DB2® Server for VSE

IBM

Installation

Version 6 Release 1

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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 iii.

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Contents

About This Manual

Who Should Use This Manual

This manual is intended for the person who installs DB2 Server for VSE or migrates on a VSE system. It describes the procedures for installation, including generating a database and starting DB2 Server for VSE for productive use. It also contains procedures for migrating a database from earlier releases.

Notes:

1. All references in this manual to VSE and VSE/Enterprise Systems Architecture (VSE/ESA™), system apply only to those VSE/ESA release levels that specifically support DB2 Server for VSE Version 6 Release 1.

2. If you are installing DB2 Server for VSE on Virtual Machine/Enterprise Systems Architecture (VM/ESA®), or if you are moving from SQL/DS on VSE to DB2 Server for VM, you should be using *DB2 Server for VM Program Directory*.

Organization

Summary of Changes for DB2 Version 6 Release 1 describes the technical changes made since the last release.

Chapter 1, Before You Begin presents DB2 Server for VSE installation preliminaries and an overview of the preparation, installation, and migration steps found in Chapters 2, 3, and 4.

Chapter 2, Preparing to Install DB2 Server for VSE 6.1 presents the steps to prepare the VSE system for DB2 Server for VSE installation.

Chapter 3, Installing DB2 Server for VSE presents the steps to install DB2 Server for VSE on a VSE system, and briefly describes how to install DB2 Server for VSE as a guest in a VM/ESA environment.

Chapter 4, Migrating an Existing Database presents the steps to migrate an existing SQL/DS database to Version 6 Release 1. You do not have to perform the steps in this chapter for initial installation.

Chapter 5, Maintenance Activities describes various maintenance activities that you should do after DB2 Server for VSE is installed and in use.

Appendix A, Techniques Used for Installation describes some of the techniques you should understand if you are adapting the IBM-supplied materials to your local requirements.

Appendix B, Procedures Provided by IBM lists the procedures supplied by IBM for use during installation.

Appendix C, A-Type Source Members lists the A-type members supplied by IBM for use during installation.

Appendix D, Z-Type Source Members lists the Z-type members supplied by IBM for use during installation.

Appendix E, Additional CICS and VSE Updates for the DB2 Server System
describes additional updates of CICS tables for certain DB2 Server for VSE options.

Bibliography lists other IBM publications that you may find useful.

DB2 Server for VSE Version 6 Release 1 Installation Checklist lists the mandatory and optional steps used to install DB2 Server for VSE Version 6 Release 1 in a VSE system.

Components of the Relational Database Management System

Figure 1 depicts a typical configuration with one database, one batch partition user, and a CICS® partition with several interactive users.

Figure 1. Basic Components of the RDBMS

The **database** is composed of:

- A collection of data contained in one or more *storage pools*, each of which in turn is composed of one or more *database extents (dbextents).*
- A *directory* that identifies data locations in the storage pools. There is only one directory per database.
- A *log* that contains a record of operations performed on the database. A database can have either one or two logs.

The **database manager** is the program that provides access to the data in the database. It is loaded into the database partition from the DB2 Server for VSE library.

The **application server** is the facility that responds to requests for information from and updates to the database. It is composed of the database and the database manager.

The **application requester** is the facility that transforms a request from an application into a form suitable for communication with an application server.

Related Publications

Besides this manual, you should have any of the following manuals that apply to the programs you are using or installing:

DB2 Server for VSE System Administration, SC09-2658
DB2 Server for VSE Database Administration, SC09-2655
DB2 Server for VSE Messages and Codes, GC09-2664
DB2 Server for VSE & VM Operation, SC09-2668

SQL Reserved Words

The following words are reserved in the SQL language. They cannot be used in SQL statements except for their defined meaning in the SQL syntax or as host variables, preceded by a colon.

In particular, they cannot be used as names for tables, indexes, columns, views, or dbspaces unless they are enclosed in double quotation marks (").

ACQUIRE	GRANT	RESOURCE
ADD	GRAPHIC	REVOKE
ALL	GROUP	ROLLBACK
ALTER		ROW
AND	HAVING	RUN
ANY		
AS	IDENTIFIED	SCHEDULE
ASC	IN	SELECT
AVG	INDEX	SET
	INSERT	SHARE
BETWEEN	INTO	SOME
BY	IS	STATISTICS
		STORPOOL
CHAR	LIKE	SUM
CHARACTER	LOCK	SYNONYM
COLUMN	LONG	
COMMENT		TABLE
COMMIT	MAX	TO
CONCAT	MIN	
CONNECT	MODE	UNION
COUNT		UNIQUE
CREATE	NAMED	UPDATE
CURRENT	NHEADER	USER
	NOT	
DBA	NULL	VALUES
DBSPACE		VIEW
DELETE	OF	
DESC	ON	WHERE
DISTINCT	OPTION	WITH
DOUBLE	OR	WORK
DROP	ORDER	
EXCLUSIVE	PACKAGE	
EXECUTE	PAGE	
EXISTS	PAGES	
EXPLAIN	PCTFREE	
	PCTINDEX	
FIELDPROC	PRIVATE	
FOR	PRIVILEGES	
FROM	PROGRAM	
	PUBLIC	

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

First failure data capture support is now provided not only on the application server, but also the application requester. This is to corporate the DRDA RUOW Application Requester support added in this release.

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 manual describes how to install and migrate DB2 Server Version 6 Release 1 in a VSE system environment.

To use this manual you must be familiar with VSE systems, VSE job control language, VSE/VSAM and the CICS system. You should also read the *DB2 Server for VSE System Administration* manual. You must also have selected certain parameters and values for use in installing and generating the database.

You need the following materials to install DB2 Server for VSE:

- DB2 Server for VSE distribution tape
- *DB2 Server for VSE Program Directory*
- This manual
- *DB2 Server for VSE Messages and Codes*
- *Messages and Codes* manual for your VSE system.

Overview of Installation and Migration

This section is an introduction to the installation of DB2 Server for VSE Version 6 Release 1 (6.1) and the migration of existing databases to 6.1. At the beginning of chapters 2 through 4, you can find an outline of the installation and migration steps in each chapter.

Note: If you are installing a new database, you do not have to perform the migration process. Similarly, if you are migrating an existing database to DB2 Server for VSE Version 6 Release 1, you do not have to perform the installation process unless otherwise indicated in the migration instructions.

Installation

If you are installing DB2 Server in a VSE system for the first time, follow the steps in Chapter 2, Preparing to Install DB2 Server for VSE 6.1, and Chapter 3, Installing DB2 Server for VSE.

Migration

If you are migrating from a previous release, follow the steps outlined in Chapter 4.

Preparing for Migration
As part of your preparation to migrate your existing database to the DB2 Server for VSE Version 6 Release 1 database management system, you should review the Appendix in the *DB2 Server for VSE System Administration* manual that discusses the incompatibilities between DB2 Server for VSE Version 6 Release 1 and your current system.

Optional Steps

Not all of the steps in this manual are mandatory. Depending on how you want to install DB2 Server for VSE, you may decide not to perform certain optional steps. Also, depending on how you want to migrate any existing databases you may want to omit certain optional steps.

Note: We strongly recommend that you perform the installation steps that generate the Starter Database, install needed optional database components and verify the installation. While you may skip these steps, they provide you with a test database and sample programs that help you to ensure that the DB2 Server for VSE system is correctly installed. If you are migrating, you may migrate existing SQL/DS tables and application programs to the Starter Database and use them to verify the installation.

Distributed Relational Database Architecture Server Support

The database management system you install following the instructions in this manual does not support the Distributed Relational Database Architecture™ (DRDA®) application server functions. You need this support if you want to:

- Enable remote application requesters to access your application server

- Enable the recognition of default coded character set identifiers (CCSIDs) on an application requester. These defaults may be different than the CCSIDs on the application server.

- Enable logical unit of work identifier (LUWID) support.

After installation, the system will not support DRDA application requester functions. You will need this support if you want to access remote application servers, using CICS online programs.

You can install the additional DRDA code required for these facilities after installation by following instructions in the *DB2 Server for VSE System Administration* manual that includes a discussion of using the DRDA environment and customizing your system for distributed processing.

Preventive Service Planning

If you obtained DB2 Server for VSE individually from IBM Software Distribution, then, before DB2 Server for VSE installation, you should also check with your IBM Support Center or use either Information/Access or the IBMLink system (ServiceLink) for any additional preventive service planning (PSP) information about which you should be aware.

This program release will be maintained through the use of program temporary fix (PTF) tapes. An updated version or release replaces the entire program code. A PTF tape replaces the changed portion of the program code only.

Prerequisite Programs

This section summarizes the program products required or recommended for the DB2 Server for VSE functions and environments available with this release. Unless otherwise stated, the database manager works with all subsequent versions, releases, and modification levels of the products listed in this section as well as with equivalent non-IBM products.

When installing this product on a VSE system, you require an environment provided by VSE/Enterprise Systems Architecture (VSE/ESA) Version 2 Release 2 Modification 0 or later. DB2 Server for VSE requires VSE/VSAM which is included with this operating system. To use DB2 Server for VSE stored procedures, you must have Language Environment for VSE (LE/VSE) active, and you must use an LE compliant compiler for program development.

Figure 2 summarizes the components needed for the usage environments, as well as the languages supported by each environment.

DB2/VSE Environments	DB2/VSE Components[1]			Supported Languages				
	Base	ORA	ISQL	PL/I	Cobol	Fortran	C	ASM
Batch	X			X	X	X	X	X
Online	X	X	X	X	X		X	X
Interactive application development	X	X	X	X	X	X	X	X
Query/Report Writing	X	X	X					
DRDA Requestor		X	X	X	X		X	X
Notes:								
[1] For this column: • **Base** refers to the database manager components that support batch applications, the preprocessors, and the utilities including the database services (DBS) utility. • **ORA** (online resource adapter) refers to the DB2 Server for VM support for transaction processing (CICS*) environments. • **ISQL** refers to the terminal user query and report-writing facilities.								

Figure 2. VSE Environments

Prerequisite programs should be installed before you begin to do any of the steps described in this manual. Check the *DB2 Server for VSE Program Directory* for any prerequisite program temporary fixes (PTFs) that may have to be installed on the prerequisite programs.

Initial Considerations for Installing DB2 Server on a VSE System

Installing DB2 Server on a VSE System

Before using this book to install DB2 Server in a VSE environment, refer to the installation manual for your VSE system for an overview of how to install optional programs such as DB2 Server for VSE.

Placement of DB2 Server for VSE Distribution Libraries

When you use the installation function provided by VSE/Interactive Interface (VSE/II), choose option 2: "Install Programs—V1 Format." The job stream generated installs DB2 Server for VSE in the VSE library PRD2.DB2610. Although you can override this, do not do so because all jobs described in this manual assume that the target library is PRD2.DB2610. If you decide to install DB2 Server for VSE in a different library, you must change any LIBDEF statements that refer to PRD2.DB2610.

If you are using the V2 format dialog, do not perform option 1: "Prepare for Installation" because the distribution tape is nonstacked.

Machine-Readable Material

IBM distributes machine-readable DB2 Server material on magnetic tape (reel or cartridge, non-stack). The format of the tape for VSE is:

File 1   DB2 Server for VSE Copyright Records
File 2   DB2 Server for VSE History File
File 3   DB2 Server for VSE Product
File 4   Tape Mark
File 5   Tape Mark.

This tape is intended for processing by the VSE Maintain System History Program (MSHP), or VSE/II. You will need the following information to download DB2 Server for VSE:

- The tape label for DB2 Server for VSE is

  DB2/VSE.....6.1.0

- The library for the product is PRD2

- The sublibrary for the product is DB2610.

Be sure you have a distribution tape in the correct format for your VSE system. To verify this tape, scan it by running the sample JCL shown in Figure 3. Figure 4 shows a sample report from a scan job.

```
// JOB SCAN TAPE
* ********************************************************
* PLEASE MOUNT DB2 Server R6.1.0 DISTRIBUTION TAPE ON A TAPE DRIVE
* AND ASSIGN SYS006 TO THAT TAPE DRIVE.
* THEN PRESS THE ENTER KEY WHEN READY ...
* ********************************************************
// PAUSE           PLEASE ASSIGN SYS006 NOW ...
// MTC REW,SYS006
// EXEC LIBR
   RESTORE * TAPE=SYS006 SCAN=YES
/*
/&
```

Figure 3. Scanning the DB2 Server for VSE 610 Distribution Library

```
   RESTORE * TAPE=SYS006 SCAN=YES
L059I BACKUP FILE ID = 'DB2/VSE.....6.1.0'
L123I HISTORY FILE FOUND ON TAPE



L091I SUBLIBRARY PRD2.DB2610 FOUND ON INPUT TAPE
     APPROXIMATE SPACE REQUIREMENT :  23791 LIBRARY BLOCKS
     3375 :      953 TRACKS  =     79 CYLINDERS  5 TRACKS
     3380 :      768 TRACKS  =     51 CYLINDERS  3 TRACKS
     3390 :      722 TRACKS  =     48 CYLINDERS  2 TRACKS
     9345 :      851 TRACKS  =     56 CYLINDERS  11 TRACKS
     FBA  :   47602 BLOCKS



L113I RETURN CODE OF RESTORE IS 0
```

Figure 4. Sample Report from the Scan Job

IBM-Supplied Installation Aids

To help you install DB2 Server on a VSE system and migrate existing SQL/DS databases to 6.1, sample job control members are included on the DB2 Server for VSE tape. These are distributed as Z-type source members in the DB2 Server for VSE sublibrary. You load these members as part of preparing for installation, as described in Preparation Step 4: Restore the DB2 Server for VSE Distribution Library in Chapter 2.

