directory VMSYS:SQLMACH.RXSQL.PRODUCTION is defined as the DB2 RXSQL production SFS directory.
3. Directory VMSYS:SQLMACH.RXSQL.SERVICE is defined as the DB2 RXSQL service SFS directory.
4. The SQLUSER virtual machine is authorized to use the directories in read-only mode.

5. Other user virtual machines are authorized to use the directories in read-only mode.

Use the MAINT machine to set up the SFS environment and give the appropriate authorization to SQLUSER and all other DB2 RXSQL users.

Step 1.1 Increase the Size of the SQLMACH SFS Directory

Log on to the MAINT machine and type the MODIFYUSER command to increase the size of the SQLMACH directory for DB2 RXSQL requirements:

```
MODIFY USER +1050 FOR SQLMACH VMSYS:
```

Step 1.2 Enroll Users in the VMSYS File Pool

Use the file pool administration machine to enroll users in the VMSYS file pool. The default file pool administration machine is the MAINT virtual machine. See the *VM/ESA: CMS File Pool Planning, Administration, and Operation* manual, for more information on the file pool administration machine.

Type the ENROLL command to grant connect *authority* to file pool VMSYS for all users:

```
ENROLL PUBLIC VMSYS:
```

To grant authority to file pool VMSYS for SQLUSER and other RXSQL users, type the following statements:

```
ENROLL USER SQLUSER VMSYS:
ENROLL USER userid  VMSYS:
                .
                .
```

SQLUSER and other RXSQL users must have *authorization* to access the file pool VMSYS.

Step 1.3 Create SFS Directories for RXSQL

Make sure you have created the VMSYS:SQLMACH SFS directory.

Type the CREATE command to create SFS directories for DB2 RXSQL production and service files:

```
CREATE DIR VMSYS:SQLMACH.RXSQL
CREATE DIR VMSYS:SQLMACH.RXSQL.PRODUCTION
CREATE DIR VMSYS:SQLMACH.RXSQL.SERVICE
```

Step 1.4 Grant Read Access to RXSQL Production SFS Directory

Type the GRANT command to grant read access to the DB2 RXSQL production SFS directory to all users:

```
GRANT AUTH VMSYS:SQLMACH.RXSQL.PRODUCTION TO PUBLIC (READ
```

To grant read access to the production directory to only SQLUSER and individual users, type the following statements:

```
GRANT AUTH VMSYS:SQLMACH.RXSQL.PRODUCTION TO SQLUSER (READ
GRANT AUTH VMSYS:SQLMACH.RXSQL.PRODUCTION TO userid  (READ
                .
                .
```

SQLUSER must have read authorization to the DB2 RXSQL production SFS directory, VMSYS:SQLMACH.RXSQL.PRODUCTION. Read-only authorization is granted because it is assumed the MAINT user ID has the authority to write to the production SFS directory. If the MAINT user ID does not have the authority, the file pool administrator must grant MAINT write authority.

Step 1.5 Grant Read Access to RXSQL Service SFS Directory

Type the GRANT command to grant read access to the DB2 RXSQL service SFS directory to SQLUSER:

```
GRANT AUTH VMSYS:SQLMACH.RXSQL.SERVICE TO SQLUSER (READ
```

Access to the DB2 RXSQL service SFS directory is required for installation and servicing only. It is assumed that the MAINT user ID will be performing all servicing.

If continuing with the next phase, you do not have to disconnect or log off the MAINT machine. Otherwise, disconnect or log off as follows:

```
#CP DISCONNECT
```

Phase 2: Installing RXSQL in VM

Phase 1 prepared the environment for installing DB2 RXSQL in SFS directories. Phase 2 installs DB2 RXSQL in a VM environment. It is not necessary to shut down the DB2 database during this phase.

The INSTFPP EXEC can be used instead of this phase. Refer to the appropriate VM installation guide for information on the INSTFPP EXEC. If you use the INSTFPP EXEC, ensure that you access the MAINT machine's work minidisk as file mode C, and that you access a read/write minidisk as file mode A.

Refer to Figure 12 on page 27 for an overview of the installation process.

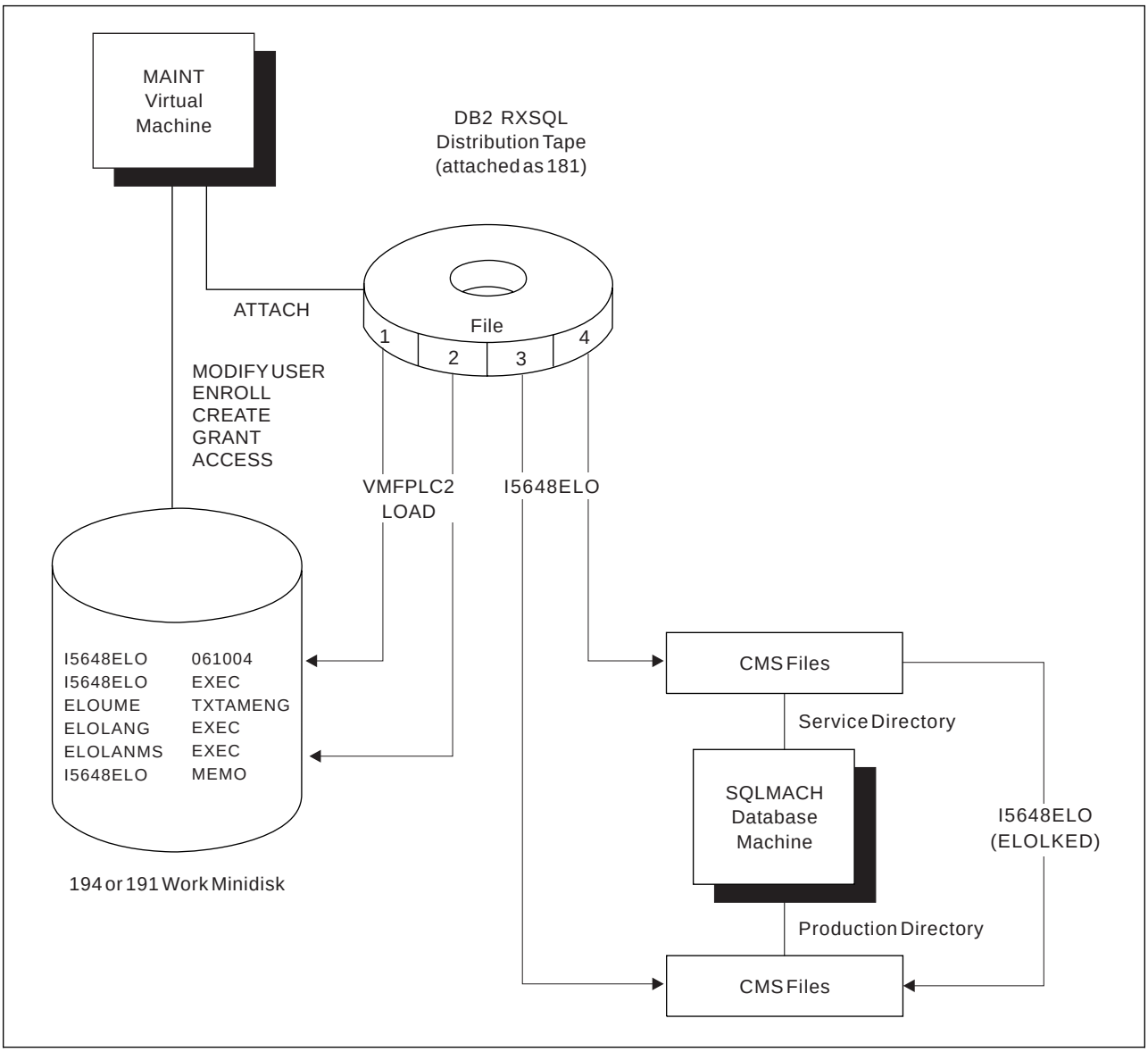


Figure 12. Summary of DB2 RXSQL Installation in VM

Step 2.1 Load the First Two Tape Files to the MAINT Work Minidisk

Use the MAINT machine to load the DB2 RXSQL production and service SFS directories. If continuing from the previous phase, you are already logged on to the MAINT machine.

Access the MAINT machine's work minidisk as file mode A. Type the following statements to load the first two tape files to this minidisk:

- To identify the virtual address (*cuu*) of the MAINT machine's work minidisk, type the following:

  ```
  ACCESS cuu A
  ```

  The *cuu* is usually specified as 194 or 191.

- To identify the virtual device address (*rdev*) of the tape device to be accessed as virtual tape address 181, type the following:

```
ATTACH rdev TO MAINT AS 181
```

The distribution tape must be mounted on the device defined as virtual address 181.

- To rewind the tape, type the following command:

  ```
  VMFPLC2 REW
  ```

- To load tape files 1 and 2 from the distribution tape to the MAINT machine's A disk or work minidisk, type the following:

  ```
  VMFPLC2 LOAD * * A (EOF 2
  ```

  – Tape file 1 contains the I5648ELO EXEC, which will load the remaining DB2 RXSQL distribution tape.

  – Tape file 2 contains a *Memo to Users*. To print the *Memo to Users*, type the CMS PRINT command:

    ```
    PRINT I5648ELO MEMO A (CC
    ```

Step 2.2 Load the RXSQL SFS Directories

The I5648ELO EXEC loads the DB2 RXSQL production and service SFS directories. This step also links text files into a load library and a load module on the DB2 RXSQL production SFS directory.

The I5648ELO EXEC

Before you run this EXEC, verify that:

1. The SFS directory in which you plan to install the RXSQL production files exists. The default is VMSYS:SQLMACH.RXSQL.PRODUCTION if you are not installing on the DB2 Server for VM production SFS directory.
2. The SFS directory on which you plan to install the RXSQL service files exists. The default is VMSYS:SQLMACH.RXSQL.SERVICE if you are not installing on the DB2 Server for VM service SFS directory.
3. There are enough free file modes to access the DB2 RXSQL and DB2 Server for VM SFS directories. If you are installing DB2 RXSQL on the DB2 Server for VM SFS directories, two free file modes are required. Otherwise, four free file modes are required for installing DB2 RXSQL.
4. There are two free virtual device addresses to link the DB2 Server for VM minidisks if DB2 was installed on minidisks. The free virtual device addresses must be between 001 and 499. If DB2 was installed in SFS directories, you do not require any free addresses.
5. The user ID running the DB2 RXSQL installation has access to the files shown in Figure 13 on page 29.

File Name	Location	DB2 Server for VM Components
DMSCSL	VM/ESA system minidisk.	Bootstrap for the callable services library.
ARIRVSTC	SQLMACH 195 minidisk or VMSYS:SQLMACH.SQL.PRODUCTION.	Bootstrap for the DB2 Server for VM system
ARIUXDT	SQLMACH 193 minidisk or VMSYS:SQLMACH.SQL.SERVICE SFS directory.	Date routine
ARIUXTM	SQLMACH 193 minidisk or VMSYS:SQLMACH.SQL.SERVICE SFS directory.	Time routine

Figure 13. VM and DB2 Server for VM Text Files

Running the I5648ELO EXEC

To run the I5648ELO EXEC, type:

```
I5648ELO
```

The I5648ELO EXEC usually takes approximately 5 minutes to run, depending on system capabilities and current load. Refer to “The I5648ELO EXEC” on page 73 for instructions on running this EXEC.

Check the final message returned by the installation EXEC. If it is a return code of 888, the installation is successfully completed. However, to complete this installation, you must continue with “Step 2.3 Grant Read Access to RXSQL Service Files” on page 29.

If the DB2 RXSQL production and service SFS directories were successfully loaded, but the DB2 RXSQL system link-edit was not completed successfully, run the ELOLKED EXEC to complete the system link-edit before performing the next step of the DB2 RXSQL installation procedure. Refer to “The ELOLKED EXEC” on page 81 for information on running the ELOLKED EXEC.

After the installation EXEC is finished, type the CP DETACH command to detach the tape device and rewind the tape:

```
DETACH 181
```

Step 2.3 Grant Read Access to RXSQL Service Files

Type the GRANT command to grant read access to the DB2 RXSQL service files to SQLUSER:

```
GRANT AUTH * * VMSYS:SQLMACH.RXSQL.SERVICE TO SQLUSER (READ
```

Step 2.4 Grant Read Access to RXSQL Production Files

Type the GRANT command to grant read access to the DB2 RXSQL production files to SQLUSER:

```
GRANT AUTH * * VMSYS:SQLMACH.RXSQL.PRODUCTION TO SQLUSER (READ
```

Type the GRANT command to grant read access to the DB2 RXSQL production files to all users:

```
GRANT AUTH * * VMSYS:SQLMACH.RXSQL.PRODUCTION TO PUBLIC (READ
```

Type the GRANT command to grant read access to the DB2 RXSQL production files to individual users:

```
GRANT AUTH * * VMSYS:SQLMACH.RXSQL.PRODUCTION TO userid  (READ
                    .
                    .
```

Log off or disconnect the MAINT machine as follows:

```
#CP DISCONNECT
```

Step 2.5 Start the DB2 Server for VM System in Multiple User Mode

If the database is shut down, log on to the SQLMACH database machine and type the SQLSTART command to start the DB2 Server for VM database:

```
SQLSTART DBNAME(SQLDBA)
```

If you usually specify additional parameters for SQLSTART, you should specify them in addition to the DBNAME parameter shown above.

Type the CP DISCONNECT command to disconnect from the SQLMACH machine:

```
#CP DISCONNECT
```

Step 2.6 Installing a New Date or Time Exit

In this optional step, you can customize the date or time formats by creating a new exit. If exits already exist, they were linked in when the I5648ELO EXEC was run. To create a new date or time exit:

1. Create a date (ARIUXDT TEXT) or time (ARIUXTM TEXT) exit as described in the *DB2 Server for VM System Administration* manual.
2. Use VMSES to store the customized ARIUXDT and ARIUXTM TEXT files.
3. Run the ELOLKED EXEC as described in “The ELOLKED EXEC” on page 81.

You must ensure that your date and time exits match the date and time exits of any application server to which you are connecting.

Phase 3: Installing the RXSQL Package and HELP Tables into DB2 Application Servers

In this phase, you load the DB2 RXSQL package into each application server in which DB2 RXSQL is to be installed. You also create and install the DB2 RXSQL secondary-level HELP tables with the HELP text in each application server in which DB2 RXSQL is to be installed, and give the public select authority on these tables.

Repeat this phase for each application server in which DB2 RXSQL is to be available. You will be using the SQLUSER machine to install DB2 RXSQL into each application server.

An authorization ID called SQLDBA that has DBA authority must exist on the DB2 application server into which you are installing RXSQL.

Step 3.1 Access the DB2 RXSQL and DB2 Disks

Log on to the SQLUSER machine. To install DB2 RXSQL into an application server, you must have read access to the DB2 RXSQL production and service disks and the DB2 production files. The disks that you must access depends on where DB2 RXSQL and the DB2 product are installed, as shown in Figure 14:

Disks to Access	DB2 RXSQL Installed in DB2 SFS Directories	DB2 RXSQL Installed in Separate SFS Directories	
		DB2 Product is on Minidisk	DB2 Product is in SFS Directories
DB2 production SFS directory	**X**		**X**
DB2 service SFS directory	**X**		
DB2 RXSQL production SFS directory		**X**	**X**
DB2 RXSQL service SFS directory		**X**	**X**
DB2 production minidisk		**X**	

Figure 14. Accessing DB2 RXSQL and DB2 Disks When DB2 RXSQL Is in SFS Directories

DB2 RXSQL Was Installed in DB2 SFS Directories: If DB2 RXSQL was installed in DB2 SFS directories, specify the following commands to access the DB2 production and service SFS directories:

- To access the DB2 production SFS directory, which also contains the DB2 RXSQL production files, type:

  ```
  ACCESS VMSYS:SQLMACH.SQL.PRODUCTION Q
  ```

- To access the DB2 service SFS directory, which also contains the DB2 RXSQL service files, type:

  ```
  ACCESS VMSYS:SQLMACH.SQL.SERVICE V
  ```

DB2 RXSQL Was Installed in Separate SFS Directories: If DB2 RXSQL was installed in separate SFS directories, specify the following commands to access the DB2 RXSQL production and service SFS directories and the DB2 production files:

- To access the DB2 RXSQL production SFS directory, type:

  ```
  ACCESS VMSYS:SQLMACH.DB2 RXSQL.PRODUCTION P
  ```

- To access the DB2 RXSQL service SFS directory, type:

  ```
  ACCESS VMSYS:SQLMACH.DB2 RXSQL.SERVICE V
  ```

- You must also type one of the following commands:
  - If DB2 was installed in an SFS directory, type the following to access the DB2 Server for VM production directory:

    ```
    ACCESS VMSYS:SQLMACH.SQL.PRODUCTION Q
    ```

  - If DB2 was installed on minidisks, type the following to link and access the DB2 production minidisk SQLMACH 195:

    ```
    LINK SQLMACH 195 195 RR
    ACCESS 195 Q
    ```

    Note: You do not have to specify the CP LINK command if the DB2 production disk is already linked.

Step 3.2 Install the RXSQL Package and HELP Tables into a DB2 Application Server

To complete this step, you must:

- Know the connect password for the SQLDBA authorization ID.

Note: The dbspace RXSQHELP will be dropped and recreated with the new RXSQL help tables if you are upgrading. The installation exec will acquire the necessary dbspace for the help tables if you are installing this feature for the first time.

To install DB2 RXSQL into a DB2 application server, type the following commands:

- To establish the DB2 application server into which the DB2 RXSQL package will be installed, type:

  ```
  SQLINIT DBNAME(SQLDBA)
  ```

- To load the DB2 RXSQL package into a DB2 application server using the ELOAMOD EXEC, type:

  ```
  ELOAMOD
  ```

  Refer to “The ELOAMOD EXEC” on page 78 for instructions on running this EXEC.

- To install or update DB2 RXSQL HELP tables, type one of the following:

  ```
  ELOHLPLD
  ```

  or

  ```
  ELOSHLP LANG(S001)
  ```

  The ELOHLPLD EXEC installs DB2 RXSQL secondary-level HELP tables into a DB2 application server. Refer to “The ELOHLPLD EXEC” on page 79 for instructions on running this EXEC.

  The ELOSHLP EXEC replaces the AMENG HELP text for releases of DB2 RXSQL Version 3 with the AMENG HELP text for DB2 RXSQL Version 6 Release 1. Refer to “The ELOSHLP EXEC” on page 83 for instructions on running this EXEC.

Step 3.3 Verify the RXSQL Installation

For information about verifying the DB2 RXSQL installation, refer to “Installation Verification” on page 33. Log off the SQLUSER machine. Installation of DB2 RXSQL is now completed.

Phase 4: Installing the RXSQL Package into Non-DB2 Application Servers Using the DRDA Protocol

In this phase, you load the DB2 RXSQL package into each non-DB2 Server for VM application server in which DB2 RXSQL is to be installed. This phase must be repeated for each application server in which DB2 RXSQL is to be available.

For this phase, your DB2 installation must have the ability to use the DRDA protocol and you must have DBA authority.

Before you can load the DB2 RXSQL package into a non-DB2 Server for VM application server, ensure that the DBS Utility package has been installed on the application server, and that you can run DBS Utility jobs from the SQLUSER machine using the DRDA protocol.

Step 4.1 Access the DB2 RXSQL and DB2 Disks

Log on to the SQLUSER machine and access the appropriate DB2 RXSQL and DB2 disks as described in “Step 3.1 Access the DB2 RXSQL and DB2 Disks” on page 31.