Depending on how you choose to install DB2 Server for VSE, you may have to change some of the job control members before submitting them for execution. These members and the changes they need are discussed in the installation and migration steps. You can punch these members out of the DB2 Server for VSE sublibrary into VSE/ICCF or card decks for editing and resubmission. Alternatively, because most of them are short, you can type them in yourself.

For a complete list of the IBM-supplied installation aids distributed with DB2 Server for VSE, see Appendix B, "Procedures Provided by IBM" on page 83, Appendix C, "A-Type Source Members" on page 85, and Appendix D, "Z-Type Source Members" on page 89. You can also find the "DB2 Server version" on page 103 at the back of this manual.

Chapter 2. Preparing to Install DB2 Server for VSE 6.1

To prepare to install DB2 Server for VSE:

1. Read "Planning for Installation" in the *DB2 Server for VSE System Administration* manual.

2. Ensure that the VSE operating system and all necessary software are already installed and running correctly. (See "Prerequisite Programs" on page 2.) If you will be using double-byte characters in DB2 Server for VSE, you must have enabled DBCS support in your CICS® system.

3. Read the *DB2 Server for VM Program Directory* provided with the distribution tape. Complete the instructions and check for any prerequisite program temporary fixes (PTFs) that you may need to install. If you obtained DB2 Server for VSE individually from IBM Software Distribution, then, before installing DB2 Server for VSE, check with your IBM Support Center or use either Information/Access or the IBMLink (ServiceLink) system to see whether there is any additional preventive service planning (PSP) information which you should be aware of.

4. Perform all the mandatory steps in this chapter, and any optional ones that apply to your installation. These steps are shown in Figure 5.

Note: For users migrating from a previous release of SQL/DS™ refer to Chapter 5, "Maintenance Activities" on page 65.

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

1. ▪ Allocate DASD for the DB2 Server for VSE 6.1 Distribution Library (7)
2. ▪ Allocate DASD for the Starter Database (8)
3. ▪ Set Up the VSE Environment (9)
4. ▪ Restore the DB2 Server for VSE Distribution Library (10)
5. ○ Prepare the CICS System for DB2 Server for VSE (11)
6. ○ Setup the SQLGLOB and BIND Files (20)
7. ▪ Define VSAM Data Sets for the Starter Database (24)
8. ○ Set Up the DBNAME Directory (27)

Figure 5. Steps to Prepare to Install DB2 Server for VSE Version 6 Release 1

Preparation Step 1: Allocate DASD for the DB2 Server for VSE 6.1 Distribution Library

This step is mandatory.

Before you can install DB2 Server on a VSE system, allocate space for the distribution library. The approximate size of the library on various devices is:

DASD Storage Requirements for DB2 Server for VSE Library

APPROXIMATE SPACE REQUIREMENT: 27,181 LIBRARY BLOCKS		
DASD Device Type	**Approximate Library Space Required**	**MSHP History File Space Required**
3375	95 cylinders	15 tracks
3380	62 cylinders	15 tracks
3390	58 cylinders	15 tracks
9345	68 cylinders	15 tracks
FB-512	56,815 blocks	900 blocks

Notes:

1. These allocations include approximately 25% free space to allow for maintenance.

2. The sizes for the Maintain System History Program (MSHP) auxiliary history files are based on suggested values in the *IBM VSE/ESA System Control Statements* manual for your VSE operating system.

3. FB-512 devices include 0671, 3370, 9332, 9335, and 9336 storage devices.

Preparation Step 2: Allocate DASD for the Starter Database

This step is mandatory for the installation process, but optional for the migration process.

Allocate VSAM space for the Starter Database. Table 1 shows the approximate size of the Starter Database on various devices.

Table 1. Recommended Starter Database DASD Sizes

Starter Database Data Set Allocations	**3375 Cyls**	**3380 Cyls**	**3390 Cyls**	**9345 Cyls**	**FB-512 Blocks**
Directory	53	34	29	38	31,620
Log	13	8	7	9	9,600
Data Extent					
Minimum	38	24	21	27	28,800
Recommended	121	77	65	85	92,400
Total Allocations					
Minimum	104	66	57	74	70,020
Recommended	187	119	101	132	133,620

Notes for Table 1:

- A complete explanation of the Starter Database is in the *DB2 Server for VSE System Administration* manual.

- Fixed block (FB) storage devices store data in blocks of fixed size. These blocks are addressed by block number relative to the beginning of the particular file.

In the installation process, you have to supply your own volume identifier when defining VSAM data sets. Note that the Starter Database is designed to be installed on a single volume of a given device. If you later choose to add dbextents, you should distribute them across the volumes available. Refer to the *DB2 Server for VSE System Administration* manual for more information on adding dbextents.

You can use any DASD currently supported by VSE/VSAM in your VSE system. If you are defining your own database instead of using the Starter Database, refer to the *DB2 Server for VSE System Administration* manual to estimate the space you require for a particular device to support a database of a given size.

You can easily add dbextents or enlarge the directory after the database is generated. A utility program, ARIMEXBD, is available to increase the size of the directory to support a larger VSAM dataset. (See the *DB2 Server for VSE System Administration* manual for information on ARIMEXBD.) Given the dbspace definitions for the Starter Database, the actual space supported for public and private dbspaces is about 4.6 gigabytes.

Preparation Step 3: Set Up the VSE Environment

This step is mandatory for both the installation and migration process.

For migration from a previous release of SQL/DS, you may have to increase the partition size. Refer to *DB2 Server for VSE System Administration* manual for more information.

Ensure that your VSE system is prepared as follows:

- Equip the system with a tape drive for the type of distribution tape ordered.

- Be sure that the system files are assigned correctly. During the installation process, input is read from SYSIPT and source members from the DB2 Server for VSE sublibrary. Output is written to the printer file, SYSLST, and the SYS001 workfile.

- Ensure that the SYS001 workfile size is at least equal to 1 cylinder on an IBM 3380 DASD (960 blocks on FBA devices).

See the *DB2 Server for VSE System Administration* manual for detailed information about capacity planning for storage requirements.

The partition sizes given below are the minimum required to successfully install or migrate a database. For a detailed discussion of how to calculate partition sizes based on real operating conditions see the *DB2 Server for VSE System Administration* manual. Also, refer to the *IBM VSE/ESA Planning* for information about partition configuration that could be used during the installation of optional program product such as DB2 Server for VSE.

- Compiling and running application programs - 2.0 megabytes;

- CICS system to support ISQL - 8.0 megabytes;

  - to support DRDA Requestor, approximately 1 additional megabyte is required for the resident online resource adapter

- DB2 Server for VSE partition:

  - without DRDA - 5.0 megabytes;

– with DRDA - 6.5 megabytes;

Note:

When the application server is started in single user mode, both the application server and the installation application program are executed in the DB2 Server for VSE partition.

When the application server is started in multiple user mode:

– Batch installation application programs can be started in any partition with enough storage. The library search assignment must include the DB2 Server for VSE 6.1 sublibraries for installation programs executed in the partition.

– ISQL must be executed in the CICS partition.

• If the ISQL facility will be used in the CICS partition, the available CICS dynamic transaction storage size must be at least 900 kilobytes to support ISQL. See "Installation Step 1: Link-Edit the DB2 Server for VSE 6.1 Online Support Components" on page 29.

Preparation Step 4: Restore the DB2 Server for VSE Distribution Library

This step is mandatory.

You can restore the DB2 Server for VSE Distribution Library in two ways. We recommend using the VSE/Interactive Interface, Product Installation Dialog in VSE/ESA. If you use this method, you need to know that DB2 Server for VSE is shipped on a **NON-STACKED V2 FORMAT** tape. For directions on using this method, refer to the *IBM VSE/ESA Installation* for your VSE operating system.

Alternatively, you may create the job control member shown in Figure 6 to restore the Distribution Library. Mount the distribution tape and run your modified job.

```
// JOB ARIS61AD          INSTALL DB2 Server
// MTC REW,cuu           *-- REWIND TAPE
// ASSGN SYS002,cuu1     *-- AUXILIARY HISTORY FILE
// ASSGN SYS005,UA       *-- NO RESTORE TO DOSRES
// ASSGN SYS006,cuu      *-- DISTRIBUTION TAPE
// OPTION CATAL
// EXEC MSHP
INSTALL PRODUCT FROMTAPE ID='DB2/VSE.....6.1.0' - *-- ACTUAL TAPE ID  1
PROD IN=PRD2.DB2610  *-- IDENTIFICATION OF LIBRARIES    2
DEFINE HISTORY AUX EXTENT=xxx:yyy
/*
// MTC RUN,cuu
/&
```

Figure 6. Job ARIS61AD (Using MSHP to Install DB2 Server for VSE)

Notes for Figure 6:

• Before execution, modify the above statements as follows:

cuu   Replace with the address of the tape drive.

	cuu1	Replace with the address of the disk drive on which the auxiliary history file resides.
	xxx	Replace with the starting address of the auxiliary history file (in tracks or blocks).
	yyy	Replace with the size of the auxiliary history file (in tracks or blocks).

- You receive various messages from MSHP. These messages are normal and can be ignored. If you want more details about the MSHP control statements, refer to the *DB2 Server for VSE Messages and Codes.*

- Later installation steps do not require the distribution tape.

1   '**DB2/VSE.....6.1.0**' is the actual ID of the tape.

2   If necessary, replace **PRD2.DB2610** with the library and sublibrary names you used in Figure 6 on page 10.

Preparation Step 5: Prepare the CICS System for DB2 Server for VSE

This step is optional for the installation process, but mandatory for the users who are **migrating** from a previous release and **are** using ISQL.

If you will **not** be using DB2 Server for VSE in an CICS interactive environment, or if you will **not** be using ISQL, skip this step.

To prepare the CICS system for DB2 Server for VSE, update the CICS control tables and modify the CICS startup job control. The modifications to the tables take effect the next time the CICS system is stopped for maintenance and then restarted. The changes to the startup job control ensure that the CICS system can find the DB2 Server for VSE 6.1 sublibrary, and that the CICS subpool is properly defined. You may also define a printer for ISQL.

You need to update the CICS control tables and startup job control to include journaling and the restart resynchronization facility, to ensure the coordinated rollback of a CICS activity when a DB2 Server for VSE activity is being rolled back. This is a requirement for CICS Database Switching support. Refer to the *DB2 Server for VSE System Administration* manual for detailed information about this support.

Note: You have to allocate and format the journal files before restarting CICS.

Modifying the CICS Start-Up JCL

Figure 7 shows an example of CICS startup job control for the application server. Make sure that you add the DB2 Server for VSE sublibrary in your library concatenation chain for your startup job.

```
// JOB CICS START
// LIBDEF PHASE,SEARCH=(PRD2.DB2610,...)
// UPSI 00011000        1
     •
     •
     •
// DLBL SQLBIND,'DB2.BIND.MASTER',,VSAM=catalog,DISP=(OLD,KEEP)
// DLBL SQLGLOB,'DB2.SQLGLOB.MASTER',,VSAM=catalog,DISP=(OLD,KEEP)
// DLBL ARITRAC,'TRACE.FILE1',
// EXTENT ,VSER01,1,0,301,120      5
// ASSGN SYS007,195
     •
     •
     •

// ASSGN SYS098,cuu        2
// EXEC DFHSIP,SIZE=nnnnK  *-- DETERMINATION OF THE CICS SUBPOOL SIZE  3
     •
     •
     •

┌                    ┐
│ Optional CICS System │
│ Initialization Parameter │      4
│ Override Statements │
└                    ┘

     •
     •
     •
/*
/&
```

Figure 7. Starting the CICS System for Use with ISQL

Notes for Figure 7:

1   In a VSE/ICCF environment, place the UPSI statement after the EXEC statement (see note 3 below). The UPSI setting shown in the example allows reconfiguration at initialization time and console responses from SYSIPT. You may need to use different UPSI settings for your environment.

2   The logical unit SYS098 is used for ISQL report output. For multiple-copy support, assign SYS098 to a VSE/POWER-intercepted printer (**cuu**). ISQL uses the 8-position resource name "PRINT98" to control use of the printer.

The logical unit SYS098 is also used for the Online Resource Adapter FFDC Dump output.

3   The EXEC statement parameter SIZE=**nnnnK** controls the CICS subpool size, which is the amount of dynamic storage remaining after the CICS system assigns storage for management and resident program purposes, and is shared by all CICS transactions. ISQL requires at least 900 kilobytes of the subpool. The SIZE value (**nnnn**) specified depends on the CICS configuration.

If the CICS system is being run in a VSE/ICCF environment:

• Replace the EXEC statement shown in Figure 7 with:

    // EXEC DTSINIT,SIZE=**nnnnK**

- Consider increasing the size of the VSE/ICCF interactive partition for the CICS system to at least 8 megabytes.

  If VSE/ICCF is running as a subtask under the CICS/VSE 2.2 or later system, you need to add at least 3 megabytes of virtual storage below the 16MB line reserved for the CICS/VSE partition (SIZE value). Refer to the *IBM VSE/ESA Planning* manual for more information on how to allocate storage for a CICS/VSE system.

4 DB2 Server for VSE 6.1 requires the CICS system to support journaling. Set bit 1 of the UPSI to 1 to force the CICS system to read the optional CICS system initialization parameter override statements from SYSIPT. You can then include the journaling parameter in the override statements. For more information about UPSI values, refer to the CICS manuals.

5 These are the job control statements for the BIND file, the SQLGLOB file, and the trace output DASD SAM file to the CICS startup JCL. The file_IDs specifed for SQLBIND and SQLGLOB must be identical to the name of the file that was specified in the respective DEFINE command of IDCAMS and listed in the VSE/VSAM catalog. See Figure 12 on page 21 and Figure 13 on page 22 for more information on the IDCAMS DEFINE CLUSTER jobs for the SQLGLOB and SQLBIND files. SQLBIND is an optional dataset, it is only required for DRDA application requester functions.

It is recommended that SQLGLOB and SQLBIND DLBL statements be placed in Standard Labels.

If the output of the application requester trace is directed to tape, a TLBL statement for the trace output file must be included in the CICS start-up job instead. An example of a TLBL statement for a trace output file is as follows:

```
// TLBL ARITRAC,'TRACE.FILE2'
```

CICS Table Entries Required by DB2 Server for VSE 6.1

The following CICS resources must be updated to define the DB2 Server for VSE online support and ISQL to the CICS system. DB2 Server for VSE programs and transactions in the CICS System Definition (CSD) file:

DFHSIT System Initialization Table

DFHTCT Terminal Control Tables.

DFHFCT File Control Table

The entries required for each table are described later in this step.

This manual describes only the CICS resources required for DB2 Server for VSE: it does not attempt to provide a tutorial on CICS installation and table definition. For complete descriptions of the CICS tables and parameters, refer to the CICS manuals.

To update the CICS tables, you must make the changes and recompile them. However, you have to wait until the CICS system is stopped and restarted for the changes to take effect. You can change programs and transactions with a batch job, or online using the Resource Definition Online (RDO) tool. For more information on RDO and CEDA, see the *CICS/VSE Resource Definition (Online).*

Besides the minimum entries required to use DB2 Server for VSE online support and ISQL, the CICS Journaling Support and the CICS Restart Resynchronization Support must be enabled. These are discussed in "CICS Journaling Support" on page 19 and in "CICS Restart Resynchronization Support" on page 19, respectively. In addition, you may make optional entries that allow you to use:

- CICS Monitoring Facility
- DB2 Server for VSE Accounting.

For a description of the entries required for each optional feature, refer to Appendix E, "Additional CICS and VSE Updates for the DB2 Server System" on page 91.

Defining CICS Programs and Transactions
The job control shown below is contained in sample ARIS61JD, and can be used to define the programs and transactions required for DB2610.

```
CATALOG ARIS61JD.Z          EOD=&&            REPLACE=YES
// JOB ARIS61JD DEFINE DB2610 PROGRAMS AND TRANSACTIONS
// DLBL VSEUCAT,'VSESP.USER.CATALOG',,VSAM
// DLBL DFHCSD,'CICS.CSD',,VSAM,CAT=VSEUCAT   1
// LIBDEF PHASE,SEARCH=PRD1.BASE
// EXEC DFHCSDUP,SIZE=300K
*-------------------------------------------------------------------*
* DB2 FOR VSE SERVER - CICS CSD Definitions                         *
*                                                                   *
* Note: The group that contains the DB2610 run time routines        *
*       must be in the group list used during CICS startup.         *
*                                                                   *
*       This job will fail until the TRANSEC parameter in           *
*       transaction DSQG is changed.                                *
*-------------------------------------------------------------------*
DELETE GROUP(DB2610)                                                 *
                                                                     *
DEFINE TRANSACTION(CIRA) GROUP(DB2610) PROGRAM(ARIRCONT)             *
    TWASIZE(0) INDOUBT(BACKOUT) SPURGE(YES) TPURGE(YES)              *
                                                                     *
DEFINE TRANSACTION(CIRB) GROUP(DB2610) PROGRAM(ARIRCONT)             *
    TWASIZE(0) INDOUBT(BACKOUT) SPURGE(YES) TPURGE(YES)              *
                                                                     *
DEFINE TRANSACTION(CIRC) GROUP(DB2610) PROGRAM(ARIRCONT)             *
    TWASIZE(0) INDOUBT(BACKOUT) SPURGE(YES) TPURGE(YES)              *
                                                                     *
DEFINE TRANSACTION(CIRD) GROUP(DB2610) PROGRAM(ARIRCONT)             *
    TWASIZE(0) INDOUBT(BACKOUT) SPURGE(YES) TPURGE(YES)              *
                                                                     *
DEFINE TRANSACTION(CIRR) GROUP(DB2610) PROGRAM(ARIRCONT)             *
    TWASIZE(0) INDOUBT(BACKOUT) SPURGE(YES) TPURGE(YES)              *
                                                                     *
DEFINE TRANSACTION(CIRT) GROUP(DB2610) PROGRAM(ARIRCONT)             *
    TWASIZE(0) INDOUBT(BACKOUT) SPURGE(YES) TPURGE(YES)              *
* ----------------------------------------------------------         *
*  ISQL ENTRIES                                                      *
* ----------------------------------------------------------         *
DEFINE TRANSACTION(ISQL) GROUP(DB2610) PROGRAM(ARIITRM)              *
    TWASIZE(300) INDOUBT(BACKOUT) SPURGE(NO) TPURGE(YES)             *
                                                                     *
DEFINE TRANSACTION(CISQ) GROUP(DB2610) PROGRAM(ARIISQL)              *
    TWASIZE(0) INDOUBT(BACKOUT) SPURGE(NO) TPURGE(YES)               *
* ***                                                                *
* ***                 N O T E                                        *
* Set TRANSEC to a value greater than 1, so that DSQG cannot be      *
* initiated by any user on the CICS system.  Only authorized CICS    *
* users should be allowed to invoke this transaction.                *
* ***                                                                *
* ------------------------------------------------------------- *    *
*   Transactions to maintain Global Variables                        *
* ------------------------------------------------------------- *    *
DEFINE TRANSACTION(DSQG) GROUP(DB2610) PROGRAM(ARIRDSQD)             *
    TWASIZE(0) SPURGE(YES) TPURGE(YES) TRANSEC(>1)   2 *
*                                                                    *
DEFINE TRANSACTION(DSQU) GROUP(DB2610) PROGRAM(ARIRDSQD)             *
    TWASIZE(0) SPURGE(YES) TPURGE(YES)                              *
*                                                                    *
DEFINE TRANSACTION(DSQQ) GROUP(DB2610) PROGRAM(ARIRDSQD)             *
    TWASIZE(0) SPURGE(YES) TPURGE(YES)                              *
*                                                                    *
DEFINE TRANSACTION(DSQD) GROUP(DB2610) PROGRAM(ARIRDSQD)             *
    TWASIZE(0) SPURGE(YES) TPURGE(YES)                              *
```

Figure 8 (Part 1 of 2). Defining CICS Programs and Transactions

```
                          * -------------------------------------------------------------- *      *
                          *   Transactions to Bind Packages to Remote Servers               *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE TRANSACTION(CBND) GROUP(DB2610) PROGRAM(ARIPCBND)                 *
                              TWASIZE(0) SPURGE(YES) TPURGE(YES)                                   *
                          *                                                                        *
                          DEFINE TRANSACTION(CB2D) GROUP(DB2610) PROGRAM(ARIPCB2D)                 *
                              TWASIZE(0) SPURGE(YES) TPURGE(YES)                                   *
                          * -------------------------------------------------------------- *      *
                          *     DB2 for VSE ONLINE RESOURCE MANAGER                          *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROG(ARIRCONT) GROUP(DB2610) RES(YES) LANG(ASSEMBLER)             *
                          DEFINE PROG(ARI0OLRM) GROUP(DB2610) LANG(ASSEMBLER)                      *
                          DEFINE PROG(ARICMOD)  GROUP(DB2610) LANG(ASSEMBLER)                      *
                          DEFINE PROG(ARIMS001) GROUP(DB2610) RES(YES) LANG(ASSEMBLER)             *
                          * -------------------------------------------------------------- *      *
                          *     ISQL ENTRIES                                                 *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROG(ARIISQL) GROUP(DB2610)  RES(YES) LANG(ASSEMBLER)             *
                          DEFINE PROG(ARIITRM) GROUP(DB2610)  RES(YES) LANG(ASSEMBLER)             *
                          DEFINE PROG(ARIITRX) GROUP(DB2610)  RES(YES) LANG(ASSEMBLER)             *
                          * -------------------------------------------------------------- *      *
                          *     DBNAME DIRECTORY SERVICES ENTRY                              *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROG(ARIRDIRD) GROUP(DB2610) LANG(ASSEMBLER)                      *
                          * -------------------------------------------------------------- *      *
                          * Phase for DSQG, DSQU, DSQD and DSQQ transactions                 *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARICDSQD) GROUP(DB2610) LANGUAGE(ASSEMBLER) RES(YES)      *
                          * -------------------------------------------------------------- *      *
                          * Phase for CBND and CB2D  Bind transaction                        *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARIPCBND) GROUP(DB2610) LANGUAGE(ASSEMBLER) RES(YES)      *
                          DEFINE PROGRAM(ARIPCB2D) GROUP(DB2610) LANGUAGE(ASSEMBLER) RES(YES)      *
                          * -------------------------------------------------------------- *      *
                          * Phase for SQLGLOB Directory                                      *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARICSQGD) GROUP(DB2610) LANGUAGE(ASSEMBLER)               *
                          * -------------------------------------------------------------- *      *
                          * Phase for Build Assembler Version of the SQLGLOB Directory       *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARICBDGD) GROUP(DB2610) LANGUAGE(ASSEMBLER) RES(YES)      *
                          * -------------------------------------------------------------- *      *
                          * Phase for Character Translation Table                            *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARISSCRD) GROUP(DB2610) LANGUAGE(ASSEMBLER)               *
                          * -------------------------------------------------------------- *      *
                          * Phase for SYSSTRINGS Table                                       *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARISSTRD) GROUP(DB2610) LANGUAGE(ASSEMBLER)               *
                          * -------------------------------------------------------------- *      *
                          * Phase for SYSCCSIDS Table                                        *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARISCCSD) GROUP(DB2610) LANGUAGE(ASSEMBLER)               *
                          * -------------------------------------------------------------- *      *
                          * Phase for Store IBM-supplied Global SQLGLOB Defaults             *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARICGDEF) GROUP(DB2610) LANGUAGE(ASSEMBLER)               *
                          * -------------------------------------------------------------- *      *
                          * Phase for Read ISQL Bind File                                    *      *
                          * -------------------------------------------------------------- *      *
                          DEFINE PROGRAM(ARICIQBD) GROUP(DB2610) LANGUAGE(ASSEMBLER) RES(YES)      *
                          * -------------------------------------------------------------- *      *
                          * Add the DB2 6.1.0 Group to the GroupList used to start CICS       *      *
                          * -------------------------------------------------------------- *      *
                          ADD GROUP(DB2610) LIST(VSELIST)                                          *
                          /*                                                                       *
                          /&                                                                *
                          &&                                                                       *
```

Figure 8 (Part 2 of 2). Defining CICS Programs and Transactions

Notes for Figure 8:

1   Change the information on the DLBL statement to correspond to the VSAM catalog and dataset where the CICS System Definition File for this CICS system resides.

2   Transaction DSQG is used to maintain the DB2 Server for VSE system global variables. Unauthorized use may cause incorrect results during access to servers. Only authorized CICS users should be allowed to invoke this transaction. Set TRANSEC to a value greater than 1.

Entries Required in DFHSIT: The DFHSIT macro must always include:

AMXT=nn
Limit on the number of active tasks within the CICS system.

If you are adding DB2 Server for VSE work to an existing CICS environment, consider increasing the AMXT value. Each active ISQL user requires *two* active tasks within the CICS system. (If the AMXT limit is reached, response time may be adversely affected.)

DBP=YES|xx
Dynamic transaction backout support.

Specifying DBP=YES requests use of the *default* dynamic transaction backout module. The DBP parameter can be specified as DBP=xx, where "xx" is the 2-character suffix of the module to be used.

EXEC=YES
Command-level support.

EXITS=YES
User exits will be used.

TST=NO|xx
Identifies the auxiliary temporary storage program support.

Temporary storage queues defined to ISQL must be nonrecoverable, because recoverable storage queues are incompatible with ISQL. Temporary storage queues with names like CISQXXXX and XXXXCISQ (where XXXX is the terminal ID) are reserved for use by ISQL, and should not be used by other CICS applications.

For information about the optional DFHSIT entries to control access to ISQL, see the *DB2 Server for VSE System Administration* manual.

The DB2 Server for VSE installation process assumes that the application name identified by the DFHSIT APPLID parameter is DBDCCICS. If the application name is not DBDCCICS, take special action (described under "Installation Step 6: Grant SCHEDULE Authority" on page 37).

Entries in DFHTCT Required by ISQL: The DFHTCT TYPE=TERMINAL macro must include:

ALTSCRN=(lines,columns)
Alternate screen size

This parameter is optional. Specify it if you want to use ISQL large-screen support for IBM 3270 terminals with screens larger than 24 rows by 80 columns.

DEFSCRN=(24,80)
> Default screen size

TRMSTAT=TRANSCEIVE
> Terminal status.

Entries in DFHTCT for CICS Local Terminal Printers: The DFHTCT TYPE=TERMINAL macro should include the ALTPAGE and PGESIZE parameters.

If you specify FORMFEED=YES, the value you use for these two parameters should match with the page size of the CICS local terminal printer since the ISQL SET command will no longer have full control over the page size.