Step 4.2 Install DB2 RXSQL into the Non-DB2 Server for VM Application Server

To install DB2 RXSQL in the non-DB2 Server for VM application server, type the following commands:

- To establish the non-DB2 application server into which the DB2 RXSQL package will be installed using the DRDA protocol, type:

  ```
  SQLINIT DBNAME(server_name) PROTOCOL(DRDA)
  ```

- To load the DB2 RXSQL package into the non-DB2 application server, type:

  ```
  ELOAMOD
  ```

  Refer to “The ELOAMOD EXEC” on page 78 for instructions on running this EXEC.

  Note: HELP table installation is not supported in non-DB2 Server for VM application servers.

Step 4.3 Verify the RXSQL Installation

For information about verifying the DB2 RXSQL installation, refer to “Installation Verification” on page 33. Log off the SQLUSER machine.

Installation Verification

This procedure verifies the installation of RXSQL by testing some of its functions. With it, you can check the sample programs and EXECs supplied by RXSQL.

The installation verification procedure is designed to test whether or not RXSQL was installed correctly into a DB2 application server. If you are verifying RXSQL installation into a non-DB2 Server for VM application server, you may have to

modify the sample EXECs provided, or execute equivalent statements. You should verify that:

- The correct level of RXSQL is installed
- The RXSQL package was loaded correctly by checking the system *catalog*
- You can use DB2 RXSQL statements to create objects and manipulate data
- You can create a package, prepare statements into the package, and execute the statements in the package.

To perform this procedure, type the commands shown in lowercase as instructed. Compare the output from your command with the output shown in the figures immediately following the command. If the output is not similar, a problem may exist.

The installation verification procedure is as follows:

1. To load the DB2 RXSQL message repository, type:

   ```
   set language (add elo user
   ```

   ```
   Ready;
   ```

2. To check the DB2 RXSQL release level, type:

   ```
   rxsqlvl
   ```

   ```
   ELO2102I *** DB2 RXSQL Version 6 Release 1 Modification 0 ***
   Ready;
   ```

3. To create the RXEMP table and view and to load data into the table, type:

   ```
   empcre
   ```

   The EMPCRE program requires that your *userid* (SQLUSER) can create the table and load data into it. If you are verifying installation into an DB2 Server for VM application server, you must have a *private dbspace*.

   ```
   Ready;
   ```

4. To verify that the table was created correctly, type:

   ```
   rxselect * from rxemp
   ```

   The following output is displayed in the temporary file SQL STM$T.

```
SELECT * FROM RXEMP
EMPNO  FIRSTNME MIDINIT LASTNAME WORKDEPT PHONENO   HIREDATE JOB      EDLEVEL SEX
------ -------- ------- -------- -------- ------- ---------- -------- ------- ---
002130 GARY     M       SAMS     B12      5643    1969-10-01 MANAGER       17 M
002300 JANET    L       HEDGLEY  B09      2345    1972-12-15 ANALYST       16 F
001010 RON      A       LOWRY    D14      2313    1978-01-15 ANALYST       20 M
000990 RANDY    M       SCHENKER A07      1430    1983-03-22 OPERATOR      15 M
002020 TERRY    A       RAINEY   D11      3243    1989-09-05 DESIGNER      20 M
001840 PAUL     P       CORDON   B09      7070    1985-07-21 FILEREP       18 M
002330 LES      H       FABER    A10      2119    1977-03-18 CLERK         14 M
009236 HEATHER  B       DOBSON   D08      3467    1979-04-03 WRITER        16 F
002574 JAY      Q       MERCIER  A11      2946    1991-05-06 WRITER        15 M
003567 DICK     E       SCHMIDT  C04      3847    1972-11-17 CLERK         14 M
002419 HARRY    P       ATWALA   A07      9127    1980-10-28 OPERATOR      16 M
003326 MARY     K       GOODBAR  B09      3943    1974-07-13 MANAGER       18 F
003589 STEVE    S       GOULD    D07      3565    1976-06-12 WRITER        17 M
ELO2121I ******** End-of-Data **********
```

In XEDIT, *scroll* to the right to view the remainder of the table.

```
 BIRTHDATE   SALARY  BONUS    COMM
---------- -------- ------ -------
1956-11-21 41700.00 900.00 4130.00
1963-06-01 37900.00 800.00 3178.00
1959-09-17 38240.00 600.00 3000.00
1960-12-17 30190.00 700.00 2660.00
1967-09-13 32560.00 500.00 2408.00
1965-03-05 28090.00 600.00 3090.00
1952-02-25 27800.00 400.00 1777.00
1964-05-31 37600.00 800.00 2900.00
1971-09-22 33400.00 600.00 2650.00
1960-12-03 25790.00 500.00 2540.00
1962-10-30 37940.00 800.00 3105.00
1959-02-25 40360.00 900.00 3980.00
1956-04-25 39250.00 350.00 3050.00
```

5. To verify that the view was created correctly, type:

   ```
   rxselect * from empview
   ```

   The following output is displayed in the temporary file SQL STM$T.

```
SELECT * FROM EMPVIEW
EMPNO  FIRSTNME MIDINIT LASTNAME JOB      EDLEVEL   SALARY
------ -------- ------- -------- -------- ------- --------
002130 GARY     M       SAMS     MANAGER       17 41700.00
002300 JANET    L       HEDGLEY  ANALYST       16 37900.00
001010 RON      A       LOWRY    ANALYST       20 38240.00
000990 RANDY    M       SCHENKER OPERATOR      15 30190.00
002020 TERRY    A       RAINEY   DESIGNER      20 32560.00
001840 PAUL     P       CORDON   FILEREP       18 28090.00
002330 LES      H       FABER    CLERK         14 27800.00
009236 HEATHER  B       DOBSON   WRITER        16 37600.00
002574 JAY      Q       MERCIER  WRITER        15 33400.00
003567 DICK     E       SCHMIDT  CLERK         14 25790.00
002419 HARRY    P       ATWALA   OPERATOR      16 37940.00
003326 MARY     K       GOODBAR  MANAGER       18 40360.00
003589 STEVE    S       GOULD    WRITER        17 39250.00
ELO2121I ******** End-of-Data **********
```

6. To select *rows* from the table using dynamic statements, type:

   ```
   empsel
   ```

```
Employee: 002300      JANET L HEDGLEY
Job:ANALYST     Education:16     Salary:37900.00

Ready; T=0.25/0.44 10:00:47
```

7. To create a package for selecting data from the table:

   a. Type the following:

      ```
      empprp
      ```

```
Ready;
```

   b. To set the case to upper for RXSELECT EXEC, type the following:

      ```
      rxcase upper
      ```

```
Ready;
```

   c. If verifying RXSQL installation into an DB2 Server for VM application server, type the following to check that the package was created:

      ```
      rxselect * from system.sysprogauth where progname = 'empprog'
      ```

      Output similar to the following is displayed in the temporary file SQL STM$T.

```
SELECT * FROM SYSTEM.SYSPROGAUTH WHERE PROGNAME = 'EMPPROG'
GRANTOR  GRANTEE  CREATOR  PROGNAME TIMESTAMP    RUNAUTH
-------- -------- -------- -------- ------------ -------
SQLUSRV3 PUBLIC   SQLUSRV3 EMPPROG  B1AXKZO9IGO8 Y
SQLUSRV3 SQLUSRV3 SQLUSRV3 EMPPROG  B1AXKZN9HGLY G
ELO2121I ******** End-of-Data **********
```

If you are verifying RXSQL installation into a non-DB2 Server for VM application server, type an equivalent select statement to find the package listed in one of the *catalog tables*.

8. To use the package that was created to select data:
   a. Type the following to select an employee:

      ```
      empselx
      ```

```
Employee: 002300      JANET L HEDGLEY
Job:ANALYST     Education:16     Salary:37900.00

Ready; T=0.24/0.42 10:04:47
```

   b. Type the following to change the select statement to obtain a list of analysts earning less than $55,000:

      ```
      empselx analyst 55000
      ```

```
Employee: 002300      JANET L HEDGLEY
Job:ANALYST     Education:16     Salary:37900.00

Employee: 001010      RON A LOWRY
Job:ANALYST     Education:20     Salary:38240.00

Ready; T=0.27/0.46 10:05:02
```

9. To create another package that will update the table:
   a. Type the following:

      ```
      empprpm
      ```

```
Ready;
```

   b. If RXSQL was installed into a DB2 Server for VM application server, type the following to verify that the package was created correctly:

      ```
      rxselect * from system.sysprogauth where progname = 'empupd'
      ```

      Output similar to the following is displayed in the temporary file SQL STM$T.

```
SELECT * FROM SYSTEM.SYSPROGAUTH WHERE PROGNAME = 'EMPUPD'
GRANTOR  GRANTEE  CREATOR  PROGNAME TIMESTAMP    RUNAUTH
-------- -------- -------- -------- ------------ -------
SQLUSRV3 MANAGER  SQLUSRV3 EMPUPD   B1AXLXHR6LQO Y
SQLUSRV3 SQLUSRV3 SQLUSRV3 EMPUPD   B1AXLXGSJ78S G
ELO2121I ******** End-of-Data **********
```

If you are verifying RXSQL installation into a non-DB2 Server for VM application server, type an equivalent select statement to find the package listed in one of the catalog tables.

10. To use the package to insert and update data in the table:

    a. Type the following to modify the table:

       ```
       empupd
       ```

```
Enter command: Insert Set Update COMMit ROLLback or Quit
```

    b. Type the INSERT command:

       ```
       i
       ```

```
Enter Employee number, First name, Middle initial, Last name, Job,
Education level and Salary
 (Empty line to quit)
```

    c. Type the following information to update the table:

       ```
       888 joe e user manager 2 36737
       ```

```
Inserted.
Enter Employee number, First name, Middle initial, Last name, Job,
Education level and Salary
 (Empty line to quit)
```

    d. Press Enter:

```
Enter command: Insert Set Update COMMit ROLLback or Quit
```

    e. Type the SET command:

       ```
       s
       ```

```
Enter Emp#, Last name, SALARY. (Empty line to quit)
```

f. Type the following to update the table:

```
888 user 45000
```

```
1 row(s) updated.
Enter Emp#, Last name, SALARY. (Empty line to quit)
```

g. Press Enter:

```
Enter command: Insert Set Update COMMit ROLLback or Quit
```

h. Type the UPDATE command:

```
u
```

```
Enter percent salary change. (Empty line to quit)
  5 means add 5 percent to all current salaries,
 -4 means subtract 4 percent from all current salaries.
```

i. Type the following to add 3% to all current salaries:

```
3
```

```
14 row(s) updated.
Enter command: Insert Set Update COMMit ROLLback or Quit
```

j. Type the COMMIT command:

```
comm
```

```
Enter command: Insert Set Update COMMit ROLLback or Quit
```

k. Type the QUIT command:

```
q
```

```
Ready;
```

l. Type the following to see the updated table:

```
rxselect * from rxemp
```

The following output is displayed in the temporary file SQL STM$T.

```
SELECT * FROM RXEMP
EMPNO  FIRSTNME MIDINIT LASTNAME WORKDEPT PHONENO   HIREDATE JOB      EDLEVEL SEX
------ -------- ------- -------- -------- ------- ---------- -------- ------- ---
002130 GARY     M       SAMS     B12      5643    1969-10-01 MANAGER       17 M
002300 JANET    L       HEDGLEY  B09      2345    1972-12-15 ANALYST       16 F
001010 RON      A       LOWRY    D14      2313    1978-01-15 ANALYST       20 M
000990 RANDY    M       SCHENKER A07      1430    1983-03-22 OPERATOR      15 M
002020 TERRY    A       RAINEY   D11      3243    1989-09-05 DESIGNER      20 M
001840 PAUL     P       CORDON   B09      7070    1985-07-21 FILEREP       18 M
002330 LES      H       FABER    A10      2119    1977-03-18 CLERK         14 M
009236 HEATHER  B       DOBSON   D08      3467    1979-04-03 WRITER        16 F
002574 JAY      Q       MERCIER  A11      2946    1991-05-06 WRITER        15 M
003567 DICK     E       SCHMIDT  C04      3847    1972-11-17 CLERK         14 M
002419 HARRY    P       ATWALA   A07      9127    1980-10-28 OPERATOR      16 M
003326 MARY     K       GOODBAR  B09      3943    1974-07-13 MANAGER       18 F
003589 STEVE    S       GOULD    D07      3565    1976-06-12 WRITER        17 M
888    JOE      E       USER     ?        ?              ? MANAGER        2 ?
ELO2121I ******** End-of-Data **********
```

In XEDIT, scroll to the right to view the remainder of the table.

```
 BIRTHDATE   SALARY  BONUS    COMM
---------- -------- ------ -------
1956-11-21 42951.00 900.00 4130.00
1963-06-01 39037.00 800.00 3178.00
1959-09-17 39387.20 600.00 3000.00
1960-12-17 31095.70 700.00 2660.00
1967-09-13 33536.80 500.00 2408.00
1965-03-05 28932.70 600.00 3090.00
1952-02-25 28634.00 400.00 1777.00
1964-05-31 38728.00 800.00 2900.00
1971-09-22 34402.00 600.00 2650.00
1960-12-03 26563.70 500.00 2540.00
1962-10-30 39078.20 800.00 3105.00
1959-02-25 41570.80 900.00 3980.00
1956-04-25 40427.50 350.00 3050.00
         ? 46350.00      ?       ?
```

11. To issue an operator command, type:

```
rxsqlop show system
```

The following output is displayed in the temporary file SQL O$P.

Note: Because operator commands are not supported in the DRDA protocol, omit this step if you are verifying DB2 RXSQL installation into a non-DB2 Server for VM application server.

```
============================================================
SQLOP SHOW SYSTEM
============================================================
System state at DATE='03-11-92'  TIME='10:26:17'

POOL     TOTAL    NO. OF      NO. OF      NO. OF     %    NO. OF
NO.      PAGES  PAGES USED  FREE PAGES  RESV PAGES  USED  EXTENTS SOS
   1      1710         303        1407          20    17        2
FREE    252242
Log Status:
           .
           .
           .

Status of DB2 Server for VM agents:
           .
           .
           .

ARI0065I DB2 Server for VM operator command processing is complete.
```

12. To execute an SQL statement:

    a. Type the following:

       ```
       rxsqlex drop table rxemp
       ```

```
RXSQL EXEC DROP TABLE RXEMP
RXSQL COMMIT
Ready;
```

    b. Type the following to verify that the drop is executed correctly:

       ```
       rxselect * from rxemp
       ```

       The following is shown in XEDIT:

```
SELECT * FROM RXEMP
RXSQL PREP SELSTMT SELECT * FROM RXEMP
  Sqlcode: -204
 Sqlstate: 52004
  Sqlerrd.1: -100
  Sqlerrd.4: -7.23700514597311554e75
  Sqlerrp: ARIXOCA
  Sqlerrm: SQLUSRV3.RXEMP
```

13. To display HELP information on -204 *sqlcode*, type:

    ```
    rxsqlhlp -204
    ```

    Note: If you are verifying DB2 RXSQL installation into a non-DB2 Server for VM application server, HELP information is not available. The installation verification procedure is therefore completed.

    The following output is displayed in the temporary file SQL HEL$P.

```
============================================================
DB2 RXSQL HELP '-204'
============================================================
TOPIC NAME:  ELO0204E / RETURN CODE 204 OR -204

ELO0204E <main_variable> is undefined and the value of
<indicator_variable> was non-negative.

Explanation:  The main variable was undefined, yet the
indicator variable indicated that the main variable would
be set with a value.

System Action:  The DB2 RXSQL request was not executed
successfully. Control is returned to the user's REXX
program.

User Response:  Check that the main variable or the
indicator variable was set correctly or that the main
variable was not inadvertently dropped.  Change your
program and rerun your program.

============================================================
DB2 Server for VM HELP '-204'
============================================================
TOPIC NAME: -204
-204       owner.object-name was not found in the system
catalog.

EXPLANATION: .
             .
             .
             .
             .
```

14. To display HELP for RXSQL return code (116), type:

    ```
    rxsqlhlp 116
    ```

    The following output is displayed in the temporary file SQL HEL$P.

```
============================================================
DB2 RXSQL HELP '+116'
============================================================
TOPIC NAME:  ELO0116E / RETURN CODE 116 OR -116

ELO0116E <name> does not represent a SELECT statement.
<request> request cannot be executed.

Explanation:  The statement name or prepare name specified
in the <request> request does not refer to a prepared or
declared SELECT statement.

System Action:  The DB2 RXSQL request was not executed
successfully. Control is returned to the user's REXX
program.

User Response:  Check your spelling of the statement name
and rerun the program.

============================================================
DB2 Server for VM HELP '+116'
============================================================
ELO2112I DB2 Server for VM HELP text is not available for topic '+116'
for language S001.
```

The installation verification procedure is now completed.

Chapter 3. Installing a REXX SQL NLS Language

This chapter is intended for the system programmer responsible for installation and maintenance. It contains information concerning the material and procedures associated with the installation of DB2 REXX SQL NLS Languages. You should read all of this chapter before enabling a DB2 REXX SQL NLS Language.

This chapter will discuss:

- Installation Requirements and Considerations
- Installation Instructions
- Preventive Service Planning and Service Instructions.

Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating DB2 REXX SQL NLS Languages. In most cases, you can install a DB2 REXX SQL NLS Language on a running system (target system). However, some cases may warrant the use of two systems. If two systems are required the following terminology is used:

1. The system used to install the language (driving system)
2. The system on which the language is installed (target system)

Installation Defaults

Before installing a DB2 REXX SQL NLS Language, you must have installed and verified DB2 Server for VM Version 6 Release 1 Modification 0. Therefore, you have created a DB2 Server for VM virtual machine, DB2 Server for VM Production and Service minidisks or SFS directories, and a user virtual machine.

It is also assumed that DB2 REXX SQL has been installed in the manner described in this manual (Chapter 2). Therefore, you have DB2 REXX SQL Production and Service minidisks or SFS directories. As part of the installation you will also have created the DB2 REXX SQL Help tables in your DB2 Server for VM application server. If DB2 Server for VM or DB2 REXX SQL was not installed using defaults, you may need to substitute machine names, virtual addresses, or SFS directory names in order to install a DB2 REXX SQL NLS Language.

The DB2 REXX SQL NLS Language installation described in this chapter is not applicable when using non-DB2 for VM application servers or when using the DRDA protocol.

Driving System Requirements

This section describes the environment required of the driving system to install a DB2 REXX SQL NLS Language.

Programming Requirements

Same requirements as the DB2 REXX SQL feature.

Additional DASD Requirements

The free space required on a work minidisk of the MAINT machine is described in the following table.

Figure 15. Storage Requirements - DASD for Driving System

Minidisks	Block Size	Virtual Address	Access Mode	3375 Cyl	3380 Cyl	3390 Cyl	9345 Cyl	FB-512 Blocks
MAINT machine: Work minidisk for installation	4096	194 or 191	A or C	2	1	1	1	800

Target System Requirements

This section describes the environment required of the target system to install and use a DB2 REXX SQL NLS Language.

Programming Requirements

The same operating system environment as DB2 REXX SQL is required to run a DB2 REXX SQL NLS Language. Also before installing a DB2 REXX SQL NLS Language, you must have installed DB2 Server for VM Version 6 Release 1 Modification 0. You will also have installed DB2 REXX SQL prior to enabling a DB2 REXX SQL NLS Language.