If you specify FORMFEED=NO, assign the value (1,132) to the ALTPAGE and PGESIZE parameters. This will allow the ISQL SET command to have full control over the page size.

To use the ISQL terminal printer support, define a DFHTCT entry for each terminal printer.

Entries in DFHFCT for DB2 Server for VSE: The entries in sample ARIS61FC, an A type member, should be placed in the File Control Table (FCT) for the CICS system in which online support is required. You can use a COPY statement to include the entries. If you change the suffix on the FCT INITIAL statement, code an FCT=xx override on CICS Initialization JCL.

```
**********************************************************************
*              DB2 FOR VSE AND VM 6.1   FCT ENTRIES             *
**********************************************************************
*
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                   GLOBAL Variables
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*
SQLGLOB DFHFCT TYPE=FILE,                                        X
            ACCMETH=(VSAM,KSDS),                                 X
            FILE=SQLGLOB,                                        X
            FILSTAT=(ENABLED,OPENED),                            X
            SERVREQ=(ADD,BROWSE,DELETE,UPDATE),                  X
            RSL=PUBLIC,                                          X
            STRNO=2

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                Preprocessor BIND file
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*
SQLBIND DFHFCT TYPE=FILE,                                        X
            ACCMETH=(VSAM,KSDS),                                 X
            FILE=SQLBIND,                                        X
            FILSTAT=(ENABLED,OPENED),                            X
            SERVREQ=BROWSE,                                      X
            RSL=PUBLIC,                                          X
            STRNO=2
```

Figure 9. DFHFCT Sample entries

CICS Journaling Support

If the CICS Journaling Support wasn't enabled when the CICS system was installed, you have to update the following CICS tables to provide the Journaling Support required by DB2 Server for VSE.

DFHJCT Journal Control Table

DFHSIT System Initialization Table.

DFHJCT Entries: A journal used for the CICS system log must be defined in DFHJCT by specifying JFILEID=SYSTEM in a DFHJCT TYPE=ENTRY macro.

Figure 10 shows an example of how to code DFHJCT for a CICS system log allocated to a 3380 DASD device.
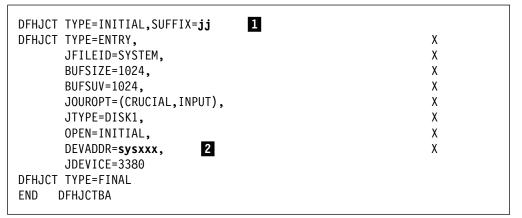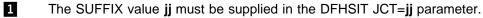
```
DFHJCT TYPE=INITIAL,SUFFIX=jj        1
DFHJCT TYPE=ENTRY,                                      X
       JFILEID=SYSTEM,                                  X
       BUFSIZE=1024,                                    X
       BUFSUV=1024,                                     X
       JOUROPT=(CRUCIAL,INPUT),                         X
       JTYPE=DISK1,                                     X
       OPEN=INITIAL,                                    X
       DEVADDR=sysxxx,          2                       X
       JDEVICE=3380
DFHJCT TYPE=FINAL
END    DFHJCTBA
```

Figure 10. DFHJCT Examples for CICS Journaling

Notes for Figure 10:

- CICS journal files must be formatted before use. See the CICS manuals for information on CICS journal files.

1   The SUFFIX value **jj** must be supplied in the DFHSIT JCT=**jj** parameter.

2   **sysxxx** is the logical unit address for the CICS system log journal (JFILEID=SYSTEM) assigned to a 3380 DASD file.

DFHSIT Entries: The DFHSIT macro must include the JCT parameter. Specify JCT=YES or JCT=(**jj**<,....>) where **jj** is the SUFFIX parameter value specified in the DFHJCT TYPE=INITIAL macro defining the CICS system log journal data set.

CICS Restart Resynchronization Support

If the CICS Restart Resynchronization Support was not enabled when the CICS system was installed, you have to update the following CICS tables to enable the CICS Restart Resynchronization capability.

DFHJCT Journal Control Table

DFHSIT System Initialization Table.

DFHJCT Entries: A journal used for the CICS system log must be defined in the DFHJCT by specifying JFILEID=SYSTEM in a DFHJCT TYPE=ENTRY macro.

Figure 10 is an example of how you could code your DFHJCT for a CICS system log allocated to a 3380 DASD device.

| **Programs and Transactions:** Use the CICS RDO tool to add the resources
| required for CICS Restart Resynchronization.

```
    CEDA ADD GROUP(DFHRMI) LIST(VSELIST)
```

| Use the list that is coded in the value for GRPLIST in your DFHSIT or CICS
| startup.

| **DFHSIT Entries:** The DFHSIT macro must include the JCT parameter. Specify
| JCT=YES or JCT=(**jj**<,....>) where **jj** is the SUFFIX parameter value specified in the
| DFHJCT TYPE=INITIAL macro defining the CICS system log journal data set.

| Preparation Step 6: Setup the SQLGLOB and BIND Files

| This step is mandatory.

| Refer to the *DB2 Server for VSE System Administration* for more information on
| SQLGLOB VSAM files. VSAM datasets can also be created using the VSE/ESA
| Interactive Interface. Refer to the *IBM VSE/ESA Administration* for more
| information.

| Defining the Global Variable File (SQLGLOB)

| To define a VSAM cluster for the SQLGLOB file, modify the VSAM utility IDCAMS
| as shown in Figure 11.

```
 // JOB ARIS618D
 // EXEC IDCAMS,SIZE=AUTO
  DEFINE CLUSTER ( -
        NAME (DB2.SQLGLOB.MASTER                           ) -
        TRACKS (15 5) -    1
        SHAREOPTIONS (2) -
        RECORDSIZE (80     80   ) -
        VOLUMES (volid) -
        NOREUSE -
        INDEXED -
        FREESPACE (15 7) -
        KEYS (8  0     ) -
        NOCOMPRESSED -
        DATA (NAME (DB2.SQLGLOB.MASTER.@D@                      ) -
        CONTROLINTERVALSIZE (4096  )) -
        INDEX (NAME (DB2.SQLGLOB.MASTER.@I@                     ))
        CATALOG (catalog.id                            )
 * ****************************************************************
 * STEP 2: INITIALIZE THE SQLGLOB FILE WITH A DUMMY RECORD
 * ****************************************************************
 // EXEC PROD=ARIS390D
 /*
 /&
```

| *Figure 11. Job ARIS618D (SQLGLOB VSAM Definition)*

| **Note for Figure 11:**

| **1**   The size of the VSAM space is based on the number of CICS users.
| There will be one SQLGLOB record for each CICS user who does not
| want to use the global SQLGLOB defaults, but wants to use his or her
| own SQLGLOB defaults. The sample allocation will be sufficient for

about 6000 users. The IDCAMS REPRO step will load a record into the
SQLGLOB dataset.

Updating the SQLGLOB File with IBM-Supplied Global Defaults

Execute the IBM-supplied job control program ARISGDEF.Z to update the
SQLGLOB file with the IBM-supplied global SQLGLOB default values. Figure 12
shows the IBM-supplied job control program ARISGDEF.

```
// JOB ARISGDEF -- CREATE GLOBAL SQLGLOB DEFAULTS
* ******************************************************************
* ARISGDEF  STEP 1 -- EXECUTE ARICGDEF TO STORE SQLGLOB DEFAULTS    *
* ******************************************************************
// ON $RC < 700 CONTINUE
// LIBDEF *,SEARCH=(PRD2.DB2610)
// DLBL SQLGLOB,'DB2.SQLGLOB.MASTER',,VSAM,CAT=catalog,DISP=(OLD,KEEP)
// EXEC ARICGDEF
/*
// IF $RC <= 4 THEN
// GOTO EXITOK
/. ERREXIT
* DB2 SERVER FOR VSE GLOBAL SQLGLOB DEFAULTS NOT UPDATED DUE TO ERROR
// GOTO SQLDONE
/. EXITOK
* DB2 SERVER FOR VSE GLOBAL SQLGLOB DEFAULTS UPDATED SUCCESSFULLY
/. SQLDONE
/*
/&
```

Figure 12. Job ARISGDEF (Create GLOBAL SQLGLOB Defaults)

Defining the Preprocessor BIND File

This step is optional.

You will only need to do this step if you will be using DRDA CICS Application
Requestor support. This dataset is a repository for the preprocessor bind package
records, that will be bound to remote application servers.

Define a VSE VSAM cluster for the preprocessor bind file, using the VSAM utility
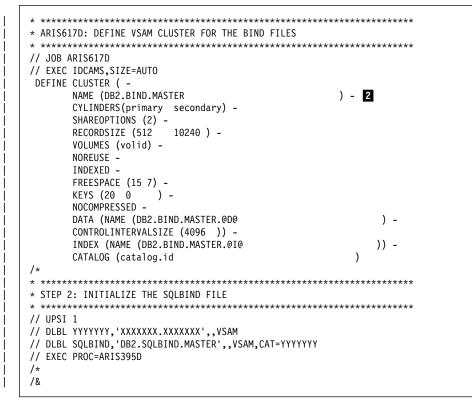IDCAMS. See Figure 13 on page 22.

```
| * **********************************************************************
| * ARIS617D: DEFINE VSAM CLUSTER FOR THE BIND FILES
| * **********************************************************************
| // JOB ARIS617D
| // EXEC IDCAMS,SIZE=AUTO
|  DEFINE CLUSTER ( -
|         NAME (DB2.BIND.MASTER                    ) -  ②
|         CYLINDERS(primary  secondary) -
|         SHAREOPTIONS (2) -
|         RECORDSIZE (512    10240 ) -
|         VOLUMES (volid) -
|         NOREUSE -
|         INDEXED -
|         FREESPACE (15 7) -
|         KEYS (20  0     ) -
|         NOCOMPRESSED -
|         DATA (NAME (DB2.BIND.MASTER.@D@                 ) -
|         CONTROLINTERVALSIZE (4096  )) -
|         INDEX (NAME (DB2.BIND.MASTER.@I@                )) -
|         CATALOG (catalog.id                    )
| /*
| * **********************************************************************
| * STEP 2: INITIALIZE THE SQLBIND FILE
| * **********************************************************************
| // UPSI 1
| // DLBL YYYYYYY,'XXXXXXX.XXXXXXX',,VSAM
| // DLBL SQLBIND,'DB2.SQLBIND.MASTER',,VSAM,CAT=YYYYYYY
| // EXEC PROC=ARIS395D
| /*
| /&
```

Figure 13. Job ARIS617D (Preprocessor Bind File VSAM Definition)

Notes for Figure 13 :

1 If you specified a different file ID for the SQLBIND file than what is specified by the NAME parameter of the DEFINE CLUSTER commands in the ARIS617D procedure, you must alter the NAME specification in the IDCAMS DEFINE CLUSTER commands to match the file ID specified in the DLBL SQLBIND statement. These must agree.

2 The size of the SQLBIND dataset will vary depending on the number of bind files contained in it.

Defining the Preprocessor Bind Work File (BINDWKF)

The Bind work file is required by the preprocessor when creating bind files which will be bound to remote application servers.

Modify the JCL from sample member ARIS619D; it contains JCL to define BINDWKF.

```
|   // JOB ARIS619D
|   * *********************************************************************
|   * ARIS619D: DEFINE VSAM CLUSTER FOR THE BINDWKF FILE
|   * *********************************************************************
|   // DLBL YYYYYYY,'XXXXXXX.XXXXXXX',,VSAM
|   // EXEC IDCAMS,SIZE=AUTO
|    DELETE   (DB2.BIND.WORKF) CLUSTER PURGE       -
|            CATALOG(XXXXXXX.XXXXXXX)
|
|    DEFINE CLUSTER ( -
|          NAME (DB2.BIND.WORKF                    ) -
|          CYLINDERS(1 1) -
|          SHAREOPTIONS (2) -
|          RECORDSIZE (512 10240 ) -
|          VOLUMES (XXXXXX) -
|          REUSE -
|          INDEXED -
|          FREESPACE (15 7) -
|          KEYS (20  0    ) -
|          NOCOMPRESSED -
|          DATA (NAME (DB2.BIND.WORKF.@D@            ) -
|          CONTROLINTERVALSIZE (4096  )) -
|          INDEX (NAME (DB2.BIND.WORKF.@I@           )) -
|          CATALOG (XXXXXXX.XXXXXXX)
|   /*
|   /&
```

| *Figure 14. Sample JCL ARIS619D (Define Preprocessor Bind Work File)*

Converting the ISQL Bind File to a VSAM File

The ISQL bind file is shipped as an A-type source member called ARISIQBD. This file must be stored in the "DB2.BIND.MASTER" master bind file. Execute the IBM-supplied job control program ARISIQBD.Z to store the supplied ISQL bind file in the "DB2.BIND.MASTER" file. Figure 15 on page 24shows the IBM-supplied job control program ARISIQBD.

If the ISQL bind file cannot be converted to a VSAM file, the following message will be displayed on the console:

        ISQL BIND FILE CANNOT BE BUILT DUE TO ERROR

Otherwise, the following message will be displayed:

        ISQL BIND FILE BUILT SUCCESSFULLY

```
| // JOB ARISIQBD -- ISQL BIND FILE CONVERSION
| * *******************************************************************
| * ARISIQBD -- READ LIBRARY MEMBER AND CONVERT TO VSAM            *
| * *******************************************************************
| // ON $RC < 700 CONTINUE
| // SETPARM WDISK='SYSWK1',START=xxxxx,FOR=xx  *-- UPDATE WORKDISK
| // LIBDEF *,SEARCH=(PRD2.DB2610)
| // DLBL SQLBIND,'DB2.BIND.MASTER.',,VSAM,CAT=catalog,DISP=(OLD,KEEP)
| // EXEC ARICIQBD
|    READ MEMBER ARISIQBD.A
| $ $$ SLI MEMBER=ARISIQBD.A,S=PRD2.DB2610
| /*
| // IF $RC < 4 THEN
| // GOTO EXITOK
| /. ERREXIT
| * ISQL BIND FILE CANNOT BE BUILT DUE TO ERROR
| // GOTO SQLDONE
| /. EXITOK
| * ISQL BIND FILE BUILT SUCCESSFULLY
| /. SQLDONE
| /*
| /&
```

| *Figure 15. Job ARISIQBD (ISQL Bind File Conversion)*

| It is recommended that the labels for the new datasets (SQLGLOB, SQLBIND, and
| BINDWKF) be added to the system standard labels. Refer to "VSE/ESA System
| Control Statements" for an explanation.

```
| // JOB STDLABEL
| // OPTION STDLABEL=ADD
| // DLBL SQLGLOB,'DB2.SQLGLOB.MASTER.',,VSAM,CAT=XXXXXXX,            X
|             DISP=(OLD,KEEP)
| // DLBL SQLBIND,'DB2.BIND.MASTER.',,VSAM,CAT=XXXXXXX,               X
|             DISP=(OLD,KEEP)
| // DLBL BINDWKF,'DB2.BIND.WORKF.',,VSAM,CAT=XXXXXXX,                X
| /*
| /&
```

| *Figure 16. Adding new labels to Standard Labels*

| You will also be required to add the labels to the procedure used to load standard
| labels at VSE startup.

| **Note:** The DLBL for BINDWKF must not have the DISP parameter coded.

Preparation Step 7: Define VSAM Data Sets for the Starter Database

This step is mandatory for the installation process, but optional for the migration
process.

To install the Starter Database, modify and run ARIS61CD. Figure 17 shows job
control member ARIS61CD, which contains the job control and VSAM IDCAMS
commands to define the VSAM components of the Starter Database.

You should initially install the Starter Database, because it helps you to ensure that
DB2 Server for VSE is correctly installed. If you are migrating from a previous
release of SQL/DS, allocate a new area for the Starter Database. When you are
ready to generate your own database, refer to the *DB2 Server for VSE System
Administration* manual.

Define VSAM clusters for the following:

- DB2 Server for VSE directory (one only)
- DB2 Server for VSE log (one or two extents can be defined)
- DB2 Server for VSE dbextents (one or more can be defined).

```
// JOB ARIS61CD            DB2 Server STARTER DATABASE VSAM DEFINITIONS
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB          *-- DB2 Server DATABASE ID PROC   1
// EXEC IDCAMS,SIZE=AUTO
   DEFINE UCAT          /* DEFINE USER CATALOG         */ -
          ( NAME (SQLCAT)      -   1
            CYL (1)            -           4
            ORIGIN (NNNN)      -        3
            VOL (XXXXXX)       )        3
   DEFINE SPACE         /* DEFINE DB2 Server DATABASE SPACE */ -
          ( ORIGIN (NNNN)      -
            CYL    (119)       -
            VOL    (XXXXXX)  ) -
            CAT    (SQLCAT)
   DEFINE CLUSTER       /* DEFINE DB2 Server DATABASE DIRECTORY */ -
          ( NAME (SQL.BDISK.STARTER.DB) -        2
            CNVSZ (512)        -
            CYL   (34)         -
            NONINDEXED         -
            VOL   (XXXXXX)     -
            RECSZ (505 505)    -
            REUSE              -
            SHR   (2)          ) -
            DATA  (NAME(SQL.BDISK.STARTER.DB.DATA))-
            CAT   (SQLCAT)
   DEFINE CLUSTER       /* DB2 Server DATABASE LOG */ -
          ( NAME (SQL.LOGDSK1.STARTER.DB) -     2
            CNVSZ (4096)       -
            CYL   (08)         -
            NONINDEXED         -
            VOL   (XXXXXX)     -
            RECSZ (4089 4089)  -
            REUSE              -
            SHR   (2)          ) -
            DATA  (NAME(SQL.LOGDSK1.STARTER.DB.DATA))-
            CAT   (SQLCAT)
   DEFINE CLUSTER       /* DEFINE DB2 Server DATABASE DATA EXTENT 1 */ -
          ( NAME (SQL.DDSK1.STARTER.DB) -        2
            CNVSZ (4096)       -
            CYL   (77)         -
            NONINDEXED         -
            VOL   (XXXXXX)     -
            RECSZ (4089 4089)  -
            REUSE              -
            SHR   (2)          ) -
            DATA  (NAME(SQL.DDSK1.STARTER.DB.DATA))-
            CAT   (SQLCAT)
/*
/&
```

Figure 17. Job ARIS61CD (Defining VSAM Data Sets for the Database)

Notes for Figure 17:

1 If the user catalog for the database will not be identified by the file ID **SQLCAT**, then:

- Update the ARIS61DB procedure to specify the correct file ID in the DLBL statement identifying the VSAM user catalog for the database. This procedure is shown in Figure 18.

- Alter the NAME specification in the IDCAMS DEFINE UCAT command, and the CAT specification in the IDCAMS DEFINE SPACE, and DEFINE CLUSTER commands.

We recommend that you use a VSAM user catalog for the Starter Database. If you choose not to, do the following:

- Remove the DLBL statement identifying the VSAM user catalog

- Remove the DEFINE UCAT command and the DEFINE SPACE command

- Remove the CAT specification from the IDCAMS DEFINE CLUSTER commands.

2 If you have different file IDs for the VSAM spaces of the database than those specified by the NAME parameter of the DEFINE CLUSTER commands in the ARIS61CD job, then:

- Alter the NAME specifications in the IDCAMS DEFINE CLUSTER commands to match the file IDs specified in the DLBL statements of the ARIS61DB procedure. These must agree.

3 Change all occurrences of VOLUME (**XXXXXX**) and ORIGIN (**NNNN**) to reflect the correct volume identifier and origin allocation for the VSAM components that make up the database. (The origin value is the beginning track number or block number.)

4 If the database is being allocated to a 3380 DASD device, the TRK/CYL space allocations do not need to be modified.

If a fixed block architecture (FBA) 0671/3370/9332/9335/9336 DASD device is being used for the database, replace the TRK/CYL allocations with the BLOCKS allocations noted in Table 1 on page 8.

If other than 3380 or fixed block architecture DASD is being used, refer to Table 1 on page 8 for the space allocations.

```
// PROC CAT='SQLCAT'
* *********************************************************
* ARIS61DB: DB2 Server STARTER DATABASE IDENTIFICATION
* *********************************************************
// DLBL &CAT,'SQLCAT',,VSAM
// DLBL BDISK,'SQL.BDISK.STARTER.DB',,VSAM,CAT=&CAT
// DLBL LOGDSK1,'SQL.LOGDSK1.STARTER.DB',,VSAM,CAT=&CAT
// DLBL DDSK1,'SQL.DDSK1.STARTER.DB',,VSAM,CAT=&CAT
```

Figure 18. Procedure ARIS61DB (Identifying the Starter Database Components)

Preparation Step 8: Set Up the DBNAME Directory

This step is optional.

Refer to the *DB2 Server for VSE System Administration* manual for a detailed discussion on how to select your application server name and how the DBNAME directory is used. After you have determined the names of your application servers, do the following:

1. Punch out the A-type source member ARISDIRD.

2. Update the DBNAME (mapped DBNAME) and APPLID (basic DBNAME) fields as required.

3. Identify one of the entries as the system default application server by adding an asterisk in the SYSDEFAULT field (column 16).

4. Update PNM fields with VSE partition names if partition defaults are desired.

5. Re-catalog the A-type source member ARISDIRD.

6. Punch out the Z-type job control member ARISBDID.

7. Update the ARISBDID DLBL and EXTENT statements for your installation.

8. Re-catalog the job control member ARISBDID.

9. Execute job ARISBDID to generate the DBNAME Directory Services phase.

Note: If you are performing a migration, the format of the DBNAME Directory source has changed. Study the comments in A-type source member ARISDIRD, for the new column placements.

If you already have VSE Guest Sharing, do the following additional steps:

- Keep any SET XPCC or SET APPCVM commands in the VSE IPL procedure.

- Replace the VSE Guest Sharing User Subset with the DB2 Server for VSE 6.1 version so that existing applications can continue to access the host VM database.

- Set up a DBNAME Directory entry for the host VM database. This directory entry must have the VM database server RESID in the APPLID field. Refer to the *DB2 Server for VSE System Administration* manual for information on how to do this.

Chapter 3. Installing DB2 Server for VSE

To install this product:

1. Refer to Appendix A, "Techniques Used for Installation" on page 79 for a description of how to adapt the IBM-supplied materials to your local needs.

2. Complete the steps in Chapter 2, "Preparing to Install DB2 Server for VSE 6.1" on page 7.

3. Perform all the mandatory steps in this chapter, and any of the optional ones that apply to your installation. These steps are shown in Figure 19.

Note: If you are migrating from a previous release of SQL/DS, you may only need to perform "Installation Step 1: Link-Edit the DB2 Server for VSE 6.1 Online Support Components." The other steps in this chapter are optional.

Attention: If any procedure within any of the steps in this chapter fails to execute successfully, fix the problem and rerun the entire step again before continuing.

- *Perform these steps in order*
- *Mandatory steps are preceded by squares* (■)
- *Optional steps are preceded by circles* (○)

1. ○ Link-Edit the DB2 Server for VSE 6.1 Online Support Components (29)
2. ■ Generate the Starter Database (30)
3. ○ Install Optional Database Components (33)
4. ○ Reload CCSID-Related Phases Package (35)
5. ■ Selecting National Language Support (35)
6. ○ Grant SCHEDULE Authority (37)
7. ■ Start the Application Server in Multiple User Mode (38)
8. ■ Create CCSID-Related Phases (40)
9. ○ Run ISQL to Verify Installation (41)
10. ○ Run the Sample Programs to Verify Installation (42)
11. ■ Stop the Application Server (43)
12. ○ Add New Users to the Database (45)
13. ■ Change the Database Administrator Password (45)
14. ○ System Customization Activities (46)

Figure 19. Steps to Install DB2 Server for VSE Version 6 Release 1

Install the DB2 Server for VSE 6.1 RDBMS

Installation Step 1: Link-Edit the DB2 Server for VSE 6.1 Online Support Components

This step is optional.

If you will **not** be using DB2 Server for VSE online support in a CICS interactive environment, or ISQL, skip this step.

Figure 20 shows job control member ARIS61BD through which you can support both a CICS interactive environment and ISQL by link-editing the system components.

```
// JOB ARIS61BD     LINK EDIT DB2 Server ONLINE SUPPORT COMPONENTS
// LIBDEF *,SEARCH=(PRD2.DB2610,PRD1.BASE,PRD2.CONFIG),           X
             CATALOG=PRD2.DB2610                     1
// EXEC PROC=ARIS090D  *-- LINK-EDIT ONLINE RESOURCE ADAPTER CONTROL
// EXEC PROC=ARIS140D  *-- LINK-EDIT ISQL        2
// EXEC PROC=ARIS150D  *-- LINK-EDIT ISQL ITRM TERMINAL TRANSACTION   2
// EXEC PROC=ARIS160D  *-- LINK-EDIT ISQL ITRM TERMINAL EXTENSION    2
/*
/&
```

Figure 20. Job ARIS61BD (DB2 Server for VSE System Installation Link-Edit Job)

Notes for Figure 20:

- This job specifies the standard CICS libraries in the LIBDEF search path. If required, modify the job to search your own CICS libraries.

- Link-editing any one of the online support components will include the CICS interface modules DFHEAI and DFHEAI0 found in the CICS PRD1.BASE sublibrary, or your own CICS libraries.

1   This job requires that you specify the DB2 Server for VSE sublibrary into which the linkage editor output is cataloged; in this job, the output is cataloged in the PRD2.DB2610 sublibrary. Specify your own if it has a different name.

2   If you only want to support CICS applications, not ISQL, omit the statements for procedures ARIS140D, ARIS150D, and ARIS160D.

After running this step, you can run the modified CICS start-up JCL that you changed in "Modifying the CICS Start-Up JCL" on page 11.

Generate the Starter Database

Installation Step 2: Generate the Starter Database

This step is mandatory for the installation process, but optional for the migration process.

To generate the Starter Database, run job control member ARIS61DD, shown in Figure 21. The job ends with an SQL return code of 0 if it was successful. A return code of 6 is also acceptable from the ARISDBSD procedure executed by procedures ARIS050D and ARIS055D. The return code for the job is displayed in the SYSLST output. Verify that the job is completed successfully before continuing.