Additional DASD Requirements

Before installing a DB2 REXX SQL NLS Language you must provide several minidisks for installation, service, and running. The following table lists the minidisks and the space requirements:

Figure 16. DASD Storage Requirements for Target Minidisks

Minidisk Description	Default Address	Storage in Cylinders			Storage in Blocks	
		DASD	CYLS		Type	Blocks
SQLMACH machine: NLS UCENG Minidisk	298	9345 3390 3380 3375	1 1 1 2		FB512	960
SQLMACH machine: NLS UCENG SFS Directory	N/A	N/A	N/A		4K	120

Notes:

1. Select either minidisk or SFS directory values above, depending on where SQLMACH is located.
2. Minidisk 298 is a default address for the Upper Case English NLS Language. Each language has a specified default address. UCENG is used as an example throughout this chapter.
3. If you wish to install multiple languages, then you must create a new NLS minidisk or SFS directory *for each language to be installed*.

Installation Instructions

This section describes the installation method and the step-by-step procedures to install and to activate the functions of a DB2 REXX SQL NLS Language.

Installing a DB2 REXX SQL NLS Language

These instructions are intended to help you install a DB2 REXX SQL NLS Language on VM. It is assumed that you are familiar with the base DB2 REXX SQL installation process, VM commands and execs. Changes to the VM Directory MUST be performed by a user ID such as MAINT, which has VM Directory maintenance privileges. The terminology used in this documentation is synonymous with that used previously in this manual.

The following tasks must be completed before proceeding with the REXX SQL NLS installation process:

- Define an NLS Language minidisk or SFS directory for the DB2 for VM database
- Attach a tape drive with a virtual address of 181 to the VM installer user ID that can be used to read the DB2 REXX SQL distribution tape
- If you are installing on minidisks, obtain the names of the owner, virtual address, and the write password for the DB2 REXX SQL NLS Language minidisk and the DB2 REXX SQL Service minidisk.

  If you are installing on SFS directories obtain the directory name for the DB2 REXX SQL NLS Language SFS directory and the DB2 REXX SQL Service SFS directory.

DB2 REXX SQL NLS Language Installation Overview

The following activities are involved in installing a DB2 REXX SQL NLS Language:

- Defining the DB2 REXX SQL NLS Language minidisk or creating an SFS directory from a VM user ID with VM Directory privileges
- Formatting the NLS Language minidisk
- Running the IBM-supplied ELOINLS EXEC to load the DB2 REXX SQL NLS Language from the distribution tape to the NLS Language minidisk or SFS directory and associated macros and execs to the DB2 REXX SQL Service minidisk or SFS directory
- Verifying the DB2 REXX SQL NLS Language installation.

DB2 REXX SQL NLS Language Installation Steps

Step 1: Log on to the MAINT user ID

To begin installing the DB2 REXX SQL NLS Language, log on to the MAINT user ID.

Step 2: Define the new NLS minidisk or create an SFS directory

For minidisks:

Redefine the VM directory for SQLMACH, or its equivalent, to include a minidisk for the NLS Language.

Follow these steps:

1. Obtain a minidisk map and locate a free gap large enough for the new minidisk
2. Assign a new virtual device address to the new minidisk
3. Insert a new MDISK statement for the new minidisk
4. Replace the directory entry
5. Obtain a new minidisk map and check for overlaps
6. Place the VM directory online when satisfied.

Figure 17 shows an example of the new MDISK statement based on 3380 DASD.

```
MDISK cuu 3380 cylr 001 volser RR readpw writepw
------------------------------------------------------------------------
NOTES:
  1. 'cuu' is the virtual device address
  2. 'cylr' is the starting cylinder number
  3. The 'readpw' and 'writepw' cuu must be recorded for later
     use during installation.
```

Figure 17. Example of new MDISK statement

Refer to the *VM/ESA: Planning and Administration* manual, for a complete description of VM/ESA directory control statements.

The rest of the steps assume that the DB2 REXX SQL NLS Language minidisk has an owner of SQLMACH and virtual device address of 298. *The actual virtual device address will be different for each NLS language installed.*

For SFS Directories

Follow the procedure listed to define the DB2 REXX SQL NLS Language SFS directory.

1. Give the SQLMACH SFS directory 120 more blocks in the file pool VMSYS, or equivalent, by typing:

   ```
   MODIFY USER +120 FOR SQLMACH VMSYS:
   ```

2. Enroll users in VMSYS file pool by typing:

   ```
   ENROLL PUBLIC VMSYS:
   ```

   or, enroll specific users,

   ```
   ENROLL USER SQLUSER VMSYS:
   ```

   To enroll more users, substitute the user ID in for SQLUSER, and repeat the above command.

3. Create the SFS directory for a DB2 REXX SQL NLS Language

   Type,

   ```
   CREATE DIR VMSYS:SQLMACH.RXSQL.NLSPROD
   ```

   Note: If you are installing more than one REXX SQL NLS Feature, you may want to use a different directory name to reflect the language that you are installing. The installation exec and this document refer to the directory as REXX SQL.NLSPROD.

4. Grant read access to the DB2 REXX SQL NLS Language SFS directory

Type:

```
GRANT AUTH VMSYS:SQLMACH.RXSQL.NLSPROD TO PUBLIC (READ
```

or, depending on the command you used to enroll users,

```
GRANT AUTH VMSYS:SQLMACH.RXSQL.NLSPROD TO SQLUSER (READ
```

Repeat the above command with the user ID substituted in for SQLUSER to grant authority to more users.

Refer to the *VM/ESA: CMS File Pool Planning, Administration, and Operation* manual, for a complete description of VM/ESA directory control statements.

For minidisks:

Step 3: Format the new NLS minidisk

Access the new DB2 REXX SQL NLS Language minidisk and format it by entering the following commands:

```
LINK SQLMACH 298 ncuu WR writepw
FORMAT ncuu fmode (BLKSIZE 4096
```

The first statement links you to the new NLS minidisk in write mode. `ncuu` is any available virtual device address and `writepw` is the disk write password.

The second statement accesses and formats the new NLS minidisk. `fmode` is any available file mode. Any other disk accessed as `fmode` will be released.

For minidisks and SFS directories:

Step 4: Mount the REXX SQL Distribution tape

Using your current operating procedures, attach a free tape drive to the installer user ID as virtual address 181 and mount the REXX SQL Distribution tape.

The REXX SQL distribution tape contains 12 files separated by tape marks.

Step 5: Load the installation exec and print the Memo to Users

To load file 1 and file 2 of the REXX SQL distribution tape to your A-disk, enter the following commands:

```
VMFPLC2 REW
VMFPLC2 LOAD * * A (EOF 2
```

The first statement rewinds the distribution tape.

The second statement loads file 1 and file 2 of the distribution tape to the installer's work disk (assumed here to be the A-disk). **Any files on the work disk with the same names as those being loaded from the distribution tape will be overwritten**.

File 1 contains the ELOINLS EXEC that will load the desired DB2 REXX SQL NLS Language from the distribution tape to minidisks or SFS directories

File 2 contains the Memo to Users. To print this file, enter the command:

```
PRINT I5648ELO MEMO A (CC
```

Step 6: Load Files to the new NLS minidisk or SFS directory and the DB2 REXX SQL Service minidisk or SFS directory

For minidisks:

If you are installing the DB2 REXX SQL NLS Language on minidisks, then you need to know the owners, virtual addresses, and write passwords of the DB2 REXX SQL NLS Language minidisk and the DB2 REXX SQL Service minidisk.

If you defined the DB2 REXX SQL NLS Language minidisk with the default options, the owner is SQLMACH, and the virtual address is 298 (for UCENG). The default password in the ELOINLS EXEC is WSQL; however, this is probably different from the password you assigned when you defined the disk.

If DB2 REXX SQL was installed with the default options, the DB2 REXX SQL Service minidisk owner is SQLMACH, the virtual address is 199, and the write password is WSQL.

For SFS Directories:

If you are installing a DB2 REXX SQL NLS Language on SFS directories, then you need to know the file pool ID, the directory owner, and the directory name for both the REXX SQL NLS directory and the DB2 RXSQL Service directory.

The ELOINLS EXEC default for the DB2 REXX SQL NLS Language directory is VMSYS:SQLMACH.RXSQL.NLSPROD, and the default for the DB2 REXX SQL Service directory is VMSYS:SQLMACH.RXSQL.SERVICE.

You may want to use the Language id for the DB2 REXX SQL NLS Language directory name, especially if you are planning on installing more than one language. As an example the Language ID for Upper Case English is ECENG.

For both minidisks and SFS directories:

You must change the current language by typing:

```
SET LANGUAGE langid
```

NOTE: **langid** can be UCENG for Upper Case English, FRANC for French, HANZI for Simplified Chinese, or KANJI for Japanese.

To invoke the ELOINLS EXEC, type:

```
ELOINLS
```

You can expect the ELOINLS EXEC to take approximately 5 minutes to complete. Processing time will vary depending on current system load and time spent responding to prompts.

The first prompt asks you if you want to install DB2 REXX SQL NLS Help files for Version 6 Release 1 Modification 0.

The default is No. Press enter to execute the default.

To continue, type the following and press ENTER:

```
1
```

The next prompt asks you which DB2 REXX SQL NLS Help Language you wish to install.

There is no default available for this prompt.

To continue, type the following and press ENTER:

```
1         to install Upper Case English
2         to install French
3         to install Simplified Chinese
4         to install Japanese
QUIT      to exit at this point in the installation.
```

If you are on a VM/ESA installation the exec issues a prompt asking if DB2 REXX SQL is installed on minidisks or in SFS directories.

To continue, type one of the following, and press ENTER:

```
M         for minidisk
S         for SFS directory
111       to stop the installation process.
```

The exec then displays the defaults for the REXX SQL NLS minidisk, or SFS directory.

You are asked if you want the defaults. Type one of the following responses and press ENTER:

```
1         to accept the defaults and proceed
0         to specify different values
111       to stop the installation process.
```

If you typed 0 and pressed ENTER, you will be asked to specify, in order, a new:

1. Owner (minidisk) or file pool ID (SFS directory)
2. Virtual address (minidisk) or directory owner (SFS directory)
3. Write password (minidisk) or directory name (SFS directory)

The new values are listed for your verification. Type one of the following responses, and press ENTER.

```
1         to accept the new values and proceed
0         to specify different values
111       to stop the installation process.
```

The ELOINLS EXEC then displays the defaults for the DB2 REXX SQL Service minidisk or SFS directory.

You are asked if you want the defaults. Type one of the following responses, and press ENTER.

```
1         to accept the defaults and proceed
0         to specify different values
111       to stop the installation process.
```

If you typed 0 and pressed ENTER, you will be asked to specify , in order, a new:

1. Owner (minidisk) or file pool ID (SFS directory)
2. Virtual address (minidisk) or directory owner (SFS directory)
3. Write password (minidisk) or directory name (SFS directory)

The new values are listed for your verification. Type one of the following responses, and press ENTER.

```
1         to accept the new values and proceed
0         to specify different values
111       to stop the installation process.
```

A message with a return code of 888 displays when processing has finished. The REXX SQL NLS tape is positioned at the tape mark following the end of the last file on the tape (file 12).

For SFS directories

Step 7: Grant read access to the REXX SQL NLS Language files

Type:

```
GRANT AUTH * * VMSYS:SQLMACH.RXSQL.NLSPROD TO PUBLIC (READ
```

or, depending on the command you used to enroll users,

```
GRANT AUTH * * VMSYS:SQLMACH.RXSQL.NLSPROD TO SQLUSER (READ
```

Repeat the above command with the user ID substituted in for SQLUSER to grant authority to more users.

For both minidisks and SFS directories:

Step 8: Log off the MAINT user ID

Log off the MAINT user ID if installation will be continued from another machine.

Step 9: Log on to the installer user ID

To continue with the DB2 REXX SQL NLS Language installation process, you should log on to the user ID that will be performing the installation into the database.

Step 10: Install or refresh the DB2 REXX SQL NLS Language Help Text for each database

Note: If a previous release of the REXX SQL NLS Language is currently installed, then you refresh the Language Help text by applying service to it instead of installing it. There are different steps to follow depending on whether you are installing or refreshing. If you are installing, follow the instructions in **Step 10a**. If you are refreshing, follow the instructions in **Step 10b**.

To complete this step you must:

- Know the connect password for SQLDBA
- Know the language key of the Language. (S002 is the language key for Upper Case English, S003 for French, D001 for Japanese, and D003 for Simplified Chinese)
- Have previously installed the American English Help Text.

For minidisks:

Type the following statements, and press enter after each line.

```
LINK SQLMACH 195 195 RR
ACCESS 195 Q
LINK SQLMACH 199 199 RR
ACCESS 199 V
LINK SQLMACH 298 298 RR
ACCESS 298 N
```

This links and accesses you to the DB2 Server for VM Production minidisk, the DB2 REXX SQL Service minidisk and the DB2 REXX SQL NLS Language minidisk. These statements may vary slightly if DB2

Server for VM, DB2 REXX SQL, or the DB2 REXX SQL NLS Language were not installed using the defaults.

For SFS directories

Type the following statements, and press enter after each line.

```
ACCESS VMSYS:SQLMACH.SQL.PRODUCTION  Q
ACCESS VMSYS:SQLMACH.RXSQL.SERVICE  V
ACCESS VMSYS:SQLMACH.RXSQL.NLSPROD  N
```

This gives you access to the DB2 for VM Production SFS directory, the DB2 REXX SQL Service SFS directory and the DB2 REXX SQL NLS Language SFS directory. These statements may vary slightly if DB2 for VM, DB2 REXX SQL, or the DB2 REXX SQL NLS Language were not installed using the defaults.

For both minidisks and SFS directories:

Enter the following statements *for each database* in which you intend to install or refresh the DB2 REXX SQL NLS Language Help text:

```
SQLINIT DBNAME(dbname)
```

This statement initializes the user to the DB2 for VM database in which the NLS Language Help Text will be installed or refreshed. Replace `dbname` with the name of your database.

After you run the SQLINIT EXEC, you must either install the DB2 REXX SQL NLS Language or apply service to the existing installed NLS Language Help text.

Step 10a: Install the DB2 REXX SQL NLS Language

Invoke the ELOHNLS EXEC that performs this task for you by:

- Issuing a connect to the database as authorization ID SQLDBA
- Inserting a row containing information about the language being installed into the SQLDBA.ELOLANGUAGE table
- Loading the SQLDBA.ELOTEXT2 with text from file ELO2S002 MACRO, or ELO2S003 MACRO, or ELO2D001 MACRO, or ELO2D003 MACRO. Depending on which language you are enabling at the time.

To invoke the ELOHNLS EXEC type:

```
ELOHNLS <LANGkey (langkey)> <CONnect(SQLDBA/password)>
```

Text that is in the < > symbols is optional. You will be prompted for both the `langkey` and the connect `SQLDBA/password` if you invoke ELOHNLS without these options.

A message "*NLS Help text installed successfully in help tables.*" displays when the NLS Help Text is successfully loaded in the Help tables.

IF THE ELOHNLS EXEC FAILS:

An error message will identify the problem. If the error occurred during DBSU processing, check the console listing for more details. Correct the error, and rerun the ELOHNLS EXEC.

When this EXEC runs successfully the Language Help text is installed. Verify the Language Help text by following the instructions in **Step 11**.

Step 10b: Apply service to the existing NLS Language Help Text

Invoke the ELOSHLP EXEC which applies service for you.

To invoke the ELOSHLP EXEC issue the following command:

```
EXEC ELOSHLP <LANGkey(langkey)> <CONnect(SQLDBA/password)>
```

A complete description of this exec is in Chapter 4 of this manual.

When this exec has successfully serviced the Language Help text, verify the Language Help text by following the instructions in **Step 11**.

See "Changing the Default Help Text Language" later in this chapter if you want to make the language you just installed or refreshed the default Help Text language.

Step 11: Verify the installation

To complete the verification you must have a private dbspace available.

For minidisks

To verify that the installation of the DB2 REXX SQL NLS Language was successful, enter the following commands:

```
LINK SQLMACH 198 198 RR rsql
ACCESS 198 P
```

These statements link and access the DB2 REXX SQL Production minidisk SQLMACH 198 in read mode. `rsql` is the read password. The DB2 REXX SQL Production minidisk is accessed in file mode P. The DB2 REXX SQL NLS Language minidisk is still accessed with the file mode of N. The DB2 REXX SQL NLS Language minidisk must be accessed before the DB2 REXX SQL Production minidisk and before any other DB2 REXX SQL NLS minidisks.

For SFS directories:

To verify that the installation of the DB2 REXX SQL NLS Language was successful, enter the following commands:

```
ACCESS VMSYS:SQLMACH.RXSQL.PRODUCTION  P
```

This statement accesses the DB2 REXX SQL Production SFS directory in file mode P. The DB2 REXX SQL NLS Language SFS directory is still accessed with a file mode of N. The DB2 REXX SQL NLS Language SFS directory must be accessed before the DB2 REXX SQL Production SFS directory and before any other DB2 REXX SQL NLS SFS directory.

For both minidisks and SFS directories:

To continue with the verification, issue the following CMS command:

```
SET LANGUAGE langid (ADD ELO USER
```

The SET LANGUAGE command changes the current language of your CMS session and forces CMS to pick up the DB2 REXX SQL NLS Language Message repository for REXX SQL. Remember, as an example, the **langid** for Upper Case English is **UCENG**. Refer to the *DB2 REXX SQL for VM/ESA Reference* manual, for a complete description of the following steps.

To complete your verification type:

```
EMPCRE
```

This exec creates the RXEMP table and view, and loads data into the table. If you get an error when you run this exec, make sure that the RXEMP does not already exist in your database space, and make sure that you have the resource authority needed to create a table. If you are still encountering problems, check the *DB2 REXX SQL for VM/ESA Reference* manual, for more information.

Now type:

```
RXSELECT * FROM RXEMP
```

Is the message text for number ELO2121I translated?

To continue the verification, exit from editing the file, and type:

```
HELP RXSQL RXSELECT
```

Is the Help Panel displayed in the Language you just enabled?

Now, exit from HELP, and type:

```
RXSQLANG RX(langid)
```

This will ensure that the HELP information displayed by DB2 REXX SQL will be in the Language you just enables. Check the *DB2 REXX SQL for VM/ESA Reference* manual, for more information about the REXX SQLANG EXEC.

To finish your verification type:

```
RXSQLHLP +116
```

Is the first section of the file displayed in the Language you just enabled?

Exit from the file you are editing.

If you answered **Yes** to all of the above questions, then you have successfully installed the DB2 REXX SQL NLS Language.

If you did not answer **Yes** to all of the above questions, verify that the NLS Language minidisk or SFS directory is accessed before the DB2 REXX SQL Production minidisk. If it is not, then reaccess it so that it is. Next, make sure that the CMS command "SET LANGUAGE **langid** (ADD ELO USER" was issued successfully. If you still encounter untranslated text that is supposed to appear in the DB2 REXX SQL NLS Language, then run the ELODNLS EXEC to delete the Language CMS HELP and any help text that may have been installed in the database, return to Step 6, and repeat the installation from that point.

For more information about running the ELODNLS EXEC refer to Appendix C in this manual.

Step 12: Log Off the Installer User ID

You are finished installing the DB2 REXX SQL NLS Language.

Changing the Default Help Text Language

If you wish to make the language you just installed the default Help Text language for all users connecting to the database, then issue the following commands:

```
SQLINIT DBNAME(dbname)
```

Replace `dbname` with the name of your database.

```
ISQL
CONNECT SQLDBA IDENTIFIED BY password
SELECT * FROM SQLDBA.ELOOPTIONS
UPDATE SQLDBA.ELOOPTIONS SET VALUE = 'langkey' WHERE
RXSQLOPTION = 'DEFAULT LANGUAGE'
COMMIT WORK
EXIT
```

`password` is the password assigned to SQLDBA.