Job ARIS61DD does the following:

1. Starts the application server from the "cold start" (STARTUP=C) condition. It then generates the Starter Database.

2. Uses the assembler preprocessor to create the DBS utility package.

3. Uses the DBS utility to finish generating the database.

4. Uses the DBS utility to load sample tables and routines.

When the application server is cold-started, it reads the statements that specify how the database is to be generated from SYSIPT. Details of the syntax and sequence required for these statements are in the *DB2 Server for VSE System Administration* manual.

```
// JOB ARIS61DD          DATABASE DBGEN AND SET UP
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61SL   *-- DB2 Server SERVICE/PRODUCTION LIBRARY ID PROC
// EXEC PROC=ARIS61DB   *-- DB2 Server DATABASE ID PROC          1
// EXEC PROC=ARIS030D   *-- GENERATE THE STARTER DATABASE        2
// EXEC PROC=ARIS040D   *-- PREPARE THE DBS UTILITY              3
// EXEC PROC=ARIS050D   *-- PREPARE CCSID TABLES                 4
// EXEC PROC=ARIS055D   *-- LOAD SAMPLE TABLES AND ROUTINES      5
/*
/&
```

Figure 21. Job ARIS61DD (Generating a Database)

Notes for Figure 21:

- The source members called by the procedures in this job are described in Appendix C, "A-Type Source Members" on page 85. They are read using the READ MEMBER statement, documented in "Using the READ MEMBER Statement" on page 79.

- If any step fails to execute successfully, rerun the entire job.

- ARIS61DD runs the application server in single user mode (SYSMODE=S). Ensure that it runs in the DB2 Server for VSE partition, as described in "Preparation Step 3: Set Up the VSE Environment" on page 9.

1 Procedure ARIS61DB contains the job control statements that identify the database files, log, directory, and database extents. For more information about ARIS61DB, refer to "Embedding Database Identification Statements" on page 79.

2 Procedure ARIS030D generates the Starter Database by reading A-type source member ARISDBG for the database generation control statements (shown in Figure 22). These statements determine the configuration and maximum size of the database being generated. By changing this A-type source member, you can generate a custom database. Respond with *"DBGEN"* to DB2 Server for VSE message ARI0919D.

3 Procedure ARIS040D uses the DB2 Server for VSE Assembler preprocessor (program ARIPRPA) to create the DB2 Server for VSE DBS utility package. Program ARIPRPA is completed successfully with a return code of 4. This program requires the SYS001 workfile referred to in "Preparation Step 3: Set Up the VSE Environment" on page 9. Do **not** change procedure ARIS040D or the A-type source member it reads (ARIDSQLP).

4 Procedure ARIS050D uses the DBS utility to execute SQL commands that finish generating the database. A return code of 6 from this procedure is acceptable and may be ignored. Do **not** change procedure ARIS050D or the A-type source member it reads (ARISDBU). ARISDBU performs the following:

- Grants RUN authority to PUBLIC for the DBS utility package SQLDBA.ARIDSQL.

- Loads tables for CCSID support.

- Acquires three public dbspaces: HELPTEXT, ISQL, and SAMPLE.

- Creates the SQLDBA.SYSLANGUAGE table in the dbspace named `PUBLIC.SYS0001`. The command also creates indexes SQLDBA.SYSLANGINDEX and SQLDBA.SYSLANGIDINDEX.

- Creates HELP Text tables SQLDBA.SYSTEXT1 and SQLDBA.SYSTEXT2 in the dbspace named `PUBLIC."HELPTEXT"`. The command also creates indexes SQLDBA.SYSTEXT1INDEX and SQLDBA.SYSTEXT2INDEX.

- Creates the ISQL sample routine table EXAMPLE.ROUTINE, and an index for it named EXAMPLE.RINDEX.

- Creates view SQLDBA.SYSUSERLIST on catalog SYSTEM.SYSUSERAUTH, and grants SELECT authority to PUBLIC on the view.

- Grants SELECT authority to PUBLIC for all DB2 Server for VSE catalog tables except the SYSTEM.SYSUSERAUTH catalog, and database CONNECT authority to all users (ALLUSERS).

- Reloads the preprocessor package for DBCS support.

5 Procedure ARIS055D reads A-type source members ARISAMDB and ARISAMPI, which contain commands that do the following:

- Create sample tables SQLDBA.DEPARTMENT, SQLDBA.EMPLOYEE, SQLDBA.ACTIVITY, SQLDBA.PROJECT, SQLDBA.EMP_ACT, and SQLDBA.PROJ_ACT.

A return code of 6 from this procedure is acceptable and may be ignored.

```
CUREXTNT=1
MAXPOOLS=256
MAXEXTNT=256
MAXDBSPC=10240
END
1 1
END
PUBLIC   12800  1
PUBLIC    2048  1
PUBLIC    8192  1
PUBLIC    1024  1
PUBLIC     512  1
PUBLIC    1024  1
PUBLIC    1024  1
PUBLIC    1024  1
PUBLIC    5120  1
PUBLIC     256  1
PUBLIC     256  1
PUBLIC     128  1
PUBLIC     128  1
PUBLIC     128  1
PUBLIC     128  1
PUBLIC     128  1
PUBLIC     128  1
PRIVATE    128  1
PRIVATE    128  1
PRIVATE    128  1
PRIVATE    128  1
PRIVATE    128  1
INTERNAL    80  1024 1
END
```

Figure 22. A-type source member ARISDBG. These statements specify the Dbextents and Dbspaces.

Notes for Figure 22:

For details on the syntax of these control statements, refer to the *DB2 Server for VSE System Administration* manual.

Installation Step 3: Install Optional Database Components

This step is optional.

We recommend that you install **all** these optional database components, even if you do not plan to use them now. Job control member ARIS61ED, shown in Figure 23, contains the job control statements to load the optional components of a database into a Starter Database. You may omit specific optional components by removing the procedures in job ARIS61ED that create that component.

```
 // JOB ARIS61ED     INSTALL DATABASE COMPONENTS
 // LIBDEF PROC,SEARCH=(PRD2.DB2610)
 // EXEC PROC=ARIS61SL   *--DB2 Server SERVICE/PRODUCTION LIBRARY ID PROC
 // EXEC PROC=ARIS61DB   *--DB2 Server DATABASE ID PROC
 // EXEC PROC=ARIS080D   *--INSTALL ONLINE SUPPORT          2
 // EXEC PROC=ARIS110D   *--INSTALL ISQL                    3
 // EXEC PROC=ARIS120D   *--INSTALL ISQL
 // EXEC PROC=ARIS130D   *--INSTALL ISQL
 // EXEC PROC=ARIS360D   *--INSTALL FIPS FLAGGER            4
 /*
 /&
```

Figure 23. Job ARIS61ED (Database Options Installation Job)

Notes for Figure 23:

- The ARIS61ED job runs the application server in single user mode. Ensure that it runs in the DB2 Server for VSE partition as described in "Preparation Step 3: Set Up the VSE Environment" on page 9.

2   Procedure ARIS080D installs the DB2 Server for VSE online support, which you need to run ISQL or any of your own interactive applications. In Installation Step 2: Generate the Starter Database, procedure ARIS050D granted CONNECT authority to ALLUSERS. This allows the DB2 Server for VSE online support to implicitly connect users. See the *DB2 Server for VSE Database Administration* for more information on implicit CONNECT.

3   Procedures ARIS110D, ARIS120D, and ARIS130D install ISQL support into the database. If you do not want ISQL support, omit these statements.

Although the procedures for installing ISQL do not require it, VSE/POWER is a prerequisite for writing multiple-copy reports through ISQL.

4   Procedure ARIS360D loads the FIPS flagger into the database. For more information on the FIPS flagger, see the *DB2 Server for VSE Application Programming*.

After making the necessary job control changes, submit ARIS61ED for execution. All other job steps should end with a return code of 0 through 4. Review the SYSLST output produced by the job, to verify that all job steps are executed successfully before proceeding to the next step.

If any step fails, remove the EXEC PROC statements for all steps that are completed, and rerun the job.

However, do not remove the LIBDEF statement, the database identification procedure (ARIS61DB), or the library definition procedure (ARIS61SL). For example, if procedure ARIS110D did not complete successfully, you may rerun the step by executing the job control statements in Figure 24.

```
// JOB ARIS61ED     MODIFIED FOR RESTART
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB    *-- STARTER DB ID
// EXEC PROC=ARIS61SL    *-- SERVICE/PRODUCTION LIBRARY ID
// EXEC PROC=ARIS110D    *-- ISQL INSTALL
/*
/&
```

Figure 24. Job ARIS61ED Modified for Restart

Installation Step 4: Reload CCSID-Related Phases Package

This step is mandatory.

Job control member ARIS61WD, shown in Figure 25, contains the job control
statements to load the CCSID-related phases package into the database. After
making any changes, submit ARIS61WD for execution. All job steps should end
with a return code of 0 through 4.

```
// JOB ARIS61WD     RELOAD CCSID-RELATED PHASES PACKAGE
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61SL    *-- DB2 SERVICE/PRODUCTION LIBRARY ID
// EXEC PROC=ARIS61DB    *-- DB2 DATABASE ID
// EXEC PROC=ARIS175D    *-- RELOAD CCSID-RELATED PHASES PACKAGE
/*
/&
```

Figure 25. Job ARIS61WD (Reload CCSID-related Phases Package

Notes for Figure 25:

- For procedures ARIS61DB and ARIS61SL, substitute your own procedures or
  job control statements that identify your current database and the DB2 Server
  for VSE Version 6 Release 1 sublibrary.

- Procedure ARIS175D reloads the CCSID-related phases package in the
  database by running the application server in single user mode against that
  database.

Installation Step 5: Selecting National Language Support

This step is optional.

This step will install a national language for DB2 Server for VSE, and optionally
load the ISQL Help Text for that language. The following steps will be performed:

- Enlarge Help Text Dbspace

- "Install" Language

- Verify Installation

Enlarge Help Text Dbspace

This is only necessary if the Help Text Dbspace is not large enough to hold the addition of this language. The Help text for a language requires about 2048 free pages. As supplied, DB2 Server for VSE has 8192 pages assigned for the PUBLIC.HELPTEXT dbspace. This is sufficient for the Help text for 4 languages.

Change the PAGES=XXXX to a suitable amount in the sample JCL ARIS61HZ. Note that this step will DROP existing dbspace, so it is important to save all existing site Help Text using DATAUNLOAD. When the larger dbspace is available, RELOAD the Help Text data.

```
// JOB ARIS61HZ     Enlarge Help Text Dbspace
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB    *-- DB2 DATABASE ID
// EXEC PROC=ARIS61SL    *-- DB2 SERVICE/PRODUCTION LIBRARY ID
// EXEC ARISQLDS,SIZE=AUTO,                                        X
              PARM='SYSMODE=S,LOGMODE=N,PROGNAME=ARIDBS'
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
COMMENT '**--> ACQUIRE STANDARD SQL/DS DATA BASE DBSPACES <--**'
ACQUIRE PUBLIC DBSPACE NAMED "HELPTEXT" (PAGES=XXXX);
COMMENT '**--> CREATE HELP TEXT TABLES AND INDEXES <--**'
CREATE TABLE SQLDBA.SYSTEXT1 ( TOPIC CHAR(20) NOT NULL
                               FOR BIT DATA,
                               ITEM SMALLINT NOT NULL,)
                               IN "PUBLIC"."HELPTEXT";
CREATE TABLE SQLDBA.SYSTEXT2 ( ITEM SMALLINT NOT NULL,
                               SEQNO SMALLINT NOT NULL,
                               "SQL/DS HELP" CHAR(60) NOT NULL
                                FOR BIT DATA,
                               LANGKEY CHAR(4) NOT NULL )
                               IN "PUBLIC"."HELPTEXT";
CREATE INDEX SQLDBA.SYSTEXT1INDEX
                   ON SQLDBA.SYSTEXT1(TOPIC,ITEM);
CREATE INDEX SQLDBA.SYSTEXT2INDEX
                   ON SQLDBA.SYSTEXT2(ITEM,SEQNO,LANGKEY);
GRANT SELECT ON SQLDBA.SYSTEXT1    TO PUBLIC;
GRANT SELECT ON SQLDBA.SYSTEXT2    TO PUBLIC;
COMMIT WORK;
COMMENT '************************************************************
        *************--> END ARISDBU INPUT COMMANDS <--*************
        ************************************************************
/+
/*
/&
```

Figure 26. Job ARIS61HZ Enlarge Help Text Dbspace

Install Language

Job control member ARIS61JZ, shown in Figure 27 on page 37, contains the JCL required to install a language. Modify the sample as required, with the following considerations:

- Change LANG=AME to the Short form of the language name, taken from the following list:

Language	Short Name
Mixed English	AME
Uppercase English	UCE
French	FRE
German	GER
Japanese	KAN
Chinese	HAN

- If you want only the ISQL Help Text to be loaded, set HELP=ONLY. To install a National language in addition to the Help Text, set HELP=YES. If you do not want Help Text to be loaded now, then set HELP=NO.

- Mount the tape containing Help Text and change the CUU=xxx parameter to refer to the tape drive address.

- If you want this language to be the default language, set DEFAULT=YES; otherwise, set the value to NO.

```
// JOB ARIS61JZ -- Install Language
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS380D,LANG=AME,HELP=ONLY,CUU=xxx
/&
```

Figure 27. Job ARIS61JZ Install Language

Notes to Figure 27:

This job will perform the following functions:

- Define a sublibrary for the language components
- Linkedit the message repository
- Update SQLDBA.SYSLANGUAGES with language key and language id
- Linkedit language specific parts
- Change the default language if requested
- Load Help text if requested.

Installation Step 6: Grant SCHEDULE Authority

This step is optional.

If the CICS application name specified in the SIT table is DBDCCICS (APPLID=DBDCCICS) and you are using the default password (SQLDBAPW), skip this step.

In Installation Step 3: Install Optional Database Components, procedure ARIS080D granted SCHEDULE authority to user ID DBDCCICS and assigned it the password SQLDBAPW. DBDCCICS is the default CICS application name (APPLID).

However, if in "Entries Required in DFHSIT" on page 17, you specified a different CICS application name in the SIT (APPLID=**name**), this **name** should be granted

SCHEDULE authority instead. To do this, run job control member ARIS61FD, shown in Figure 28.

The password (**namepw**) specified in the GRANT SCHEDULE command must also be specified in the CIRB and CIRT transactions used to start and stop the DB2 Server for VSE online support. See "Starting the DB2 Server for VSE Online Support" on page 40 and "Stopping the DB2 Server for VSE Online Support" on page 44. For details on the CICS APPLID, refer to the CICS manuals.

```
// JOB ARIS61FD     GRANT SCHEDULE FOR DFHSIT APPLID
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61PL   *-- DB2 Server PRODUCTION LIBRARY ID PROC
// EXEC PROC=ARIS61DB   *-- DB2 Server DATABASE ID PROC
// EXEC PROC=ARISDBSD   *-- RUN DBS UTILITY IN SINGLE USER MODE
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
GRANT SCHEDULE TO name IDENTIFIED BY namepw;
/*
/&
```

Figure 28. Job ARIS61FD (Grant SCHEDULE Authority for DFHSIT Applid)

Note for Figure 28:

- Change **name** to the name specified for the CICS application name (APPLID=**name**). Substitute your own password for **namepw**.

Verify the Installation

Installation Step 7: Start the Application Server in Multiple User Mode

This step is mandatory for the installation process, but optional for the migration process.

You should verify the installation by performing Installation Step 7: Start the Application Server in Multiple User Mode through Installation Step 11: Stop the Application Server.

To use the application server in multiple user mode, start it in a partition like a batch job. You can then run applications in other partitions that use DB2 Server for VSE, or you can start CICS transactions that access DB2 Server for VSE.

Note: DB2 Server for VSE has many initialization parameters that it uses to initialize and configure its partition. These parameters are described in detail in the *DB2 Server for VSE System Administration* manual, along with examples of how you can create lists of such parameters and reference them. Ways of using and overriding cataloged procedures for starting the application server are also described there.

The following are simple examples of how to start the application server. IBM-supplied job control member ARIS61GD starts the application server in multiple user mode. Further information on day-to-day operation of DB2 Server for VSE is in the *DB2 Server for VSE & VM Operation* manual. The VSE partition configuration required for DB2 Server for VSE multiple user mode operation is described in "Preparation Step 3: Set Up the VSE Environment" on page 9.

Starting the Application Server

Figure 29 shows job control member ARIS61GD, which starts the application server by allowing its internal default initialization parameters to set up a multiple user mode environment. This default environment allows for concurrent DB2 Server for VSE users.

```
// JOB ARIS61GD    START DB2 Server IN MULTIPLE USER MODE
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61PL    *-- DB2 Server PRODUCTION LIBRARY ID PROC   2
// EXEC PROC=ARIS61DB    *-- DB2 Server DATABASE ID PROC             1
// EXEC ARISQLDS,SIZE=AUTO    *-- START DB2 Server                   3
/*
/&
```

Figure 29. Job ARIS61GD (Starting the Application Server in Multiple User Mode)

Notes for Figure 29:

- A minimum partition size of 5.0 megabytes should be used for DB2 Server for VSE until the actual virtual storage requirements are calculated. If you have installed DB2 Server for VSE with DRDA application server support, you need a minimum partition size of 6.5 megabytes or more of storage. (Refer to the *DB2 Server for VSE System Administration* manual for formulas to calculate virtual storage requirements.)

1 For procedure ARIS61DB you can substitute your own procedure or job control statements to start the application server using your own database.

2 If you have installed a language other than the default Mixed English, you may want to reference that sublibrary with

  `// EXEC PROC=ARIS61PL,PLIB=PRD2.DB261S02`

  where S02 is the sublibrary suffix

3 You can specify the CHARNAME parameter for DB2 Server for VSE startup. Refer to the *DB2 Server for VSE System Administration* for information, before setting this parameter.

Select a National Language for Console Messages: You can use the SET LANGUAGE command from the operator console so that DB2 Server for VSE messages can be received in the selected language.

Starting the CICS System

The CICS system needs to be running before you can start DB2 Server for VSE online support. While you do not have to restart the CICS system exclusively for DB2 Server for VSE, you must update both the CICS startup job control and the CICS control tables before you can use DB2 Server for VSE with the CICS system. See "Preparation Step 5: Prepare the CICS System for DB2 Server for VSE" on page 11.

Starting the DB2 Server for VSE Online Support

You can use the CICS CIRB transaction with all its internal default parameters, to start the DB2 Server for VSE online support. The CIRB transaction accepts six positional parameters having the following default values:

password   Defaults to SQLDBAPW. This is the password for the CICS APPLID discussed under "Installation Step 6: Grant SCHEDULE Authority" on page 37.

number of links   (NOLINKS) defaults to 3.

default user ID   (DEFUID) defaults to CICSUSER.

resource adapter ID   (RMID) defaults to 0.

language ID   (LANGID) specifies the language that is link-edited and the search order. The default is American English (AMENG).

SERVER-NAME   (SERVER-NAME) defaults to SQLDS (or to the system default application server if you have performed "Preparation Step 8: Set Up the DBNAME Directory" on page 27).

Entering CIRB is thus the same as entering:

```
CIRB SQLDBAPW,3,CICSUSER,0,AMENG,SQLDS
```

Refer to the *DB2 Server for VSE System Administration* manual for details about the parameters that can be passed in a CIRB transaction. (That discussion includes a description of how the user IDs DBDCCICS and CICSUSER relate to the DB2 Server for VSE online support.)

If the CIRB transaction fails to run successfully, ensure that:

- The required CICS table updates have been made.

- The CICS system has been restarted **after** the required table updates were made, or RDO was used to update the required tables.

- The DFHSIT application name (APPLID) has been granted SCHEDULE authority in the database. (See "Installation Step 6: Grant SCHEDULE Authority" on page 37.)

- The DB2 Server for VSE sublibrary has been concatenated to the appropriate search chains in the partition in which the CICS system or ICCF runs.

- The application server has been started in multiple user mode.

- All prerequisite service required by DB2 Server for VSE has been applied.

- The CICS restart resynchronization support has been enabled.

Installation Step 8: Create CCSID-Related Phases

This step is mandatory.

This step creates the CCSID-related phases from the system catalog tables in the database.

1. Punch out the Z-type job control member ARISCNVD.

2. Update the WORKDISK, LIBRARY, and PARMS statements for your installation. The programs that refresh the phases take one parameter with the following format: 'USERID/PASSWORD/DATABASENAME', where 'USERID' is a user ID with DBA authority (defaults to SQLDBA if not specified). 'PASSWORD' is the connect password for the USERID (defaults to SQLDBAPW if not specified), and 'DATABASENAME' is the RESID of the database to connect to (if not specified, defaults to the currently connected database). The parameters are positional; for example, in order to specify the DATABASE, the USERID and PASSWORD must also be specified.

3. Re-catalog the job control member ARISCNVD.

4. Execute job ARISCNVD to generate the CCSID-related phases.

Base CCSID phases are supplied with DB2 Server for VSE. Run this job to create updated versions.

Installation Step 9: Run ISQL to Verify Installation

This step is optional.

If you did not install ISQL in "Installation Step 3: Install Optional Database Components" on page 33, skip this step.

Starting ISQL

ISQL runs as a CICS transaction, and is invoked just like any other transaction. Details of the sign-on and exit procedures are in the *DB2 Server for VSE & VM Interactive SQL Guide and Reference*.

After the CICS terminal has been activated and the DB2 Server for VSE online support has been started, start ISQL by typing:

```
ISQL
```

The system responds with the ISQL sign-on screen, and prompts you to enter your user ID, password and optionally a target database name.

All further actions are handled conversationally between the CICS user and ISQL.

If you cannot log on to ISQL, ensure that:

- The CICS resources were successfully updated during "Preparation Step 5: Prepare the CICS System for DB2 Server for VSE" on page 11.

- There is enough CICS dynamic storage for ISQL (900 kilobytes).

- ISQL was installed successfully during "Installation Step 3: Install Optional Database Components" on page 33.

- DB2 Server for VSE online support has been started with links to the specified (or default) database.

- All links managed by DB2 Server for VSE online support have not been used up.

- All prerequisite service required by DB2 Server for VSE has been applied.

Verify the Installation

If you are signed on to ISQL, you can use it to verify that DB2 Server for VSE is correctly installed and that the Starter Database is successfully installed

To test the Starter Database, execute the following example SQL SELECT command through ISQL:

```
SELECT CREATOR,TNAME FROM SYSTEM.SYSACCESS WHERE CREATOR='SQLDBA'
```

The information displayed is selected from the DB2 Server for VSE catalog table SYSTEM.SYSACCESS. The rows or sequence of rows displayed may vary depending on the database options that were installed. Figure 30 shows all the possible rows that may be displayed.

```
CREATOR    TNAME
--------   ------------
SQLDBA     SYSUSERLIST        ---> SYSTEM.SYSUSERAUTH view
SQLDBA     ARIDSQL            ---> The DBS utility package
SQLDBA     ARIISQL            ---> The ISQL package
SQLDBA     VPHONE             ---> View for sample tables
SQLDBA     VEMPLP             ---> View for sample tables
SQLDBA     ARIFCRD            ---> FIPS Flagger package
SQLDBA     ARIPDBS            ---> DBCS support package
```

Figure 30. Installation Verification Display

To print the display results, enter the ISQL display command:

```
PRINT
```

The successful execution of the PRINT command verifies that SYS098 has been assigned to a VSE/POWER-intercepted printer, or to a real printer. (Refer to "Modifying the CICS Start-Up JCL" on page 11.)

Stopping ISQL

To end the display and terminate the ISQL session:

1. Type the ISQL display command:

   ```
   END
   ```

2. Type the ISQL session termination command:

   ```
   EXIT
   ```

Installation Step 10: Run the Sample Programs to Verify Installation

This step is optional.

You should run the sample application programs to verify that you correctly installed the DB2 Server for VSE system and the Starter Database.

For each language supported by an DB2 Server for VSE preprocessor program application program is supplied that shows how SQL commands can be coded in the preprocessor programs. These sample programs all access and manipulate the DB2 Server for VSE sample tables in a similar manner. Refer to the *DB2 Server for VSE Application Programming* manual for listings of the sample programs.

IBM also supplies the following DB2 Server for VSE Z-type source members with the job control statements to run the sample programs.

ARIS5ASD preprocesses, assembles, link-edits, and runs Assembler
ARIS5C2D preprocesses, compiles, link-edits, and runs COBOL
ARIS5CD preprocesses, compiles, link-edits, and runs C
ARIS5FTD preprocesses, compiles, link-edits, and runs FORTRAN
ARIS5PLD preprocesses, compiles, link-edits, and runs PL/I.

Retrieve the source member containing the sample program job control statements and change it as needed. Figure 31 shows the job control statements to retrieve the sample COBOL program.

```
// JOB RETRIEVE COBOL SAMPLE PROGRAM JOB CONTROL
// EXEC LIBR,PARM='MSHP'
ACCESS SUBLIB=PRD2.DB2610
PUNCH ARIS6CBD.Z
/*
/&
```

Figure 31. Retrieving the Job Control for Running Sample Programs

Change the retrieved sample program job control member as follows:

1. Delete the first statement in the job control member that begins: `CATALOG`

2. Change the DLBL, EXTENT, and ASSGN statements for the preprocessor output and the compiler input files to meet local conventions.

3. Change the device address on the CLOSE statements for SYSPCH and SYSIPT to meet local conventions.

4. You must supply a LIBDEF statement to indicate which sublibrary is to be used to catalog the phase produced by this job stream.

5. Delete the last two statements in the job control member (`/+` and `/*`), and any records that follow.

Before submitting the changed job for execution, the application server must be operating in multiple user mode. (Refer to "Installation Step 7: Start the Application Server in Multiple User Mode" on page 38.)

After the application server has been started in multiple user mode in the DB2 Server for VSE partition, submit the SQL sample program job to run in the partition assigned for application programs. (Refer to "Preparation Step 3: Set Up the VSE Environment" on page 9.) A description of the input member and the expected output is included in the preface of the source code. Make sure the sample is operating as expected before going on to the next step.

Installation Step 11: Stop the Application Server

This step is mandatory for the installation process, but optional for the migration process.

Stopping the DB2 Server for VSE Online Support

You can use the CICS CIRT transaction with all its internal default parameters, to stop the DB2 Server for VSE online support. The CIRT transaction accepts three positional parameters, which have the following default values:

password   Defaults to SQLDBAPW. This must be the same password as the one specified (or the default) in the CIRB transaction.

mode   Defaults to NORMAL. Options are NORMAL or QUICK.

interval   Defaults to 30 (seconds). This is a decimal value between 0 and 3600 (seconds).

Entering CIRT is thus the same as entering:

```
CIRT SQLDBAPW,NORMAL,30
```

Refer to the *DB2 Server for VSE System Administration* manual for details about the parameters that can be passed in a CIRT transaction.

Stopping the CICS System

The CICS system need not be stopped when the application server is being shut down; it can continue to process transactions that do not access DB2 Server for VSE. If the CICS system must be stopped, that action can be taken in its normal way; DB2 Server for VSE does not restrict CICS shutdown.

Stopping the Application Server

To stop the application server:

1. Signal the DB2 Server for VSE operator communications routine using the VSE Attention Routine command MSG F**x** (where **x** is the partition in which the application server is running).