Activating DB2 REXX SQL NLS Language

The steps for activating the functions of the DB2 REXX SQL NLS Language are summarized below:

Once the installation of the DB2 REXX SQL NLS Language is complete, each user must do the following:

- Access the DB2 REXX SQL NLS Language minidisk or SFS directory
- Access the DB2 REXX SQL Production minidisk or SFS directory
- Issue the CMS command “SET LANGUAGE langid (ADD ELO USER” so that the CMS Message Repository for DB2 REXX SQL NLS Language will be accessed.
- Execute the RXSQLANG EXEC if appropriate

Notes:

1. The DB2 REXX SQL NLS Language minidisk or SFS directory must be accessed before the DB2 REXX SQL Production minidisk or SFS directory, and before any other DB2 REXX SQL NLS minidisk or SFS directory. This must be done to view the DB2 REXX SQL error messages and CMS Help text in the desired Language.
2. To switch between the current NLS Language and any other NLS language, you must change the order in which the NLS minidisks or SFS directories are accessed and issue the "SET LANGUAGE" command for the other NLS language. To return to the default language (American English), access the DB2 REXX SQL Production minidisk or SFS directory before any of the other NLS minidisks or SFS directories, and issue the "SET LANGUAGE AMENG" command.
3. You may want to execute the RXSQLANG EXEC to see Help information in the desired NLS Language. The *DB2 REXX SQL for VM/ESA Reference* manual, contains a complete description of this exec.

Preventive Service Planning and Service Instructions

There will be no preventive service for a DB2 REXX SQL NLS Language; however corrective service will be available.

If the file ELO2S002, ELO2S003, ELO2D001, and/or ELOSD003 MACRO is serviced, then you must invoke the Help Text service exec, ELOSHLP, for each database in which the DB2 REXX SQL NLS Language Help Text is installed.

To invoke the ELOSHLP EXEC issue the following command:

```
EXEC ELOSHLP <LANGkey(langkey)> <CONnect(SQLDBA/password)>
```

A complete description of this exec can be found in Chapter 4 of this manual.

Further details regarding Service can be found in Chapter 4 of this manual.

Chapter 4. Installing Preventive and Corrective Service

This chapter provides instructions for installing preventive service and corrective service for DB2 RXSQL. It also contains instructions for reloading packages and HELP text.

Preventive service, the most common form of service, is shipped on a VM-PUT tape. If you receive a VM-PUT tape that contains DB2 RXSQL preventive service, “Installing Preventive Service” on page 59.

Corrective service is provided only in special situations. If you receive an DB2 RXSQL corrective service tape, instructions for its use are available from your IBM Support Center. Refer to “Installing Corrective Service” on page 60 for specific instructions.

If DB2 RXSQL requires service, the MAINT machine, or its equivalent, must have read/write access to a minidisk with free space equivalent to at least 5 cylinders of an IBM 3380 storage device. Figure 18 on page 59 shows the minimum free space required for the work minidisk when the block size is 4096 bytes.

Minidisk	Virtual Address	Access Mode	3350 Cylinders	3375 Cylinders	3380 Cylinders	3390 Cylinders	9345 Cylinders	FB-512 Blocks
MAINT machine: Work minidisk for service	194 or 191	A or C	7	8	5	4	5	6000

Figure 18. Database Tables Used for DB2 RXSQL HELP Text

Installing Preventive Service

To apply DB2 RXSQL preventive service from a VM-PUT tape, use the VM VMSERV EXEC and the DB2 RXSQL preventive service EXEC. The name of the preventive service EXEC is listed in the Program Service section of the Program Directory. The DB2 RXSQL files on a VM-PUT tape are described in the VM-PUT document that comes with the tape.

To install preventive service, you must do the following:

1. Review the DB2 RXSQL service *Memo to Users* carefully before using the VMSERV EXEC and the DB2 RXSQL preventive service EXEC to apply service.
2. Load service for DB2 RXSQL from the VM-PUT tape. The service is loaded to the DB2 RXSQL service disk, and the DB2 RXSQL production disk.

   If you installed DB2 RXSQL on DB2 Server for VM disks, the defaults are:

   Production minidisk = SQLMACH 195
   Service minidisk = SQLMACH 193
   Production SFS directory = VMSYS:SQLMACH.SQL.PRODUCTION

Service SFS directory = VMSYS:SQLMACH.SQL.SERVICE.

If you installed DB2 RXSQL on separate disks, the defaults are:

Production minidisk = SQLMACH 198
Service minidisk = SQLMACH 199
Production SFS directory = VMSYS:SQLMACH.RXSQL.PRODUCTION
Service SFS directory = VMSYS:SQLMACH.RXSQL.SERVICE.

3. If instructed by the preventive service EXEC, reload the DB2 RXSQL package into each application server in which DB2 RXSQL was installed. For information on reloading the DB2 RXSQL package, refer to “The ELOAMOD EXEC” on page 78.
4. If instructed by the preventive service EXEC, reinstall the HELP text in each application server in which DB2 RXSQL was installed. Follow the instructions in “Reloading HELP Text” on page 64.

The DB2 RXSQL preventive service EXEC performs the following functions:

- Loads all CMS files from DB2 RXSQL tape file 3 on the VM-PUT tape to a work disk.
- Updates the appropriate DB2 RXSQL production and service files.
- Determines if a link-edit is necessary. If it is, the preventive service EXEC calls the ELOLKED EXEC. For information on the prerequisites for running the ELOLKED EXEC, refer to “The ELOLKED EXEC” on page 81.

After installing preventive service, you should verify that DB2 RXSQL is correctly installed by following the procedure outlined in “Installation Verification” on page 33.

Installing Corrective Service

If you receive a corrective service tape, you also receive instructions for its use from your IBM Support Center. You must follow these instructions to copy the contents of the tape to the MAINT machine’s A-disk, and then use the ELOSCOR EXEC to install the corrective service.

Step 1 Load the Service Files to the MAINT Work Minidisk

You will be using the MAINT machine to apply corrective service. Access the MAINT work minidisk as file mode A. Type the following statements to load the service files supplied by IBM to this minidisk:

- To identify the virtual device address (cuu) of the MAINT work minidisk, type:

  ```
  ACCESS cuu A
  ```

  The *cuu* is normally specified as 194 or 191.
- To identify the real device number of the tape device to be accessed as virtual tape address 181, type:

  ```
  ATTACH rdev TO MAINT AS 181
  ```

  The distribution tape must be mounted on the device defined as virtual address 181.

- To rewind the tape, type:

  ```
  VMFPLC2 REW
  ```

- To load tape file 1 from the corrective service tape to the MAINT work minidisk, type:

  ```
  VMFPLC2 LOAD * * A (EOF 1
  ```

Step 2 Rename the Corrective Service Files

Before proceeding and as instructed by your IBM Support Center, you must rename the *file types* of the corrective service files that you just loaded from the tape.

Step 3 Apply Corrective Service to DB2 RXSQL Using the ELOSCOR EXEC

You are now ready to use the ELOSCOR EXEC to install corrective service. This EXEC is supplied with DB2 RXSQL and resides on the service disk. It applies the service based on the contents of the corrective service tape. It does not use service files for other IBM products. These extra files remain on the MAINT work minidisk.

The ELOSCOR EXEC also determines whether or not a link-edit is necessary. If it is, the ELOSCOR EXEC calls the ELOLKED EXEC. For information on the prerequisites for running the ELOLKED EXEC, refer to “The ELOLKED EXEC” on page 81.

If the package has been serviced, the ELOSCOR EXEC issues a message indicating that the DB2 RXSQL package must be reloaded. You must reload this package into each application server on which DB2 RXSQL was installed. Follow the instructions in “Reloading the DB2 RXSQL Package” on page 64.

If the HELP text has been serviced, the ELOSCOR EXEC issues a message indicating that the HELP text must be reinstalled. You must reinstall this HELP text in each application server in which DB2 RXSQL was installed. Follow the instructions in “Reloading HELP Text” on page 64.

Step 3.1 Access the Appropriate Disks

To apply service to DB2 RXSQL, you must have write access to the DB2 RXSQL production and service disks and read access to the DB2 production and service disks. The procedure you must follow to access the appropriate disks depends on whether DB2 RXSQL is installed on minidisks or in SFS directories. The procedure to follow in each case is described in the following sections.

Accessing DB2 RXSQL and DB2 Disks When DB2 RXSQL Installed on Minidisks

If DB2 RXSQL is installed on minidisks, the disks that you must access before applying corrective service depends on whether or not DB2 RXSQL was installed on the same disks as DB2, as shown in Figure 19 on page 62.

Disks to Access	DB2 RXSQL Installed on DB2 Minidisks	DB2 RXSQL Installed on Separate Minidisks	
		DB2 Product is on Minidisk	DB2 Product is in SFS Directories
DB2 production minidisk	**X**	**X**	
DB2 service minidisk	**X**	**X**	
DB2 RXSQL production minidisk		**X**	**X**
DB2 RXSQL service minidisk		**X**	**X**
DB2 production SFS directory			**X**
DB2 service SFS directory			**X**

Figure 19. Accessing DB2 RXSQL and DB2 Disks To Apply Corrective Service

DB2 RXSQL Was Installed on DB2 Minidisks: If DB2 RXSQL was installed on DB2 minidisks, specify the following commands to link and access the DB2 production and service minidisks:

- To link and access the DB2 production minidisk, SQLMACH 195, which also contains the DB2 RXSQL production files, type:

```
LINK SQLMACH 195 195 W writepw
ACCESS 195 P
```

- To link and access the DB2 service minidisk, SQLMACH 193, which also contains the DB2 RXSQL service files, type:

```
LINK SQLMACH 193 193 W writepw
ACCESS 193 V
```

DB2 RXSQL Was Installed on Separate Minidisks: If DB2 RXSQL was not installed on DB2 minidisks, specify the following commands to link and access the DB2 RXSQL production and service minidisks and the DB2 production and service disks:

- To link and access the DB2 RXSQL production minidisk, SQLMACH 198, type:

```
LINK SQLMACH 198 198 W writepw
ACCESS 198 P
```

- To link and access the DB2 RXSQL service minidisk, SQLMACH 199, type:

```
LINK SQLMACH 199 199 W writepw
ACCESS 199 V
```

- You must also specify one of the following:
  - If DB2 was installed on minidisks, type the following to link and access the DB2 production and service minidisks, SQLMACH 195 and 193:

```
LINK SQLMACH 195 195 RR
LINK SQLMACH 193 193 RR
ACCESS 195 Q
ACCESS 193 W
```

– If DB2 was installed in SFS directories, type the following to access the DB2 production and service directories:

```
ACCESS VMSYS:SQLMACH.SQL.PRODUCTION Q
ACCESS VMSYS:SQLMACH.SQL.SERVICE    W
```

Accessing DB2 RXSQL and DB2 Disks When DB2 RXSQL Installed in SFS Directories

If DB2 RXSQL is installed in SFS directories, the disks that you must access before applying corrective service depends on whether or not DB2 RXSQL and the DB2 product are installed on the same disks, as shown in Figure 20 on page 63:

Disks to Access	DB2 RXSQL Installed in DB2 SFS Directories	DB2 RXSQL Installed in Separate SFS Directories	
		DB2 Product is on Minidisk	DB2 Product is in SFS Directories
DB2 production SFS directory	**X**		**X**
DB2 service SFS directory	**X**		**X**
DB2 RXSQL production SFS directory		**X**	**X**
DB2 RXSQL service SFS directory		**X**	**X**
DB2 production minidisk		**X**	
DB2 service minidisk		**X**	

Figure 20. Accessing DB2 RXSQL and DB2 Disks To Apply Corrective Service

DB2 RXSQL Was Installed in DB2 SFS Directories: If DB2 RXSQL was installed on DB2 SFS directories, specify the following commands to access the DB2 production and service SFS directories:

- To access the DB2 production SFS directory, which also contains the DB2 RXSQL production files, type:

  ```
  ACCESS VMSYS:SQLMACH.SQL.PRODUCTION P (FORCERW
  ```

- To access the DB2 service SFS directory, which also contains the DB2 RXSQL service files, type:

  ```
  ACCESS VMSYS:SQLMACH.SQL.SERVICE V (FORCERW
  ```

DB2 RXSQL Was Installed in Separate SFS Directories: If DB2 RXSQL was installed on separate SFS directories, specify the following commands to access the DB2 RXSQL production and service SFS directories and the DB2 production and service disks:

- To access the DB2 RXSQL production SFS directory, type:

  ```
  ACCESS VMSYS:SQLMACH.DB2 RXSQL.PRODUCTION P (FORCERW
  ```

- To access the DB2 RXSQL service SFS directory, type:

```
ACCESS VMSYS:SQLMACH.DB2 RXSQL.SERVICE V (FORCERW
```

- You must also type one of the following commands:
  - If DB2 was installed in SFS directories, type the following to access the DB2 Server for VM production and service directories:

    ```
    ACCESS VMSYS:SQLMACH.SQL.PRODUCTION Q
    ACCESS VMSYS:SQLMACH.SQL.SERVICE W
    ```

  - If DB2 was installed on minidisks, type the following to link and access the DB2 production and service minidisks, SQLMACH 195 and 193:

    ```
    LINK SQLMACH 195 195 RR
    LINK SQLMACH 193 193 RR
    ACCESS 195 Q
    ACCESS 193 W
    ```

Step 3.2 Call the ELOSCOR EXEC

To call the ELOSCOR EXEC to apply the DB2 RXSQL corrective service, type:

```
ELOSCOR
```

For information on running the ELOSCOR EXEC, refer to “The ELOSCOR EXEC” on page 82.

Step 3.3 Release Disks

Release any SFS directories to which you are linked and release and detach any minidisks to which you are linked.

For a description of the CP commands described in this section, refer to the *VM/ESA: CP Command and Utility Reference* manual for your VM operating system. For a description of the CMS commands described in this section, refer to the *VM/ESA: CMS Command Reference* manual for your VM operating system.

Reloading HELP Text

When you are installing preventive service or corrective service, the preventive service EXEC or the ELOSCOR EXEC may issue a request to reinstall the HELP text in each DB2 application server in which DB2 RXSQL was installed. As instructed, invoke the ELOSHLP EXEC for each DB2 application server into which DB2 RXSQL was installed. Refer to “The ELOSHLP EXEC” on page 83 for instructions on running this EXEC before using it.

The ELOSHLP EXEC is supplied with DB2 RXSQL and resides on the DB2 RXSQL service disk. The ELOSHLP EXEC services the DB2 RXSQL secondary-level HELP tables. It will service the AMENG HELP text as well as any national language support language that has been installed.

Reloading the DB2 RXSQL Package

When you are installing preventive service or corrective service, the preventive service EXEC or the ELOSCOR EXEC may issue a request to reload the DB2 RXSQL package into each application server in which DB2 RXSQL was installed.

Use the ELOAMOD EXEC supplied with DB2 RXSQL to load DB2 RXSQL packages into an DB2 application server. For more information about the use of the ELOAMOD EXEC, refer to “The ELOAMOD EXEC” on page 78.

Appendix A. Files Supplied by IBM

This appendix lists the load library and module, DB2 RXSQL HELP files, MACROs, EXECs, selected TEXT files, and corrective service files necessary for installing DB2 RXSQL.

Basic System Files

The basic system files that are built at installation time are:

EXECSQL MODULE
RXSQL MODULE
RXSQL LOADLIB.

Programs and HELP Files

The programs and HELP files that are provided for general use are:

RXSQL HELPMENU
RXCASE HELPRXSQ
RXSELECT HELPRXSQ
RXSQLANG HELPRXSQ
RXSQLEX HELPRXSQ
RXSQLHLP HELPRXSQ
RXSQLOP HELPRXSQ
RXSQLVL HELPRXSQ
RXCMDS HELPRXSQ
RXUSAGE HELPRXSQ
RXCASE EXEC
RXSQLANG EXEC
RXSQLEX EXEC
RXSELECT EXEC
RXSELECT XEDIT
RXMORE XEDIT
RXSQLHLP EXEC
RXSQLHLP XEDIT
RXSQLOP EXEC
RXSQLOP XEDIT
RXSQLVL EXEC.

Example EXECs

The example EXECs and the sample input file that are described in this manual are:

EMPCRE EXEC
EMPSEL EXEC
EMPPRP EXEC
EMPSELX EXEC
EMPPRPM EXEC
EMPUPD EXEC
EMPLOYEE INPUT.

Message Repository

The message repository for mixed-case American English is ELOUME TXTAMENG.

Installation Files

Files for installation are used to:

- Identify the product:

  I5648ELO 061004
  I5648ELO MEMO (*Memo to Users*)

- Contain the installation program:

  I5648ELO EXEC

- Build MODULE and LOADLIB:

  ELOLKED EXEC

- Load the DB2 RXSQL package:

  ELOAMOD EXEC
  ELORXSQL MACRO

- Load the DB2 RXSQL message repository:

  ELOLANG EXEC
  ELOLANMS EXEC

- Build MODULE and LOADLIB by ELOLKED:

  EDCSPC TXTLIB
  EDCXMEM TEXT
  ELOCDECH TEXT
  ELOCDOFM TEXT
  ELOCECVT TEXT
  ELOCFCVT TEXT
  ELOCGCVT TEXT
  ELOCGECV TEXT
  ELOCHEXD TEXT
  ELOCHXDS TEXT
  ELOCHXTB TEXT
  ELOCLECV TEXT
  ELOCLFCV TEXT
  ELOCLGCV TEXT
  ELOCMEMM TEXT
  ELOCPRTF TEXT
  ELOCSBRK TEXT
  ELOCSCMP TEXT
  ELOCSPRT TEXT
  ELOCSSPN TEXT
  ELOCSSTR TEXT
  ELOCTFDL TEXT
  ELOCTOUP TEXT
  ELODUMMY TEXT
  ELOECREA TEXT
  ELOECXA TEXT

ELOECNXA TEXT
ELOEPENV TEXT
ELOFCLOS TEXT
ELOFCONN TEXT
ELOFCREA TEXT
ELOFDECL TEXT
ELOFDESC TEXT
ELOFDROP TEXT
ELOFELUW TEXT
ELOFEXEC TEXT
ELOFFETC TEXT
ELOFIMME TEXT
ELOFOPER TEXT
ELOFOPEN TEXT
ELOFPREP TEXT
ELOFPURG TEXT
ELOFPUT TEXT
ELOFSQL TEXT
ELOFSTMT TEXT
ELOFTRAC TEXT
ELOFXPRE TEXT
ELOLK33 TEXT
ELOP TEXT
ELOPA TEXT
ELOPR TEXT
ELOPV TEXT
ELOPW TEXT
ELOSBUIL TEXT
ELOSCONV TEXT
ELOSDBR TEXT
ELOSDESC TEXT
ELOSDTCH TEXT
ELOSDTIN TEXT
ELOSEXTD TEXT
ELOSFETC TEXT
ELOSFORM TEXT
ELOSINFE TEXT
ELOSLEX TEXT
ELOSMEM TEXT
ELOSREXX TEXT
ELOSSCA TEXT
ELOSSERR TEXT
ELOSSSB TEXT
ELOSSTEM TEXT
ELOSUSER TEXT
ELOXDTCO TEXT
ELOXDTLO TEXT
ELOXECOM TEXT
ELOXGETE TEXT
ELOXGETM TEXT
ELOXGLBV TEXT
ELOXLWRT TEXT
ELOXMEM TEXT
ELOXREXX TEXT

ELORXSQL TEXT
ELOXUPPE TEXT
ELOXVAL TEXT
EXECSQL TEXT
RXSQL TEXT
SQLEXEC TEXT

- Tailor the DB2 RXSQL MODULE:

  RXSQL ASSEMBLE

- Install DB2 RXSQL HELP text tables:

  ELOHLPLD EXEC
  ELOHELPI EXEC
  ELOSDBU MACRO
  ELO1S001 MACRO
  ELO2S001 MACRO.

Corrective Service Maintenance Files

Files for corrective service are used to:

- Install corrective maintenance:

  ELOSCOR EXEC

- Service the RXSQL HELP text tables:

  ELOSHLP EXEC.

National Language Support Files

Files for installing and deleting NLS HELP text:

ELOINLS EXEC
ELODNLS EXEC.

Migration Considerations

The files supplied by IBM for DB2 RXSQL Version 6 Release 1 do not correspond directly to the files supplied for releases of Version 3.

The following DB2 RXSQL Version 3 Release 1 files, used to build MODULE and LOADLIB, are not required to run DB2 RXSQL Version 6 Release 1 and can be deleted:

ELOCF TEXT
ELOCM TEXT
ELOCP TEXT
ELODE TEXT
ELODT TEXT
ELOFE TEXT
ELOFP TEXT
ELOLK TEXT
ELOMN55 TEXT
ELOMN6 TEXT
ELOOP TEXT

ELOUT TEXT
ELOSH TEXT
ELOSM TEXT
ELOSQ TEXT
ELOST TEXT
ELOTM TEXT
ELOTR TEXT
ELOXP TEXT

The following DB2 RXSQL Version 3 Release 2 files, used to build MODULE and LOADLIB, are not required to run DB2 RXSQL Version 6 Release 1 and can be deleted:

ELOCF TEXT
ELOCM TEXT
ELOCP TEXT
ELODE TEXT
ELODT TEXT
ELOFE TEXT
ELOFP TEXT
ELOGL TEXT
ELOLK TEXT
ELOMN55 TEXT
ELOMN6 TEXT
ELOOP TEXT
ELOUT TEXT
ELOSH TEXT
ELOSM TEXT
ELOSQ TEXT
ELOST TEXT
ELOTM TEXT
ELOTR TEXT
ELOXP TEXT

The following DB2 RXSQL Version 3 Release 3 files, used to build MODULEs and LOADLIB, are not required to run DB2 RXSQL Version 6 Release 1 and can be deleted:

ELOPC TEXT
ELOPE TEXT
ELOPF TEXT
ELOPP TEXT
ELOPS TEXT
ELOPU TEXT

The following DB2 RXSQL Version 3 Release 4 files, used to build MODULEs and LOADLIB, are not required to run DB2 RXSQL Version 6 Release 1 and can be deleted:

I5688ELO 034004
I5688ELO MEMO
I5688ELO EXEC

Appendix B. Installation and Service EXECs

This appendix provides instructions for running the installation and service EXECs listed below.

The installation EXECs are:

I5648ELO Calls ELOLANG EXEC to load the DB2 RXSQL message repository.

Installs DB2 RXSQL on minidisks or in SFS directories.

Calls ELOLKED EXEC to link-edit DB2 RXSQL.

ELOAMOD Calls ELOLANG EXEC to load the DB2 RXSQL message repository.

Loads the DB2 RXSQL package into a DB2 Server for VM or non-DB2 Server for VM application server.

ELOHLPLD Calls ELOLANG EXEC to load the DB2 RXSQL message repository.

Installs DB2 RXSQL secondary-level HELP tables in a DB2 Server for VM application server.

ELOLKED Calls ELOLANG EXEC to load the DB2 RXSQL message repository.

Link-edits DB2 RXSQL.

The service EXECs are:

ELOSCOR Applies service depending on the contents of the corrective service tape.

ELOSHLP Services the secondary level HELP tables.

The I5648ELO EXEC

The I5648ELO EXEC installs DB2 RXSQL on minidisks or in SFS directories. It does not format the minidisks on which it is installing DB2 RXSQL. You must ensure that the minidisks can be written to.

Prerequisites

Before running the I5648ELO EXEC, ensure that:

- The I5648ELO EXEC has been loaded to the MAINT machine's work minidisk.
- The MAINT machine's work minidisk is accessed as file mode A.
- The tape device containing the DB2 RXSQL distribution tape is attached to the MAINT machine as virtual address 181.
- The database machine is shut down and you are logged off the SQLMACH machine (this is a prerequisite only if you are installing DB2 RXSQL onto minidisks).

- The minidisk onto which you plan to install DB2 RXSQL is linked using the same virtual device address as the real device address (for example, SQLMACH 198 must be linked as 198) if the minidisk belongs to you.
- The minidisks into which you plan to install DB2 RXSQL must not be linked with write access before invoking this EXEC, nor can any other user IDs be linked to these minidisks with write access.
- You have the following number of free file modes to access the DB2 RXSQL and DB2 disks:
  - If you are installing DB2 RXSQL on the DB2 disks, you need two free file modes
  - If you are installing DB2 RXSQL on separate disks, you need four free file modes
- You have the appropriate number of free virtual device addresses between 001 and 499 to link the DB2 RXSQL and DB2 minidisks if DB2 RXSQL or DB2 are installed on minidisks.

  If DB2 RXSQL and DB2 are installed on separate minidisks, you need four free addresses. Otherwise, you need two free addresses.
- You have access to the following text files:

  DMSCSL
  ARIRVSTC
  ARIUXDT
  ARIUXTM.

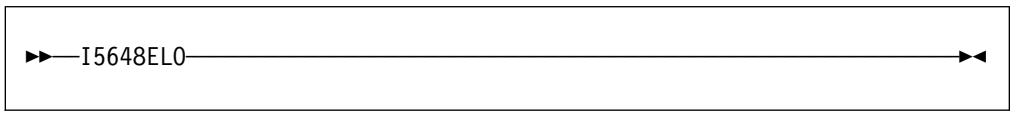
  For information on these files, refer to Figure 9 on page 18.

Authorization

Before running the I5648ELO EXEC, ensure that you have access to the following disks:

- If you are installing DB2 RXSQL on DB2 disks, you must have write access to the DB2 production and service disks.
- If you are installing DB2 RXSQL on separate disks, you must have write access to the DB2 RXSQL production and service disks and read access to the DB2 production and service disks.

Syntax



Description

When you run the I5648ELO EXEC, you must decide whether DB2 RXSQL is to be installed on separate disks or on DB2 Server for VM disks. If you are installing DB2 RXSQL on DB2 Server for VM disks, refer to “Installing DB2 RXSQL on DB2 Server for VM Minidisks or SFS Directories” on page 75. If not, refer to “Installing DB2 RXSQL on Separate Minidisks or SFS Directories” on page 76.

Installing DB2 RXSQL on DB2 Server for VM Minidisks or SFS Directories

If you are installing DB2 RXSQL on DB2 Server for VM disks, you are prompted to specify whether the DB2 Server for VM files reside on minidisks or in SFS directories.

The EXEC then displays the following defaults for the DB2 Server for VM production minidisk or SFS directory.

For minidisks the defaults are:

SQLMACH	User ID of the virtual machine that owns the DB2 Server for VM production minidisk
195	Virtual address of the DB2 Server for VM production minidisk
WSQL	Write access password for the DB2 Server for VM production minidisk.

For SFS directories the defaults are:

VMSYS	File pool ID
SQLMACH	SFS directory owner for DB2 Server for VM files
SQL.PRODUCTION	SFS directory name of the DB2 Server for VM production directory.

You must either accept these default values or supply different values.

The EXEC then displays the following defaults for the DB2 Server for VM service minidisk or SFS directory.

For minidisks the defaults are:

SQLMACH	User ID of the virtual machine that owns the DB2 Server for VM service minidisk
193	Virtual address of the DB2 Server for VM service minidisk
WSQL	Write access password for the DB2 Server for VM service minidisk.

For SFS directories the defaults are:

VMSYS	File pool ID
SQLMACH	SFS directory owner for DB2 Server for VM files
SQL.SERVICE	SFS directory name of the DB2 Server for VM service directory.

You must either accept the default values or supply different values.

The DB2 Server for VM production and service disks are then accessed with write access, and the DB2 RXSQL files loaded on the DB2 Server for VM disks.

The I5648ELO EXEC calls ELOLKED EXEC to do the system link-edit.

A message with a return code of 888 displays when processing is completed. The DB2 RXSQL distribution tape is positioned at the tape mark following the end of the last DB2 RXSQL file on the tape (file 4).

Installing DB2 RXSQL on Separate Minidisks or SFS Directories

If you are installing DB2 RXSQL on separate disks, you are prompted to specify whether the installation is on minidisks or in SFS directories, and whether the DB2 Server for VM system is installed on minidisks or in SFS directories.

The EXEC then displays the following defaults for the DB2 RXSQL production minidisk or SFS directory.

For minidisks the defaults are:

SQLMACH	User ID of the virtual machine that owns the DB2 RXSQL production minidisk
198	Virtual address of the DB2 RXSQL production minidisk
WSQL	Write access password for the DB2 RXSQL production minidisk.

For SFS directories the defaults are:

VMSYS	File pool ID
SQLMACH	SFS directory owner for DB2 RXSQL files
RXSQL.PRODUCTION	SFS directory name of the DB2 RXSQL production directory.

You must either accept the default values or supply different values.

The EXEC then displays the following defaults for the DB2 RXSQL service minidisk or SFS directory.

For minidisks the defaults are:

SQLMACH	User ID of the virtual machine that owns the DB2 RXSQL service minidisk
199	Virtual address of the service minidisk
WSQL	Write access password for the DB2 RXSQL service minidisk.

For SFS directories the defaults are:

VMSYS	File pool ID
SQLMACH	SFS directory owner for DB2 RXSQL files
RXSQL.SERVICE	SFS directory name of the DB2 RXSQL service directory.

You must either accept the default values or supply different values.

The EXEC then displays the following defaults for the DB2 Server for VM production minidisk or SFS directory.

For minidisks the defaults are:

SQLMACH	User ID of the virtual machine that owns the DB2 Server for VM production minidisk
195	Virtual address of the DB2 Server for VM production minidisk
RSQL	Read access password for the DB2 Server for VM production minidisk.

For SFS directories the defaults are:

VMSYS	File pool ID
SQLMACH	SFS directory owner for DB2 Server for VM files
SQL.PRODUCTION	SFS directory name of the DB2 Server for VM production directory.

You must either accept the default values or supply different values.

The EXEC then displays the following defaults for the DB2 Server for VM service minidisk or SFS directory.

For minidisks the defaults are:

SQLMACH	User ID of the virtual machine that owns the DB2 Server for VM service minidisk
193	Virtual address of the service minidisk
RSQL	Read access password for the DB2 Server for VM service minidisk.

For SFS directories the defaults are:

VMSYS	File pool ID
SQLMACH	SFS directory owner for DB2 Server for VM files
SQL.SERVICE	SFS directory name of the DB2 Server for VM service directory.

You must either accept the default values or supply different values.

The DB2 RXSQL production and service minidisks or SFS directories are then accessed with write access, and the DB2 Server for VM production and service minidisks or SFS directories are accessed with read-only access. The DB2 RXSQL files are also loaded on the DB2 RXSQL production and service disks.

The I5648ELO EXEC calls the ELOLKED EXEC to do the system link-edit.

A message with a return code of 888 displays when processing is completed. The DB2 RXSQL distribution tape is positioned at the tape mark following the end of the last DB2 RXSQL file on the tape (file 4).

If the I5648ELO EXEC is not successful:

An error message identifies the problem. Correct the error and rerun the I5648ELO EXEC.

Note: The error message output is spooled to the printer.

The ELOAMOD EXEC

The ELOAMOD EXEC loads the DB2 RXSQL package into a DB2 Server for VM or non-DB2 Server for VM application server. The DB2 RXSQL package has been preprocessed with the blocking option.

Prerequisites

To run the ELOAMOD EXEC, you must have:

- A user ID that has a read/write work disk accessed as file mode A
- Started the application server
- Established the application server into which you want to load the DB2 RXSQL package by typing:

  ```
  SQLINIT DBNAME(server_name)
  ```

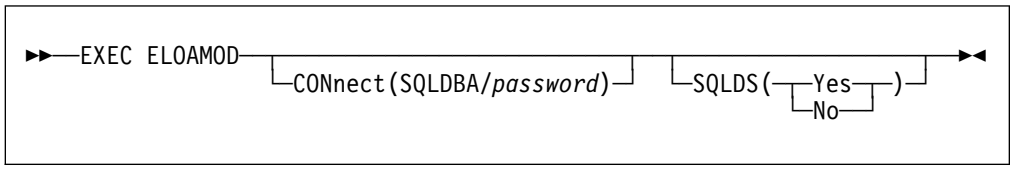
  If you are loading DB2 RXSQL into the default DB2 Server for VM application server, the *server_name* is SQLDBA.

Authorization

To run the ELOAMOD EXEC, you must have:

- Read access to the DB2 Server for VM production disk
- Read access to the DB2 RXSQL production and service disks
- An authorization ID called SQLDBA that has DBA authority on the DB2 Server for VM application server into which you are installing DB2 RXSQL
- The connect password for the SQLDBA authorization ID if you are loading the DB2 RXSQL package into a DB2 Server for VM application server
- DBA authority if you are loading DB2 RXSQL into a non-DB2 Server for VM application server, or if you are using the DRDA protocol.

Syntax



CONnect
Use the CONnect option if you do not want to be prompted to enter the password for the SQLDBA authorization ID.

This option is valid only when you are loading the DB2 RXSQL package into a DB2 Server for VM application server and are not using the DRDA protocol.

SQLDS
Use the SQLDS option if you do not want to be prompted about whether you are loading the DB2 RXSQL package into a DB2 Server for VM or non-DB2 Server for VM application server.

This option is useful when you are including several ELOAMOD invocations in an EXEC.

Note: SQLDS(YES) should be specified if loading the RXSQL package into a DB2 Server for VSE application server. The DRDA protocol must still be used even when loading RXSQL into a DB2 Server for VSE application server.

Description

If you are loading the DB2 RXSQL package into a non-DB2 application server, you must have DBA authority and the ability to use the DRDA protocol.

If you are loading the DB2 RXSQL package into a DB2 application server, and DRDA protocol is being used, you are prompted to specify whether or not you want to continue. If you want to continue the installation using the DRDA protocol, you must have DBA authority.

ELOAMOD does the following:

- Connects to the application server as SQLDBA when loading the DB2 RXSQL package into a DB2 Server for VM application server.
- Reloads the RXSQL package contained in the ELORXSQL macro file into the application server.
- Grants authority to the public to use DB2 RXSQL.

The following message is displayed when the package is successfully loaded into the application server.

```
PORTABLE PACKAGE RELOAD completed successfully.
```

If the ELOAMOD EXEC is not successful:

An error message identifies the problem. Correct the error and rerun the ELOAMOD EXEC.

Note: The error message output is spooled to the printer.

The ELOHLPLD EXEC

The ELOHLPLD EXEC installs DB2 RXSQL secondary-level HELP tables into the DB2 application server. Secondary-level HELP is not supported on non-DB2 application servers, or when using the DRDA protocol.

Prerequisites

Before running the ELOHLPLD EXEC, ensure that you have the following:

- A user ID that has a read/write work disk accessed as file mode A
- Established the application server into which you want to install the DB2 RXSQL table by typing:

  ```
  SQLINIT DBNAME(SQLDBA)
  ```

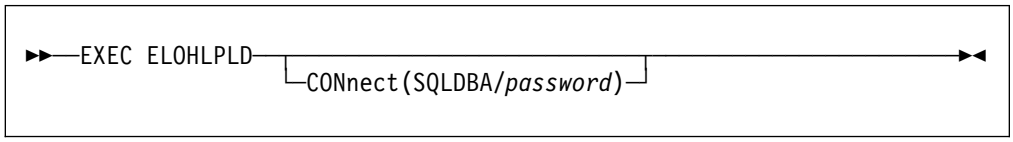
- A dbspace with the following characteristics is available or has been added to the list of available dbspaces:
  - DBSPACETYPE = 1 (so that it can be acquired as a public dbspace)
  - NPAGES = 256.

Authorization

To run the ELOHLPLD EXEC, you must have:

- Read access to the DB2 Server for VM production disk
- Read access to the DB2 RXSQL production and service disks
- The connect password for the SQLDBA authorization ID.

Syntax



CONnect
Use the CONnect option if you do not want to be prompted to enter the password for the SQLDBA authorization ID.

Description

ELOHLPLD does the following:

- Connects to the application server.
- Calls the ELOHELPI EXEC to create and load the HELP tables using the following files:
  - ELOSDBU MACRO, which contains the DBS Utility job input
  - ELO1S001 MACRO, which is the text for table ELOTEXT1
  - ELO2S001 MACRO, which is the text for table ELOTEXT2.

The ELOHELPI EXEC does the following:

- Acquires a public dbspace named RXSQHELP
- Creates table SQLDBA.ELOTEXT1 in the dbspace
- Creates table SQLDBA.ELOTEXT2 in the dbspace
- Creates index SQLDBA.ELOTEXT1INDEX on table ELOTEXT1
- Creates index SQLDBA.ELOTEXT2INDEX on table ELOTEXT2
- Loads the above tables with text from files ELO1S001 MACRO and ELO2S001 MACRO.

The following message is displayed when the HELP tables are successfully installed in the application server:

```
SECONDARY LEVEL TABLES installed successfully.
```

If the ELOHLPLD EXEC is not successful:

An error message identifies the problem. Correct the error and rerun the ELOHLPLD EXEC.

Note: The error message output is spooled to the printer.

The ELOLKED EXEC

The ELOLKED EXEC link-edits DB2 RXSQL and creates the following files on the DB2 RXSQL production disk:

- EXECSQL MODULE
- RXSQL MODULE
- RXSQL LOADLIB.

You can invoke this EXEC directly from CMS. It is also called from the I5688ELO EXEC, the ELOSCOR EXEC, and the preventive service EXECs.

Prerequisites

To run the ELOLKED EXEC, you must have:

- A work minidisk accessed as file mode A with free space equivalent to at least 2 cylinders of an IBM 3380 storage device
- Access to the following text files:

  DMSCSL
  ARIRVSTC
  ARIUXDT
  ARIUXTM.

  For information on these files, refer to Figure 9 on page 18.

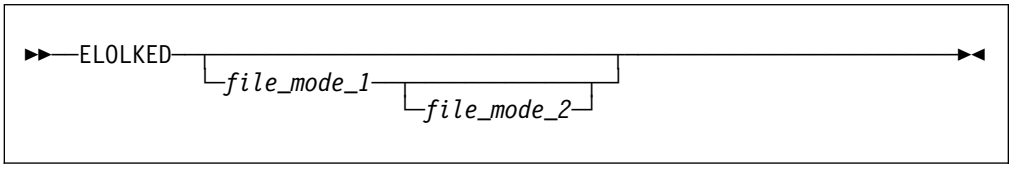
Authorization

To run the ELOLKED EXEC, you must have:

- Write access to the DB2 RXSQL production disk to allow files to be written to this disk during the link-edit
- Read access to the DB2 RXSQL service disk
- Read access to the DB2 production and service disks.

Syntax

This syntax is valid if used from CMS.



file_mode_1.
Is the file mode for the DB2 RXSQL production disk. The default file mode is P.

file_mode_2
Is the file mode for the DB2 RXSQL service disk. The default file mode is V.

Description

The ELOLKED EXEC link-edits DB2 RXSQL.

Performing an RXSQL System Link-Edit

If DB2 RXSQL was installed separately from the DB2 Server for VM files, you must link and access the DB2 RXSQL disks. If DB2 RXSQL was installed with the DB2 Server for VM files, it is unnecessary to link and access the DB2 RXSQL disks. You only have to link and access the DB2 Server for VM disks in write mode.

To perform a DB2 RXSQL system link-edit, do the following:

1. Access the DB2 RXSQL production disk in write mode.
2. Access the DB2 RXSQL service disk in read mode.
3. Access the DB2 production and service disks in read mode.
4. Type the following to call the ELOLKED EXEC to link-edit DB2 RXSQL:

   ```
   ELOLKED file_mode_1 file_mode_2
   ```

5. Release and detach the minidisks to which you are linked and release any SFS directories to which you are linked.

   The following message is displayed when the link-edit is successfully completed:

   ```
   DB2 RXSQL link-edit has been performed successfully.
   ```

Note: The RXSQL MODULE, EXECSQL MODULE, and RXSQL LOADLIB files are created by this EXEC.

If the ELOLKED EXEC is not successful:

An error message identifies the problem. Correct the error and rerun the ELOLKED EXEC.

Note: The error message output is spooled to the printer.

The ELOSCOR EXEC

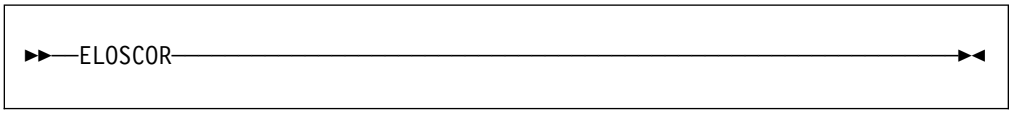
This EXEC is supplied with DB2 RXSQL and resides on the service disk. It applies the service based on the contents of the corrective service tape. It does not use service files for other IBM products, but leaves them on the MAINT work minidisk.

Authorization

To run the ELOSCOR EXEC, you must have:

- Write access to the DB2 RXSQL production and service disks
- Read access to the DB2 production and service disks.

Syntax



Description

The ELOSCOR EXEC determines whether a link-edit is necessary. If it is, the ELOSCOR EXEC calls the ELOLKED EXEC. The appropriate link-edits are done and the MODULE and LOADLIB files on the DB2 RXSQL production disk are replaced. For information on the prerequisites and authorization required to run the ELOLKED EXEC, refer to “The ELOLKED EXEC” on page 81.

If the package has been serviced, the ELOSCOR EXEC issues a message indicating that the DB2 RXSQL package must be reloaded. You must reload this package into each application server into which DB2 RXSQL was installed. For information on loading the DB2 RXSQL package, refer to “The ELOAMOD EXEC” on page 78.

The ELOSHLP EXEC

The ELOSHLP EXEC services the DB2 RXSQL secondary-level HELP tables. It services the AMENG HELP text as well as any national language support language that was installed. It is not supported for non-DB2 application servers, or when using the DRDA protocol.

Prerequisites

To run the ELOSHLP EXEC, you must have:

- Established the application server in which you want to service HELP tables by typing:

  ```
  SQLINIT DBNAME(SQLDBA)
  ```

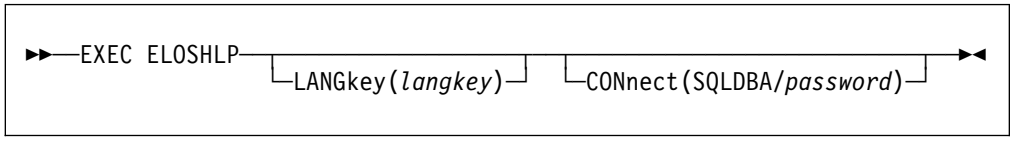
- The language key of the language being serviced
- A read/write work disk accessed as file mode A. If more than one language is installed in your RXSQL HELP tables, you will need free space on your A disk. The amount of space required is 1 cylinder of 3380 DASD (or equivalent) for each language installed, excluding the language you are servicing. For example, if three languages are installed in your HELP tables, your A disk must have a minimum of 2 free cylinders of 3380 DASD (or equivalent) to run the ELOSHLP EXEC. The ELOSHLP EXEC can then save the text for the languages not being serviced on your A disk while the service is being performed. After the service is performed, the ELOSHLP EXEC restores the languages to the database and removes them from your A disk.

Authorization

To run the ELOSHLP EXEC, you must have:

- The connect password for the SQLDBA authorization ID
- Read access to the RXSQL disks
- Read access to the DB2 Server for VM production disk.

Syntax



LANGkey
Use the LANGkey option if you do not want to be prompted to enter the language key for the language being serviced.

CONnect
Use the CONnect option if you do not want to be prompted to enter the password for the SQLDBA authorization ID.

Description

ELOSHLP does the following:

1. Connects to the application server
2. Uses the DBS Utility to:
   - Unload unchanged data from the HELP tables to temporary files on your A disk
   - Drop and recreate the HELP tables
   - Load the new data
   - Reload the saved data and erase the temporary files.

The following message is displayed when the HELP tables are serviced successfully:

```
SECONDARY LEVEL HELP TABLES serviced successfully.
```

If the ELOSHLP EXEC is not successful:

An error message identifies the problem. If the error occurred during DBS Utility processing, check the console listing for more details. Correct the error and rerun the ELOSHLP EXEC. The LASTING GLOBALV file contains the point at which the service EXEC had an error. Do not modify or delete this file. The temporary files ELO$TXT1 MACRO A and ELO$TXT2 MACRO A may have been created on your A disk. Do not modify or delete them. They will be used when you invoke the ELOSHLP EXEC again to complete the service.

Note: The error message output is spooled to the printer.

Appendix C. Online HELP Information

With DB2 RXSQL you can use any one of several national languages for messages and HELP information. (The HELP information is not supported for non-DB2 Server for VM application servers or when using the DRDA protocol.) During installation, one language is established as a system default. The default can be changed.

The HELP information is provided by the RXSQLHLP EXEC. This EXEC retrieves DB2 RXSQL HELP text for DB2 RXSQL-specific topics and DB2 Server for VM HELP information. The DB2 Server for VM HELP information is the same text that *ISQL* provides. The information is retrieved in the language that you define as your default during the installation of DB2 RXSQL. If you do not specify a default language, it is provided in the system default language. You can overwrite this default to specify your own language. Define your DB2 RXSQL and DB2 Server for VM default languages using the RXSQLANG EXEC. This EXEC verifies and stores the specified DB2 RXSQL and DB2 Server for VM language defaults in your LASTING GLOBALV file.

If you have installed a national language support feature (for example, Kanji or French), and have decided to delete it, use the ELODNLS EXEC. For a full description of the ELODNLS EXEC, see “The ELODNLS EXEC” on page 86.

The HELP text is stored internally in DB2 Server for VM tables, and can be retrieved and manipulated just like any data stored in the database. The RXSQLHLP EXEC issues SELECT statements on these tables. The tables used for DB2 RXSQL HELP text are created at DB2 RXSQL installation time. A list of the tables and a brief description of each is given in Figure 21 on page 86.

Table Name	Definition	Description
SQLDBA.ELOOPTIONS	This table has the same definition as the SYSTEM.SYSOPTIONS catalog table. The only difference is the name of the first *column:* instead of SQLOPTION, the ELOOPTIONS table has RXSQLOPTION. The other two columns have the same names and definitions.	Holds the system default language for DB2 RXSQL HELP information (SYSTEM.SYSOPTIONS holds the system default language for DB2 Server for VM HELP information).
SQLDBA.ELOLANGUAGE	This table has the same column names and definitions as the SQLDBA.SYSLANGUAGE catalog table.	This table contains a row for each language installed for RXSQL.
SQLDBA.ELOTEXT1	This table has the same column names and definitions as the SQLDBA.SYSTEXT1 table.	It also has the same usage as the SYSTEXT1 table.
SQLDBA.ELOTEXT2	This table has the same column names and definitions as the SQLDBA.SYSTEXT2 table.	It also has the same usage as the SYSTEXT2 table.

Figure 21. Database Tables Used for DB2 RXSQL HELP Text

Refer to the *DB2 Server for VM Database Administration* manual for more information on the contents of the DB2 Server for VM tables and the relationships between them.

RXSQL acquires enough space at installation time for four or five languages. You may have to check the number of active data pages for the RXSQL DBSPACE RXSQHELP. To do this, type the following command from CMS:

```
RXSELECT DBSPACENAME,NACTIVE FROM SYSTEM.SYSDBSPACES WHERE
DBSPACENAME = 'RXSQHELP'
```

If the NACTIVE value is close to 170 (256 less the index pages allowance), consider making the RXSQHELP DBSPACE larger by moving the HELP text to a larger dbspace. Refer to the *DB2 Server for VM Database Administration* manual for more information on expanding dbspaces.

The ELODNLS EXEC

The RXSQL ELODNLS EXEC deletes the CMS HELP files, the HELP text from a DB2 Server for VM application server, and the message repository for one or more languages. Delete American English HELP text only if absolutely necessary.

The HELP text is not supported for non-DB2 Server for VM application servers or when using the DRDA protocol.

Prerequisites

To run the ELODNLS EXEC, you must have:

- Established the application server from which the languages will be deleted by typing:

  ```
  SQLINIT DBNAME(SQLDBA)
  ```

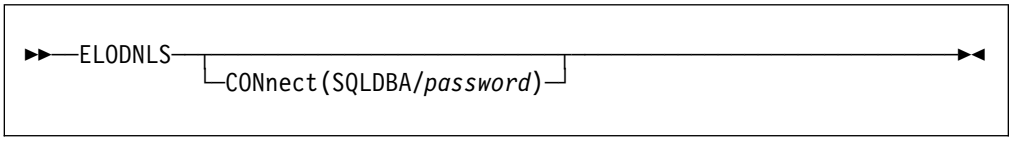
- Freed file mode P.

Authorization

To run the ELODNLS EXEC, you must have:

- Read access to the DB2 Server for VM production and RXSQL service disks
- The connect password for the SQLDBA authorization ID.

Syntax



CONnect
Use the connect option if you do not want to be prompted to enter the password for the SQLDBA authorization ID.

Description

When you run the ELODNLS EXEC, it prompts you to:

1. Specify the HELP text languages to delete.

   After the EXEC displays a list of the currently installed languages, you are prompted for the language keys of the languages to be deleted. You must specify the languages to delete. You can separate the language keys with commas or blanks.

   Each time you make a selection and press ENTER, the language is flagged on the screen. When you complete your selections, press ENTER to process them.

2. Specify the new default language if the current default language is to be deleted, and two or more languages will remain on the system.

   When the current default language, as specified in the ELOOPTIONS table, is flagged for deletion, a list of the remaining languages and keys is displayed. Specify the key for the new default language and press ENTER.

   If only one language remains on the system, it becomes the new default language.

3. Confirm that you want to delete the DB2 RXSQL HELP text for the specified languages.

   Delete the flagged languages displayed on the screen from the database. To delete the languages, type `Yes`.

   To exit from the procedure without deleting any HELP text languages, type `No`.

If you type `Yes`, the RXSQL HELP text for all languages marked for deletion is deleted from the database before you are prompted for deletion of the CMS HELP text and the message repository for each language.

4. Delete the CMS HELP text for the specified languages.

   If you want to delete the CMS HELP text for the current language, type `Yes`. You are prompted to type the disk information of the CMS HELP files of the current language. Be sure to give the correct information or you may delete the HELP text for another language.

   If you do not want to delete the CMS HELP text for the current language, or you know that CMS HELP text does not exist for the current language, type `No` or `QUIT` to bypass the processing for this language. Processing continues for the next language flagged for deletion.

   Prompts are issued for each language marked for deletion. The first prompts you to specify where the CMS HELP text is installed in your system.

   The EXEC then displays the following defaults for the minidisk or SFS directory of the current language.

   For minidisks the defaults are:

SQLMACH	User ID of the virtual machine that owns the minidisk of the current language
298	Virtual address of the minidisk
WSQL	Write access password for the minidisk.

   For SFS directories the defaults are:

VMSYS	File pool ID
SQLMACH	SFS directory owner for CMS HELP files for the current language
RXSQL.NLSPROD	Name of the SFS directory in which the CMS HELP files for the current language were installed.

   You must either accept these default values or supply different values. If you decide to bypass the deletion and go to the next language, type `QUIT`.

If the ELODNLS EXEC is not successful: An error message identifies the problem. Correct the error and rerun the EXEC.

Note: The error message output is spooled to the printer.

If the ELODNLS EXEC is successful: The summary message displays the status of all the languages marked for deletion. Check that:

- All languages are successfully deleted from the database
- The CMS HELP text for all languages is deleted or skipped as requested.

Notes:

1. At least one language remains in the SQLDBA.ELOLANGUAGE table. It is impossible to delete all languages.
2. For each language that you deactivate, the following is done:
   - The RXSQL HELP text is deleted by updating the SQLDBA.ELOTEXT2 and SQLDBA.ELOLANGUAGE tables.
   - If you delete the original default language, the SQLDBA.ELOOPTIONS table is updated with the new default language that you select.
   - If you choose to delete the CMS HELP text for a language, both the CMS HELP files and the message repository for that language are deleted.

Appendix D. Installation Messages

This appendix provides a summary of the messages that you can receive when installing DB2 RXSQL.

Messages

The RXSQL installation and database generation EXECs provide error messages. If more detailed information is required, you are directed to the appropriate documentation.

This section is divided into two parts:

- CMS- and CP-Related Messages
- RXSQL Installation Messages.

CMS- and CP-Related Messages

The following error messages may be displayed from any of the RXSQL installation EXECs:

CP FORCE command failed to force a logoff of *userid*. If command still fails after two attempts, check installation USERID class privileges.

Explanation: The CP FORCE command failed to force a logoff of the owner of the DB2 RXSQL product disk.

System Action: The program ends with the return code of 111 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Ensure the USERID installing the product has class privilege of A or use another USERID that does.

Error adding ELO message repository. RC = *rc* from the CMS SET LANGUAGE command.

Explanation: The CMS SET LANGUAGE command failed while trying to add the DB2 RXSQL message repository.

System Action: The program ends with the return code of 24, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the SET LANGUAGE command.

Error copying ELOUME TXTAMENG *fm* to the A disk as ELOUME TXT*lang-id*. RC = *rc* from the CMS COPYFILE command.

Explanation: Your current CMS language is not American English and there is no DB2 RXSQL message repository in your language on the product distribution tape. There is a DB2 RXSQL message repository for American English on the distribution tape; however, the CMS COPYFILE command failed while trying to copy that message repository to your current CMS language.

System Action: The program ends with the return code of 24, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the COPYFILE command.

Installation problem. ELOLANG EXEC & ELOLANMS EXEC not found.

Explanation: Neither the ELOLANG EXEC (to load the message repository) nor the ELOLANMS EXEC (to display messages for the ELOLANG EXEC) were found.

System Action: The program ends with the return code of 24, and the user returns to CMS.

User Response: Contact the IBM Support Center.

Installation problem. ELOLANG EXEC not found.

Explanation: This message returns by the installation and service EXECs when the EXEC to load the message repository is missing (ELOLANG EXEC).

System Action: The program ends with the return code of 24, and the user returns to CMS.

User Response: Contact the IBM Support Center.

Installation problem. ELOLANMS EXEC not found.

Explanation: The EXEC to display messages for the ELOLANG EXEC (ELOLANMS EXEC) was not found.

System Action: The program ends with the return code of 24, and the user returns to CMS.

User Response: Contact the IBM Support Center.

Neither the *lang-id* nor the AMENG message repository could be found (ELOUME TXT*lang-id* and ELOUME TXTAMENG).

Explanation: The DB2 RXSQL message repository for American English, or for your current CMS language if other than American English, was not found on the DB2 RXSQL distribution tape.

System Action: The program ends with the return code of 24, and the user returns to CMS.

User Response: Contact the IBM Support Center.

Return code = *rcode*. The DB2 RXSQL minidisks/directories have been successfully loaded. DB2 RXSQL link-edit has been completed successfully. Continue with the installation process described in the DB2 RXSQL manual. Briefly:
Execute ELOAMOD EXEC to load the portable package and ELOHLPLD EXEC or ELOSHLP EXEC
to load or migrate the HELP tables into each database where DB2 RXSQL is to be installed.

Explanation: The installation of DB2 RXSQL has been completed successfully. However, verification of the installation is not yet possible.

System Action: The program ends with the return code of 888 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Continue with the installation process as described in the DB2 RXSQL manual.

Tape not positioned at the end of the product and tape position is unknown.

Explanation: An error occurred while positioning the tape and the position of the tape is unknown.

System Action: The program ends with a return code of 18 or 20 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: After verifying that your hardware is working properly and your tape is mounted correctly, re-execute the installation EXEC. If you are using INSTFPP, **do not continue** installation of other products. **The tape position is unknown.** Correct the problem and reinstall. If the problem persists, contact the IBM Support Center.

The AMENG message repository could not be found.

Explanation: Your current CMS language is American English; however, there is no DB2 RXSQL message repository for American English on the product distribution tape.

System Action: The program ends with the return code of 24, and the user returns to CMS.

User Response: Contact the IBM Support Center.

The *lang-id* repository, ELOUME TXT*lang-id* could not be found. The AMENG repository will be used.

Explanation: Your current CMS language is not American English and there is no DB2 RXSQL message repository in your language on the product distribution tape. There is, however, an American English message repository on the distribution tape and it will be used.

System Action: The program ends with the return code of 24, and the user returns to CMS.

User Response: If you want to operate DB2 RXSQL in a language other than American English, contact the IBM Support Center to acquire a message repository in your language.

User requests exit from *fn* installation EXEC.

Explanation: The user has requested an exit from the installation EXEC.

System Action: The program ends with the return code of 111, and the user returns to CMS.

User Response: Reexecute the installation EXEC.

RXSQL Installation Messages

The following error messages may be displayed during the installation of RXSQL:

ELO8502E The number of tape files as specified by the Product Identifier File is nonnumeric.

Explanation: The Product Identifier File (I5648ELO 061004) has nonnumeric characters in the fifth and sixth positions of the file type.

System Action: The program ends with the return code of 12 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Call the IBM Support Center to report the problem.

ELO8503E Product Identifier File not found.

Explanation: The CMS LISTFILE command failed to find the Product Identifier File (I5648ELO 061004) on the work disk.

System Action: The program ends with the return code of 12 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Make sure that the first two tape files of the DB2 RXSQL product tape are loaded to the work disk. Reexecute the installation EXEC. If the problem persists, contact the IBM Support Center.

ELO8504E **Problem occurred while performing the LISTFILE command on the Product Identifier File. RC =***rc* **from the CMS LISTFILE command.**

Explanation: The LISTFILE command failed while trying to find the Product Identifier File (I5648ELO 061004).

System Action: The program ends with the return code of 12 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the LISTFILE command. Correct the problem and reexecute the installation EXEC.

ELO8506E **There is no tape drive available at virtual address 181. Please attach a tape drive as virtual address 181, mount the DB2 RXSQL distribution tape, and reexecute the EXEC I5648ELO.**

Explanation: The CMS QUERY command indicated that no virtual address exists for 181.

System Action: The program ends with the return code of 18 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Attach correct tape to virtual address 181 and reexecute the installation EXEC.

ELO8507E **Tape scan failed to find the DB2 RXSQL Product Identifier File on the tape. Please mount the correct DB2 RXSQL distribution tape and re-execute the EXEC I5648ELO.**

Explanation: No DB2 RXSQL Product Identifier File (I5648ELO 061004) was found on the tape mounted on virtual address 181.

System Action: The program ends with the return code of 18 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: After verifying that the tape mounted on virtual address 181 is the DB2 RXSQL distribution tape, reexecute I5648ELO. If the condition persists, contact the IBM Support Center.

ELO8516E **Error accessing** *userid cuu* **as** *fm***. RC =** *rc* **from the CMS ACCESS command.**

Explanation: A minidisk could not be accessed.

System Action: The program ends with the return code of 16 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the ACCESS command. Correct the problem and reexecute the installation EXEC.

ELO8518E **Error linking to** *userid cuu1* **as** *cuu2* **with** *mode* **mode. RC =** *rc* **from CP LINK command.**

Explanation: A minidisk could not be linked. It is possible that the minidisk does not exist in the CP directory, the minidisk is linked by some other user, or an invalid link password was entered.

System Action: The program ends with the return code of 16 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Consult your CP command reference manual for details on the LINK command. If the minidisk does not exist in your CP directory, then refer to the Feature Program installation section for directory tailoring information. Otherwise, correct the problem and reexecute the installation EXEC.

ELO8523E **Error loading** *type* **minidisk. RC =** *rc* **from the CMS VMFPLC2 command.**

Explanation: The minidisk may be full or a tape error has occurred.

System Action: The program ends with the return code of 25 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the VMFPLC2 command. Correct the problem and reexecute the installation EXEC.

ELO8525E **DB2 RXSQL minidisks or directories have been successfully loaded, but the DB2 RXSQL link-edit completed with error messages.**

Explanation: The DB2 RXSQL disks have been successfully loaded, but the DB2 RXSQL link-edit program returned control to the main program with error messages.

System Action: The I5648ELO EXEC ends after displaying the error messages from the DB2 RXSQL link-edit program.

User Response: Check the error messages returned from the DB2 RXSQL link-edit, and follow the corrective steps that they outline.

ELO8527E **The DB2 RXSQL minidisks or SFS directories have not been successfully loaded. DO NOT CONTINUE with the DB2 RXSQL installation process. Please correct the error identified by previous messages and review the installation procedure. Then re-execute the I5648ELO EXEC. Return Code =** *rcode*

Explanation: The I5648ELO EXEC failed with the return code of 12, 16, 18, 20, 24, 25, 26, 36, 45, or 48.

System Action: The program ends with the return code of 12, 16, 18, 20, 24, 25, 26, 36, 45, or 48 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Correct the error identified by the previous error messages and reexecute the I5648ELO EXEC.

ELO8528E **DB2 RXSQL link-edit was unsuccessful. Please correct the problem and do the following to complete the installation:**
Execute ELOLKED to do the DB2 RXSQL link-edit.
Execute ELOAMOD to load the portable package.
Execute ELOHLPLD to install secondary level HELP.
Return Code = *rcode*

Explanation: The DB2 RXSQL disks have been successfully loaded, but the DB2 RXSQL link-edit failed.

System Action: The program ends with the return code of 24, 26, 29, 32, 36, or 48 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Correct the error identified by the previous error message. Reexecute the ELOLKED EXEC and continue the installation steps.

ELO8529E **Look at the CMS file, ELOLK LKEDIT:**

- LINK-EDIT successful (if ELOLK LKEDIT contains only IEW0222 messages).
- LINK-EDIT unsuccessful (if ELOLK LKEDIT contains error messages other than IEW0222).
Return Code = *rcode*

If DB2 RXSQL link-edit is successful then do the following to complete the installation:

Execute ELOAMOD to load the portable package.
Execute ELOHLPLD to install secondary level HELP.
If DB2 RXSQL link-edit is unsuccessful then correct the errors identified in the CMS file ELOLK LKEDIT and do the following to complete the installation:
Execute ELOLKED to do the DB2 RXSQL link-edit.
Execute ELOAMOD to load the portable package.
Execute ELOHLPLD to install secondary level HELP.

Explanation: The disks have been successfully loaded, but the DB2 RXSQL link-edit completed with warning messages.

System Action: The program ends with the return code of 33 from the I5648ELO or ELOLKED EXECs, and the user returns to CMS.

User Response: Check the CMS file ELOLK LKEDIT on your work disk. If the file contains only IEW0222 messages, the link-edit was successful. If the file contains other error messages, correct the errors, reexecute the ELOLKED EXEC, and continue the installation steps. If the problem persists, contact the IBM Support Center.

ELO8530E **Error forwarding over tape file** *num***. RC =** *rc* **from the CMS VMFPLC2 FSF command.**

Explanation: An error occurred while forward spacing the tape. There is either a hardware problem or a tape error. The tape position is unknown.

System Action: The program ends with the return code of 20 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: After verifying that your hardware is working properly and your tape is mounted correctly, reexecute the installation EXEC. If the condition persists, call your IBM Customer Service Representative if it is a hardware problem, or contact the IBM Support Center if you suspect the problem is with the tape.

ELO8536E ELOHLPLD EXEC invoked with invalid parameters. To install secondary level HELP refer to the section in the DB2 RXSQL manual that describes the ELOHLPLD EXEC and execute the EXEC with correct parameters.

Explanation: The ELOHLPLD EXEC was not invoked with valid parameters.

System Action: The program ends with the return code of 27 from the ELOHLPLD EXEC, and the user returns to CMS.

User Response: Correct the problem and reexecute the ELOHLPLD EXEC with valid parameters. For information on the ELOHLPLD EXEC, refer to "The ELOHLPLD EXEC" on page 79.

ELO8537E Error connecting to the default database. Database is not available or the connect password for SQLDBA is incorrect. Return Code = *rcode*

Explanation: The error may have been caused by one of the following:

- The connect password for SQLDBA is incorrect
- SQLINIT has not been run.

System Action: The program ends with the return code of 31 from the ELOHLPLD EXEC, and the user returns to CMS.

User Response: Correct the error and reexecute the ELOHLPLD EXEC.

ELO8538E Either ELOHELPI EXEC is missing or a DBSU error occurred while installing HELP tables into the database. Return Code = *rcode*

Explanation: The ELOHELPI EXEC was not found or a DBS Utility error occurred while:

- Acquiring a public dbspace
- Creating HELP tables
- Creating indexes on the HELP tables
- Issuing GRANT SELECT TO PUBLIC on HELP tables.

System Action: The program ends with the return code of 31 from the ELOHLPLD EXEC, and the user returns to CMS.

User Response: Correct the problem and reexecute the ELOHLPLD EXEC. You may have to drop the PUBLIC.RXSQLHELP dbspace before reexecuting ELOHLPLD.

ELO8539E This VM execution environment is not supported by this release of DB2 RXSQL.

Explanation: Incorrect VM level. DB2 RXSQL 6.1 supports only VM/ESA Release 2.2 and later.

System Action: The program ends with the return code of 36, and the user returns to CMS.

User Response: Correct the problem and reexecute the installation EXEC. If the problem continues, contact the IBM Support Center.

ELO8540E DB2 Server for VM level *level* **is not supported by this release of RXSQL.**

Explanation: DB2 RXSQL does not support the indicated DB2 Server for VM level.

System Action: The program ends with the return code of 48, and the user returns to CMS.

User Response: Contact the IBM Support Center.

ELO8541E File RXSQL TEXT *fm* **not found, or RXSQL SERVICE minidisk or directory is not accessed as** *fm***.**

Explanation: The CMS STATE command failed to find the RXSQL TEXT file on the minidisk or directory accessed as the file mode.

System Action: The program ends with the return code of 32 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the STATE command, or make sure that you are accessing the correct minidisk or directory. Correct the problem and reexecute the ELOLKED EXEC.

ELO8542E Error while generating RXSQL MODULE.

Explanation: The RXSQL MODULE could not be generated or the production disk is not accessed as read/write.

System Action: The program ends with the return code of 29 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Access the DB2 RXSQL production disk as read/write and reexecute the ELOLKED EXEC.

ELO8544E File ELOLK TEXT *fm* not found, or DB2 RXSQL SERVICE minidisk is not accessed as *fm*.

Explanation: The CMS STATE command failed to find the ELOLK TEXT file on the minidisk or directory accessed as the file mode.

System Action: The program ends with the return code of 32 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the STATE command, or verify that you are accessing the correct minidisk or directory. Correct the problem and reexecute the ELOLKED EXEC.

ELO8546E File *fn ft* * not found.

Explanation: The CMS STATE command failed to find one of the files required to perform the DB2 RXSQL link-edit.

System Action: The program ends with the return code of 32 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Access the DB2 RXSQL and DB2 Server for VM production and service disks with the required access modes and reexecute the ELOLKED EXEC.

ELO8547E The above file should be on the DB2 Server for VM *type* minidisk/directory or you should have your own DATE or TIME routine on one of the accessed minidisks.

Explanation: The CMS STATE command failed to find either the ARIUXDT TEXT file or the ARIUXTM TEXT file during the DB2 RXSQL link-edit.

System Action: The program ends with the return code of 32 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Make sure that the default date or time routines (on the DB2 Server for VM disk) or your customized date or time routines are available on one of the accessed disks. Reexecute the ELOLKED EXEC.

ELO8548E This file should be on the CMS System Disk.

Explanation: The CMS STATE command failed to find the DMSCSL TEXT file in the CMS system minidisk or directory.

System Action: The program ends with the return code of 32 from the ELOLKED EXEC, and the user returns to CMS.

User Response: File DMSCSL TEXT is required to perform the DB2 RXSQL link-edit in non-XA environments. Please make sure that the system minidisk or directory is accessed and reexecute the ELOLKED EXEC.

ELO8551E Error while generating RXSQL LOADLIB. Check ELOLK LKEDIT file (ignore IEW0222 messages).

Explanation: The link-edit completed with warning messages.

System Action: The program ends with the return code of 33 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Look at the ELOLK LKEDIT file. Ignore all IEW0222 messages, if they exist. Any other messages indicate unsuccessful link-edit. Correct the problem and reexecute the ELOLKED EXEC.

ELO8556E DB2 Server for VM level cannot be determined.

Explanation: The CMS LISTFILE command failed while trying to find the SQLLEVEL EXEC. This file is needed to determine the current DB2 Server for VM level. DB2 RXSQL Version 6 Release 1 only supports DB2 Server for VM Version 6 Release 1.

System Action: The program ends with the return code of 26, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the LISTFILE command. Contact the IBM Support Center if further problems persist.

ELO8557E DIAGNOSE X'00' command failed with RC = *rc*.

Explanation: The DIAGNOSE X'00' command failed when trying to determine the VM level.

System Action: The program ends with the return code of 36, and the user returns to CMS.

User Response: Consult your CP programming services manual for details on the DIAGNOSE command. Correct the problem and reexecute the installation EXEC.

ELO8559E ELOAMOD EXEC invoked with invalid parameters. To perform the PORTABLE PACKAGE RELOAD, refer to the section in the DB2 RXSQL manual that describes the ELOAMOD EXEC and execute the EXEC with correct parameters.

Explanation: The ELOAMOD EXEC was not invoked with valid parameters.

System Action: The program ends with the return code of 27 from the ELOAMOD EXEC, and the user returns to CMS.

User Response: Correct the problem and reexecute the ELOAMOD EXEC with valid parameters. For information on the ELOAMOD EXEC, refer to "The ELOAMOD EXEC" on page 78.

ELO8561E Error loading the PORTABLE PACKAGE into the database. Return Code = *rcode*

Explanation: The error may have been caused by one of the following:

- The password for SQLDBA is incorrect
- SQLINIT has not been run.

System Action: The program ends with the return code of 31 from the ELOAMOD EXEC, and the user returns to CMS.

User Response: Ensure that the above dependencies are met and reexecute the ELOAMOD EXEC.

ELO8566E PORTABLE PACKAGE RELOAD unsuccessful. Please correct the problem identified by the previous error messages and re-execute the ELOAMOD EXEC to complete the PORTABLE PACKAGE RELOAD. Return Code = *rcode*

Explanation: The PORTABLE PACKAGE RELOAD failed with the return code of 24, 26, 27, 31, or 48.

System Action: The program ends with the return code of 24, 26, 27, 31, or 48 from the ELOAMOD EXEC, and the user returns to CMS.

User Response: Check the return code and previous error messages for more information. Correct the errors and reexecute the ELOAMOD EXEC.

ELO8567E Installation of SECONDARY LEVEL HELP TABLES was unsuccessful. Please correct the problem identified by the previous error messages and re-execute the ELOHLPLD EXEC to complete the SECONDARY LEVEL HELP installation. Return Code = *rcode*

Explanation: The secondary-level HELP tables load failed with the return code of 24, 27, or 31.

System Action: The program ends with the return code of 24, 27, or 31 from the ELOHLPLD EXEC, and the user returns to CMS.

User Response: Check the return code and errors identified by previous error messages. Correct the problem and reexecute the ELOHLPLD EXEC.

ELO8573E The minidisk or directory accessed as filemode *fm* **is not a DB2 RXSQL** *type* **minidisk or directory or it is not accessed as read/write.**

Explanation: A disk accessed as the file mode is not the DB2 RXSQL production or service disk. There may be vital files missing from the disk.

System Action: The program ends with the return code of 29 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Make sure that the DB2 RXSQL production and service disks are accessed as read/write and reexecute the ELOLKED EXEC.

ELO8574E DB2 RXSQL link-edit was unsuccessful. Please correct the problem and do the following to complete the link-edit:
Execute ELOLKED EXEC.
Return Code = *rcode***.**

Explanation: The DB2 RXSQL link-edit was unsuccessful.

System Action: The program ends with the return code of 24, 26, 29, 32, 36, or 48 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Check the return code and the previous error messages for further details. Correct any errors and reexecute the ELOLKED EXEC.

ELO8575E The above file should be on the DB2 Server for VM *type* **minidisk/directory.**

Explanation: The STATE command failed to find the ARIRVSTC TEXT file to perform the DB2 RXSQL link-edit.

System Action: The program ends with the return code of 32 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Access DB2 Server for VM production and service disks in read access mode and reexecute the ELOLKED EXEC.

ELO8576E Error occurred while attempting to skip to the end of the 5648ELO tape files.

Explanation: An error occurred while forwarding the tape to the end of the product.

System Action: The program ends with the return code of 20 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: After verifying that your hardware is working properly and your tape is mounted correctly, reexecute the installation EXEC. If the condition persists, call your IBM customer service representative

if it is a hardware problem or contact the IBM Support Center if you suspect the problem is with the tape.

ELO8579E **FILE EXECSQL TEXT** *fm* **not found, or DB2 RXSQL SERVICE minidisk or SFS directory is not accessed as** *fm***.**

Explanation: The CMS STATE command failed to find the EXECSQL TEXT file on the disk accessed as the file mode.

System Action: The program ends with the return code of 32 for the ELOLKED EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the STATE command or make sure that you are accessing the correct disk. Correct the problem and reexecute the ELOLKED EXEC.

ELO8580E **Error while generating EXECSQL MODULE.**

Explanation: The EXECSQL MODULE could not be generated or the production disk is not accessed with read/write mode.

System Action: The program ends with the return code of 29 from the ELOLKED EXEC, and the user returns to CMS.

User Response: Access the DB2 RXSQL production disk with read/write mode and reexecute the EXEC.

ELO8584E **You are installing the DB2 RXSQL package on a non-DB2 Server for VM application server, but you are not using the DRDA protocol. To perform the installation of the DB2 RXSQL package on a non-DB2 Server for VM application server you must use the DRDA protocol.**

Explanation: The ELOAMOD EXEC was not invoked with DRDA protocol when trying to install the DB2 RXSQL package onto a non-DB2 Server for VM application server.

System Action: The program ends with the return code of 38 from ELOAMOD EXEC, and the user returns to CMS.

User Response: Ensure that you are using the DRDA protocol and reexecute the ELOAMOD EXEC.

ELO8586E **The SQLDS(No) parameter that you provided is not supported when you are running in the VM/XA environment.**

Explanation: The DB2 RXSQL package cannot be installed in non-DB2 Server for VM applications servers when running in the VM/XA environment.

System Action: The program ends with the return code of 27 from ELOAMOD EXEC, and the user returns to CMS.

User Response: Change the parameter to SQLDS(Yes) and reexecute the ELOAMOD EXEC.

ELO8608E **Error loading** *type* **directory. RC =** *rc* **from the CMS VMFPLC2 command.**

Explanation: The directory may be full or the directory was not accessed in read/write mode.

System Action: The program ends with the return code of 25 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the VMFPLC2 command. Correct the problem and reexecute the installation EXEC.

ELO8610E **Error accessing** *directory* **as** *fm***. RC =** *rc* **from the CMS ACCESS command.**

Explanation: An SFS directory could not be accessed.

System Action: The program ends with the return code of 16 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the ACCESS command. Correct the problem and reexecute the installation EXEC.

ELO8612E **Write authority is required for:** *directory*

Explanation: The SFS directory is not accessed in read/write mode.

System Action: The program ends with the return code of 45 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Acquire write authority for the SFS directory and reexecute the installation EXEC. If the problem persists, contact your IBM Support Center.

ELO8701E **The DB2 RXSQL *type* minidisk or directory is not accessed as Read/Write with filemode *fm*.**

Explanation: An error occurred when ELOSCOR EXEC tried to verify write access to the DB2 RXSQL *type* minidisk or SFS directory with filemode *fm*.

System Action: The program ends with the return code of 16 from the ELOSCOR EXEC, and the user returns to CMS.

User Response: Access the *type* minidisk or SFS directory as filemode *fm* with read/write access and reexecute the ELOSCOR EXEC.

ELO8702E **No DB2 RXSQL corrective service files were found on the Work minidisk accessed as filemode *fm*. Check to make sure the proper tape was mounted and/or the proper files have been unloaded from the tape. Then re-execute this EXEC.**

Explanation: ELOSCOR EXEC could not find any corrective service files on the work minidisk accessed as filemode *fm*.

System Action: The program ends and the user returns to CMS.

User Response: Ensure that the proper tape was mounted and/or the proper files have been unloaded from the tape to the work minidisk and reexecute this EXEC.

ELO8704E **Error copying *fn ft fm* to the DB2 RXSQL *type* minidisk or directory. RC = *rc* from the CMS COPYFILE command.**

Explanation: A CMS COPYFILE error occurred when the ELOSCOR EXEC was copying a file from the work minidisk to the DB2 RXSQL *type* minidisk or SFS directory.

System Action: The program ends with the return code of 28 from the ELOSCOR EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the return code *rc* from the CMS COPYFILE command. Correct the problem and reexecute ELOSCOR EXEC.

ELO8705E **Error erasing the *fn ft fm* file. RC = *rc* from the CMS ERASE command.**

Explanation: A CMS ERASE error occurred while the EXEC was erasing a file from the work minidisk.

System Action: The program ends with the return code of 28 from the EXEC, and the user returns to CMS.

User Response: Consult your CMS command reference manual for details on the return code *rc* from the CMS ERASE command. Correct the problem and reexecute the EXEC.

ELO8804E **ELOSHLP EXEC was invoked with invalid parameters. To service secondary level help refer to the description of ELOSHLP EXEC in the manual. Re-execute the EXEC with the correct parameters. ELOSHLP** *LANGkey (langkey) CONnect (SQLDBA/password)*

Explanation: The ELOSHLP EXEC was not invoked with valid parameters.

System Action: The program ends with the return code of 27 from the ELOSHLP EXEC, and the user returns to CMS.

User Response: Correct the problem and reexecute the ELOSHLP EXEC with valid parameters.

ELO8807E **Invalid language key entered. The langkey format is either Sxxx or Dxxx, where xxx is a number. Check the console listing from the preventive service EXEC for the langkey that is to be used when applying service to the help tables. Rerun the ELOSHLP EXEC with the correct langkey.**

Explanation: The ELOSHLP EXEC was not invoked with a valid language key parameter. The language key parameter langkey must:

- Start with either S or D
- Have three numbers following S or D.

System Action: The program ends with the return code of 27 from the ELOSHLP EXEC, and the user returns to CMS.

User Response: Check the console listing from the preventive service EXEC for the langkey that is to be used when applying service to the HELP tables, and reexecute the ELOSHLP EXEC with a valid langkey parameter.

ELO8808E **A DBSU error occurred while servicing the help tables. The stage in service was *stage*. rc = *rc*. Look at the console listing to determine the error. Correct the problem indicated and rerun ELOSHLP EXEC.**

Explanation: The DBS Utility error occurred during one of the following:

- Unloading unchanged data from HELP tables to temporary files
- Dropping and recreating HELP tables

- Dropping and recreating indexes on HELP tables
- Loading data into HELP tables
- Granting select authority on HELP tables to public.

System Action: The program ends with the return code of 31 from the ELOSHLP EXEC, and the user returns to CMS.

User Response: Look at the console listing to determine the DBS Utility error. Correct the problem indicated and rerun ELOSHLP EXEC.

ELO8811E **Servicing of the SECONDARY LEVEL HELP TABLES was unsuccessful. Please correct the problem identified by the previous error messages and re-execute the EXEC ELOSHLP to complete the service of SECONDARY LEVEL HELP TABLES. rc =** ***rc*****.**

Explanation: Servicing of the secondary-level HELP tables failed with the return code of 24, 26, 27, 31, 40 or 48.

System Action: The program ends with the return code of 24, 26, 27, 31, 40, or 48 from the ELOSHLP EXEC, and the user returns to CMS.

User Response: Check the return code and errors identified by previous error messages. Correct the problem and reexecute the ELOSHLP EXEC.

ELO8813E **The ELOHNLS EXEC was invoked with invalid parameters. To load NLS help text for the languages installed, refer to the description of the ELOHNLS EXEC in the supplied documentation and re-execute the EXEC with the correct parameters. ELOHNLS** *LANGkey (langkey) CONnect (SQLDBA/password)*

Explanation: The ELOHNLS EXEC was not invoked with valid parameters.

System Action: The program ends with the return code of 27 from the ELOHNLS EXEC, and the user returns to CMS.

User Response: Correct the problem and reexecute the ELOHNLS EXEC with valid parameters.

ELO8814E **Invalid language key entered. The langkey format is either Sxxx or Dxxx, where xxx is a number. Check supplied documentation for the appropriate langkey and re-execute the ELOHNLS EXEC with the correct langkey.**

Explanation: The ELOHNLS EXEC was not invoked with a valid language key parameter. The language key parameter langkey must:

- Start with either S or D
- Have three numbers following S or D.

System Action: The program ends with the return code of 27 from the ELOHNLS EXEC, and the user returns to CMS.

User Response: Check supplied documentation for the appropriate langkey and reexecute the ELOHNLS EXEC with a valid langkey parameter.

ELO8815E **DBSU error occurred while loading the NLS help text into the help table. rc =** ***rc*****. Look at the console listing to determine the error. Correct the problem indicated and rerun the ELOHNLS EXEC.**

Explanation: The DBS Utility error occurred during one of the following:

- Inserting a row into SQLDBA.ELOLANGUAGE table
- Dropping and re-creating indexes on HELP tables
- Loading data into HELP tables
- Granting select authority on HELP tables to public.

System Action: The program ends with the return code of 31 from the ELOHNLS EXEC, and the user returns to CMS.

User Response: Look at the console listing to determine the DBS Utility error. Correct the problem indicated and rerun ELOHNLS EXEC.

ELO8817E **Loading of NLS help text into help tables was unsuccessful. Please correct the problem identified by the previous error messages and re-execute the EXEC ELOHNLS to complete the installation of NLS help text into help tables. Return Code =** ***rc*****.**

Explanation: The NLS HELP tables load failed with the return code of 24, 26, 27, 31, or 48.

System Action: The program ends with the return code of 24, 26, 27, 31, or 48 from the ELOHNLS EXEC, and the user returns to CMS.

User Response: Check the return code and errors identified by previous error messages. Correct the problem and reexecute the ELOHNLS EXEC.

ELO8818E **File** *fn ft* **was not found. Check if you are using the correct langkey or that the DB2 RXSQL Service minidisk or directory is linked. Correct the problem and rerun** ***exec*****.**

Explanation: This error can be caused by running one of the following EXECs:

- ELOSHLP
- ELOHNLS.

If you used ELOSHLP EXEC, the required file used for servicing the HELP tables was not available. If you used ELOHNLS EXEC, the required file used for installation of NLS HELP tables was not available. Either you used an incorrect language key parameter or the DB2 RXSQL service disk was not accessed.

System Action: The program ends with the return code of 26 from the EXEC, and the user returns to CMS.

User Response: Check whether you are using the correct language key parameter or whether the DB2 RXSQL service disk is accessed. Correct the problem and run the EXEC again.

ELO8821E ELODNLS EXEC was invoked with invalid parameters. To delete language(s) refer to the section in the manual that describes the ELODNLS EXEC and execute the EXEC with the correct parameters.

Explanation: The ELODNLS EXEC was not invoked with valid parameters.

System Action: The program ends with the return code of 27 from the ELODNLS EXEC, and the user returns to CMS.

User Response: Correct the problem and reexecute the ELODNLS EXEC with valid parameters.

ELO8822E Error unloading table SQLDBA.ELOLANGUAGE

Explanation: A DBS Utility error occurred when ELODNLS EXEC tried to unload language key information from the SQLDBA.ELOLANGUAGE table.

System Action: The program ends with the return code of 31 from the ELODNLS EXEC, and the user returns to CMS.

User Response: Check the console listing to determine the DBS Utility error. Correct the problem indicated and rerun ELODNLS EXEC.

ELO8823E Error unloading table SQLDBA.ELOOPTIONS

Explanation: A DBS Utility error occurred when ELODNLS EXEC tried to unload default language information from the SQLDBA.ELOOPTIONS table.

System Action: The program ends with the return code of 31 from the ELODNLS EXEC, and the user returns to CMS.

User Response: Check the console listing to determine the DBS Utility error. Correct the problem indicated and rerun ELODNLS EXEC.

ELO8834E DBSU error while deleting rows from SQLDBA.ELOLANGUAGE or SQLDBA.ELOTEXT1 tables, or while updating table SQLDBA.ELOOPTIONS. Please review the console listing to find the DBSU error, correct the problem and re-execute this EXEC.

Explanation: A DBS Utility error occurred when ELODNLS EXEC tried to delete rows from SQLDBA.ELOLANGUAGE table or SQLDBA.ELOTEXT1 HELP table, or while updating the default language in SQLDBA.ELOOPTIONS table.

System Action: The program ends with the return code of 31 from the ELODNLS EXEC, and the user returns to CMS.

User Response: Check the console listing to determine the DBS Utility error. Correct the problem indicated and run ELODNLS EXEC again.

ELO8839E Failed to find DB2 RXSQL CMS HELP files on the NLS PRODUCTION minidisk or SFS directory accessed as filemode *fm*.

Explanation: An error occurred when ELODNLS EXEC tried to find DB2 RXSQL CMS HELP file with filename DB2 RXSQL and filetype HELPMENU. It was not found for one of the following reasons:

- The disk accessed as file mode *fm* was not the NLS production disk.
- The DB2 RXSQL CMS HELP file was never installed or has already been deleted.

System Action: The program ends with the return code of 16 from the ELODNLS EXEC, and the user returns to CMS.

User Response: Make sure that the file is on the NLS production disk and rerun ELODNLS EXEC.

ELO8844E Deactivation of the language or languages (from database and the corresponding CMS HELP from minidisks or SFS directories) was unsuccessful. Please correct the errors identified by the previous error messages and re-execute the ELODNLS EXEC. rc = *rc*.

Explanation: Language deactivation failed with the return code of 16, 24, 26, 27, 28, 31, 36, or 48.

System Action: The program ends with the return code of 16, 24, 26, 27, 28, 31, 36, or 48 from the ELODNLS EXEC, and the user returns to CMS.

User Response: Check the return code and errors identified by previous error messages. Correct the problem and reexecute the ELODNLS EXEC.

ELO8850E **A DBSU error occurred while searching for the language** *langkey* **in the SQLDBA.ELOLANGUAGE table. rc =** *rc***. Look at the console listing to determine the error. Correct the problem indicated and rerun ELOSHLP EXEC**

Explanation: The error occurred when the DBS Utility tried to check if the language *langkey* was in the SQLDBA.ELOLANGUAGE table.

System Action: The program ends with the return code of 31 from the ELOSHLP EXEC, and the user returns to CMS.

User Response: Look at the console listing to determine the DBS Utility error. Correct the problem indicated and rerun ELOSHLP EXEC.

ELO8851E **An error occurred while searching for the language** *langkey* **in the SQLDBA.ELOLANGUAGE table. Either there were no entries in the output DBSU file, or there was more than 1. Look at the console listing to determine the error. Correct the problem indicated and rerun ELOSHLP EXEC.**

Explanation: The result file from the DBS Utility search for the language in the SQLDBA.ELOLANGUAGE table was empty or contained more than one entry.

System Action: The program ends with the return code of 31 from the ELOSHLP EXEC, and the user returns to CMS.

User Response: Ensure that the language is in the SQLDBA.ELOLANGUAGE table and there are no duplicate rows for the language in the table. Correct the problem and run the ELOSHLP EXEC again.

ELO8852E **The language** *langkey* **was not found in the SQLDBA.ELOLANGUAGE table. As a result, you cannot service this language. Correct the LANGkey parameter and rerun the ELOSHLP EXEC.**

Explanation: There is no entry for the language to be serviced in the SQLDBA.ELOLANGUAGE table. To service a language, it must be in the SQLDBA.ELOLANGUAGE table.

System Action: The program ends with the return code of 31 from the ELOSHLP EXEC, and the user returns to CMS.

User Response: Make sure that the language is in the SQLDBA.ELOLANGUAGE table and run the ELOSHLP EXEC again.

ELO8853E **The attempt to get** *number* **free** *fm virtual address virtual address* **for the access or link was unsuccessful. There must be at least** *number* **free for this EXEC. Correct the situation and rerun.**

Explanation: This EXEC will try to get enough free file modes, and if necessary, virtual device addresses to link and access disks. *number* indicates the number of free file modes or virtual device addresses required. The EXEC was unable to get the number required.

System Action: The program ends with the return code of 16 from the I5648ELO installation EXEC, and the user returns to CMS.

User Response: Ensure that there are at least *number* free file modes or virtual device addresses (as indicated in the message) and rerun this EXEC.

Glossary

This glossary includes terms and definitions from:

- The *American National Standard Dictionary for Information Systems* ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018. Definitions are identified by the symbol (A) after the definition.
- The *Information Technology Vocabulary* developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC1/SC1). Definitions of published parts of this vocabulary are identified by the symbol (I) after the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among the participating National Bodies of SC1.

access. The manner in which files or data sets are referred to by a computer.

access module. See *package*.

application server. The database manager component that receives and processes database requests issued by the application requester.

authority. See *CONNECT authority, RESOURCE authority,* and *DBA authority*.

authorization. The right granted to a user to communicate with or make use of a computer system.

authorization ID. (1) A character string that designates a set of privileges. The authorization ID of a statement is used by the database manager for authorization checking and as an implicit qualifier for the names of tables, views, and indexes. (2) A user or a group of users. Contrast with *user ID*.

byte. A unit of storage consisting of eight adjacent binary digits operated on as a unit and constituting the smallest addressable unit in the system.

catalog. A set of tables that contain descriptions of objects such as tables and views, and other entities such as conversion tables and authorization IDs maintained by the database manager.

catalog table. A table maintained dynamically by the DB2 Server for VM database manager containing information about objects such as tables and views, and other entities such as conversion tables and authorization IDs defined to the database manager.

character. (1) A letter, digit, or other symbol in a data character set that is part of the data. (2) A data type in SQL.

CMS. See *conversational monitor system.*

column. The vertical component of a table. A column has a name and a particular data type (for example, character, decimal, or integer).

command. A request for system action. ISQL and DBS Utility commands can be used with the DB2 Server for VM database manager. Contrast with *statement*. DB2 RXSQL commands do not have SQL equivalents.

commit. (1) The operation that terminates a *unit of work* by releasing locks so that the database changes made by that unit of work can be perceived by other processes. (2) The process that allows data changes to be made permanent. When a commit occurs, other applications can reference the just-committed data.

CONNECT authority. The authority to use database functions, such as SQL statements, on a database.

constant. Data that has an unchanging, predefined value to be used in processing. Constants are classified as string constants or numeric constants. Synonymous with *literal*. Contrast with *variable*.

control program (CP). A component of a VM system that manages the resources of a single computer so multiple computing systems appear to exist. Each virtual machine is the functional equivalent of an IBM System/370™ or System/390® system.

conversational monitor system (CMS). A virtual machine operating system that provides general interactive time sharing, problem solving, and program development capabilities, and operates only under control of the VM *control program*.

CP. See *control program*.

DASD. See *direct access storage device*.

database machine. A virtual machine that has access to DB2 Server for VM code and a database. The database machine controls access to the database.

database management system (DBMS). A software system that controls the logical and physical resources and facilities of a database.

database manager. A program product that processes SQL statements.

Database Services utility (DBS utility). An application program supplied with the DB2 Server for VM database manager to provide several utility functions, including the loading and unloading of data and packages, and the execution of SQL statements previously saved in a command file.

date. A three-part value that designates a day, month, and year.

DB2 for VM. Short form of DB2 Server for VM.

DBA authority. The authority to perform all SQL operations on all SQL tables. DBA authority includes both CONNECT authority and RESOURCE authority.

DBMS. See *database management system.*

DBS Utility (Database Services Utility). See *Database Services Utility*.

dbspace. A logical allocation of space in a *storage pool* contained in a database. Contains one or more tables and their associated indexes.

default. Pertaining to an attribute, value, or option that is assumed when none is explicitly specified.

direct access storage device (DASD). A device in which access to data is independent of the location of the data.

directory. A list of identifiers that map corresponding items of data. For example, a DB2 Server for VM directory maps dbspaces to addresses on a physical device.

distributed relational database architecture (DRDA). Pertaining to an IBM connection protocol for the access and use of distributed relational data wherever it resides in an interconnected network of relational database products.

DRDA (distributed relational database architecture). See *distributed relational database architecture*.

EXEC. A CMS file with a file type of EXEC. It contains a series of commands or instructions that are executed when you enter the filename of the EXEC file.

file mode. A 2-character CMS file identifier field comprised of a file mode letter (A through Z) followed by the file mode number (0 through 6). The file mode letter indicates the minidisk or SFS directory on which the file resides. The file mode number indicates the access mode of the file.

file type. A 1- to 8-character alphanumeric field, comprised of A through Z, 0 through 9, and special characters $ # @ + - (hyphen) : (colon) _ (underscore), that is used as a descriptor or as a qualifier of the file name field in the CMS file identifier.

Interactive Structured Query Language (ISQL). A facility of the DB2 Server for VM system that provides online data query and report writing support.

ISQL. See *Interactive Structured Query Language*.

K. Kilobyte

Kanji. A graphic character set consisting of symbols used in Japanese ideographic alphabets.

keyword. In programming languages, a predefined word that has a special meaning or function. For example, in the DB2 Server for VM database manager, SELECT is the keyword used to retrieve data from a table.

kilobyte. 1024 bytes

literal. A string whose value is given by the content of the string itself. For example, the numeric literal 7 has the value 7. Synonym for *constant*.

load. To transfer data from one medium to another; for example, to transfer data from a sequential file to a database, or to transfer a program from storage to computer memory.

logical unit of work (LUW). A recoverable sequence of operations within an application process. At any time, an application process is a single unit of work, but the life of an application process can involve many units of work as a result of commit or rollback operations.

LUW. See *logical unit of work (LUW)*.

minidisk. Logical division of a physical direct access storage device.

multiple user mode. A mode of operating the DB2 Server for VM database manager in which one or more users or application programs can access the database at the same time. Contrast with *single user mode.*

NLS. National language support.

owner. The authorization ID associated with an SQL object.

package. A control structure produced during program preparation that is used to execute SQL statements. Previously called *access module*.

parameter. A variable that is given a constant value for a specified operation.

private dbspace. A logical space in a DB2 Server for VM database owned by one user.

public dbspace. A logical space in a DB2 Server for VM database that is accessible to many users.

rc. See *return code*.

RESOURCE authority. The authority to create tables in a public dbspace and to acquire a private dbspace.

return code. A string, typically a number passed in an implementation-dependent way, that conveys some information about the command that has been executed. Return codes usually indicate the success or failure of the command but can also be used to represent other information.

REXX. A procedural language that allows programs and algorithms to be written in a clear and structured way.

row. A horizontal component of a table. A row consists of a sequence of values, one for each column of the table.

RXSQL. DB2 REXX SQL for VM/ESA.

scroll. To move a display image vertically or horizontally to view data that is not otherwise visible in a display or window.

SFS directory (shared file system directory). See *shared file system directory.*

shared file system directory (SFS directory). A part of CMS that allows users to organize their files into groups known as directories, and to selectively share those files and directories with other users.

single user mode. A mode of operation in which the DB2 Server for VM database manager and one application run in the same virtual machine. No other application programs or users can access the database at the same time. Contrast with *multiple user mode*.

SQLCA. See *SQL communication area (SQLCA)*.

SQLCODE. A code set by the database manager after an SQL statement is executed to indicate the success or failure of the SQL statement. The value returned in the SQLCODE is specific to the DB2 Server for VM system. Contrast with *SQLSTATE*. See also *SQL communication area*.

SQL communication area (SQLCA). A set of variables that provides an application program with information about the execution of its SQL statements.

SQLSTATE. A code set by the database manager after an SQL statement is executed to indicate the success or failure of the SQL statement. Contrast with *SQLCODE*.

statement. An instruction in a program or procedure. A language construct that represents a step in a sequence of actions. Contrast with *command*. RXSQL statements have SQL equivalents.

storage pool. A specific set of available storage areas. These areas are used by the database administrator to control storage of the database. A storage pool contains one or more dbspaces.

table. A named data object consisting of a specified number of columns and any number of unordered rows.

time. A three-part value that designates a time of day in hours, minutes, and seconds.

unit of work. See *logical unit of work (LUW)*.

user ID. A string of characters that uniquely identifies a user to a system. Contrast with *authorization ID*.

variable. A quantity that can assume any of a given set of values. Contrast with *constant*.

Virtual Machine (VM). A functional simulation of a computer and its associated devices. VM manages the computer's resources in such a way that all workstation users have their own virtual machine. All users can work at their virtual machines as though each is the only person using the real computer.

VM. See *Virtual Machine*.

VM/ESA environment. Virtual Machine/Enterprise Systems Architecture. The 370 feature addresses a maximum of 16 megabytes of virtual storage per virtual machine. The ESA Feature addresses a maximum of 2 gigabytes of virtual storage per virtual machine.

VM/SP (Virtual Machine/System Product). Virtual Machine/System Product.

VM/XA SP environment. Virtual Machine/Extended Architecture System Product.

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