2. In response to message ARI0062A, enter the SQL command **y** SQLEND (where **y** is the reply-id of the partition in which the application server is running).

```
 MSG F4
 AR 015 1I40I  READY
*F4-004 ARI0062A SQLDS  :
               ENTER AN SQL OPERATOR COMMAND
 4 SQLEND
 F4 004 ARI0028I DB2 Server IS TERMINATING
 F4 004 ARI0065I DB2 Server OPERATOR COMMAND PROCESSING COMPLETE
 F4 004 ARI0032I DB2 Server HAS TERMINATED
 F4 004 ARI0043I DB2 Server RETURN CODE IS 0
 F4 004 EOJ STARTSQL  MAX.RETURN CODE=0000
```

Figure 32. Stopping the Application Server

Operator entries are in **BOLD** type.

For more information on the SQLEND command, see the *DB2 Server for VSE System Administration* manual.

Post-Installation Activities

Installation Step 12: Add New Users to the Database

This step is optional.

User IDs are usually added to the database after it is installed by executing SQL GRANT commands through ISQL or the DBS utility. The job shown in Figure 33 uses the DBS utility to add a new user ID with DBA authority to the database.

```
// JOB ADD USERIDS
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61PL    *-- DB2 Server PRODUCTION LIBRARY ID PROC
// EXEC PGM=ARIDBS,SIZE=AUTO      *-- USE THE DBS UTILITY
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
GRANT DBA TO newdba IDENTIFIED BY newdbapw;  1
/*
/&
```

Figure 33. Adding New User IDs to the Database

Notes for Figure 33:

- You can supply more than one GRANT statement in the DBS utility SYSIPT input.

- Refer to the *DB2 Server for VSE & VM SQL Reference* for a complete description of the GRANT command.

- The application server must be running in multiple user mode in another partition when you run this job. Refer to "Installation Step 7: Start the Application Server in Multiple User Mode" on page 38 for instructions on how to do this.

1   At this time in the installation process, you may want to add a new user ID with DBA authority to the database (as shown above). This new user ID would be responsible for database administration. Replace **newdba** with a new DBA ID and replace **newdbapw** with a new password.

Installation Step 13: Change the Database Administrator Password

This step is mandatory for the installation process, but optional for the migration process.

The user ID SQLDBA is the default user ID under which all DB2 Server for VSE installation jobs are run. It has the default password SQLDBAPW assigned to it. Since it has DBA authority, its use must be carefully controlled. After finishing the DB2 Server for VSE installation and running the sample programs, change this password to one of your own choosing, by entering a GRANT command through either ISQL or the DBS utility.

Figure 34 on page 46 shows a DBS utility job to change the password. The user SQLDBA still has DBA authority, but its password is changed to **newpw**.

```
// JOB ARIS61VD     CHANGE SQLDBA PASSWORD
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61PL   *-- DB2 Server PRODUCTION LIBRARY ID PROC
// EXEC PGM=ARIDBS,SIZE=AUTO   *-- USE THE DBS UTILITY
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
GRANT CONNECT TO SQLDBA IDENTIFIED BY newpw;     1
/*
/&
```

Figure 34. Job ARIS61VD (Example of Changing the SQLDBA Password in the Database)

Notes for Figure 34:

- **Do not delete user ID SQLDBA from the system**. It was used for the creation of the packages (through PREP) for important programs (such as the DBS utility, the online resource adapter, and ISQL); and if service is applied to any of these programs, the IBM-supplied procedures assume that this user ID with password SQLDBAPW is in the database. Before any of these program packages can be recreated, the password must be changed back to SQLDBAPW.

- The application server must be running in multiple user mode in another partition when you run this job. Refer to "Installation Step 7: Start the Application Server in Multiple User Mode" on page 38.

1   Replace **newpw** with a new password.

Installation Step 14: System Customization Activities

This step lists further administration and customization activities you should consider at this time. These are:

- Install and activate the DRDA Application Server code, and customize the database for distributed processing.

- Install and activate the DRDA Application Requestor code.

- Change the setting of the CHARNAME parameter for the database and initialize the user partition since the default after installation is INTERNATIONAL. The CCSID defaults for the application server are determined when a CHARNAME is chosen.

- Set database options, such as double-byte character set (DBCS) support and character subtype.

- Install additional application servers.

- Set up Stored Procedures.

Refer to the *DB2 Server for VSE System Administration* manual for information to help you define procedures for operating DB2 Server for VSE and for the information you need to perform the activities listed above.

VSE Guest Sharing

This section discusses how to complete the installation of DB2 Server for VSE to enable VSE Guest Sharing. It does not attempt to explain Guest Sharing in detail. For more information on Guest Sharing, refer to the *DB2 Server for VSE System Administration* manual. You can also refer to the *IBM VSE/ESA Planning* manual.

The term "Guest Sharing" is used because the VSE system is a "guest" of the VM/ESA system and it "shares" the data with the host's application server.

The VSE Guest Sharing installation process requires you to install the complete DB2 Server for VSE product as a guest of a VM/ESA system.

VSE Guest Machine Parameters

The number of links between the VSE guest machine and the VM database is limited by the MAXCONN parameter in the VSE guest machine directory. If this parameter is not specified, the default is 16.

Each VSE guest machine partition that uses the VSE guest sharing facility must have an ALLOC R allocation. This allocation must be 40 kilobytes for each DB2 Server for VSE communication link.

Online users can access another application server on the VM/ESA systems by supplying a different database name on the SERVER-NAME parameter of the CIRB transaction.

For information on how VSE batch/ICCF applications access different application servers, refer to the *DB2 Server for VSE System Administration* manual.

Chapter 4. Migrating an Existing Database

DB2 Server for VSE 6.1.0 supports migration from SQL/DS 3.1.0 and later.

To migrate an existing database to Version 6 Release 1:

1. If an earlier release was loaded into the shared virtual area (SVA), remove those earlier phases from the SVA before running the migration process. Refer to "DB2 Server for VSE Link Books" on page 76 for a list of the phases that are eligible for the SVA.

2. Complete steps in:

   - Chapter 2, Preparing to Install DB2 Server for VSE 6.1:

     – "Preparation Step 1: Allocate DASD for the DB2 Server for VSE 6.1 Distribution Library" on page 7,

     – "Preparation Step 3: Set Up the VSE Environment" on page 9,

     – "Preparation Step 4: Restore the DB2 Server for VSE Distribution Library" on page 10.

     – "Preparation Step 5: Prepare the CICS System for DB2 Server for VSE" on page 11 and

     – "Preparation Step 6: Setup the SQLGLOB and BIND Files" on page 20.

     – "Preparation Step 8: Set Up the DBNAME Directory" on page 27.

   - Chapter 3, Installing DB2 Server for VSE:

     – "Installation Step 1: Link-Edit the DB2 Server for VSE 6.1 Online Support Components" on page 29.

   Note: Review Chapter 1, "Before You Begin" on page 1 before you proceed to perform the steps in these two chapters.

3. For each pre-Version 6 Release 1 database, perform all the mandatory steps in this chapter, and all the optional steps that apply to your database. See Figure 35.

   Note: All of the steps in this chapter run in single user mode.

Attention: If any procedure within any of the steps in this chapter fails to execute successfully, fix the problem and rerun the entire step again before continuing.

```
•  Perform these steps in order.
•  Mandatory steps are preceded by squares (▪).
•  Optional steps are preceded by circles (○).
•  topic references appear in parentheses.

 1. ▪ Space Verification and DATE/TIME Option Verification ( 50)
 2. ▪ Archiving a Database ( 51)
 3. ▪ Prepare the Database for Migration ( 51)
 4. ▪ Format the DB2 Server for VSE Logs ( 53)
 5. ▪ Update the DB2 Server for VSE Catalog to the 6.1 Level ( 53)
 6. ▪ Reload the DBS Utility Package ( 55)
 7. ▪ Update the DB2 Server for VSE Database ( 55)
 8. ▪ Migrate the HELP Text Tables ( 57)
 9. ○ Reload English HELP Text into a Database ( 57)
10. ○ Reload ISQL into a Database ( 59)
11. ○ Reload CCSID-Related Phases Package ( 60)
12. ○ Load FIPS Flagger into a Database ( 60)
13. ○ Determine the Primary Keys to be Recreated ( 61)
14. ▪ Revoke CONNECT Authority from ALLUSERS ( 62)
15. ○ Reset the Password for User SQLDBA ( 62)
16. ○ Create CCSID-Related Phases ( 63)
17. ○ System Customization Activities ( 63)
```

Figure 35. Steps to Migrate an Existing Database to Version 6 Release 1

Migration Step 1: Space Verification and DATE/TIME Option Verification

Directory Space

This step is mandatory.

Before you can migrate you should have at least 4 dbspace blocks available in the DB2 Server for VSE directory.

To verify this, start the application server and enter the operator command:

```
SHOW DBCONFIG
```

If the number of "DBSPACE BLOCKS LEFT" is:

• Four or more, proceed to Storage Pool Space below.

• Less than four, increase the number of available dbspace blocks by reducing the number of internal dbspaces. Refer to the *DB2 Server for VSE System Administration* manual for instructions on adding dbspaces to a database.

  If you are migrating, you can also increase the number of available dbspace blocks, by expanding your directory. Refer to the *DB2 Server for VSE System Administration* manual for instructions on how to do this.

Then reissue the SHOW DBCONFIG command, and make sure you have enough dbspace blocks available.

For more information on the SHOW DBCONFIG command, refer to the *DB2 Server for VSE & VM Operation*.

Storage Pool Space

Before you migrate, we recommend that each storage pool in your database be less than 90% used and each pool must have at least 30 free pages. To determine the state of your storage pools, start the application server in multiple user mode and enter the operator command:

```
SHOW POOL SUMMARY
```

For more information on the SHOW POOL command, refer to the *DB2 Server for VSE & VM Operation*.

If you find a pool above 90% used, you should add one or more dbextents to it. If this is inconvenient, you can avoid the problem until you have completed migration by specifying an SOSLEVEL other than the default when you run job ARIS61PD. Job ARIS61PD is discussed in "Migration Step 5: Update the DB2 Server for VSE Catalog to the 6.1 Level" on page 53. Refer to the *DB2 Server for VSE System Administration* manual for instructions on adding dbextents.

DATE/TIME Options

Check the values associated with DATE and TIME in SYSTEM.SYSOPTIONS by issuing the following command from ISQL:

```
SELECT * FROM SYSTEM.SYSOPTIONS
```

If VALUE is set to LOCAL and the local date/time exits do not recognize ISO format, VALUE should be set to ISO for the duration of the migration. When you use date/time exits that do not recognize ISO format, SQLCODE -180 is issued when reloading the English Help text. SQLCODE -180 may also occur in later stages of the migration.

Migration Step 2: Archiving a Database

This step is mandatory.

Archive your database by typing:

```
SQLEND ARCHIVE
```

For more information on the SQLEND command, refer to the *DB2 Server for VSE & VM Operation*.

Migration Step 3: Prepare the Database for Migration

This step is mandatory.

Prepare and run the job shown in Figure 36. This job will:

- Reset the logmode to Y.
- Reset the password for SQLDBA to SQLDBAPW, for all remaining steps in this chapter assume that SQLDBA's password is SQLDBAPW.
- Alter the SHAREOPTIONS of the DB2 Server for VSE VSAM Clusters to '2'.

```
// JOB ARIS61ND      Prepare the Database for Migration
// LIBDEF PROC,SEARCH=(PRD2.zzzzzz)          1
// EXEC PROC=ARIS020D    *-- DATABASE IDENTIFICATION          2
// EXEC PROC=ARISLIBS    *-- CURRENT DB2 Server LIBRARY DEFINITION
* STEP 1 - FORMAT DB2 Server LOG
// EXEC  PGM=ARISQLDS,SIZE=AUTO,                               X
              PARM='SYSMODE=S,STARTUP=L,LOGMODE=Y,DUALLOG=Y'  3
/*
* STEP 2 - CHANGE SQLDBA PASSWORD
// EXEC PROC=ARISDBSD    *-- EXECUTE DBS UTILITY          4
CONNECT SQLDBA IDENTIFIED BY oldpw;        5
GRANT DBA TO SQLDBA IDENTIFIED BY SQLDBAPW;
/*
* STEP 3 - ALTER DB2 Server VSAM CLUSTERS SHAREOPTIONS      6
// EXEC PGM=IDCAMS,SIZE=AUTO
     ALTER SQL.BDISK.STARTER.DB.DATA           -
          SHAREOPTIONS(2)                      -
        CATALOG(SQLCAT)
     ALTER SQL.LOGDSK1.STARTER.DB.DATA         -
          SHAREOPTIONS(2)                      -
        CATALOG(SQLCAT)
     ALTER SQL.DDSK1.STARTER.DB.DATA           -
          SHAREOPTIONS(2)                      -
        CATALOG(SQLCAT)

/*
/&
```

Figure 36. Job ARIS61ND (Prepare the Database for Migration)

Notes for Figure 36:

1   Replace **zzzzzz** with the appropriate release level (DB2510, DB2350, SQL340, SQL330, SQL320, SQL310).

2   For procedures ARIS020D and ARISLIBS, substitute your own procedures or job control statements that identify the database and the current version of the DB2 Server for VSE sublibrary.

3   The ARISQLDS program is run to reset the logmode to Y. This is necessary before running the ARISDBSD procedure. The DUALLOG parameter defines the number of DB2 Server for VSE logs used (two for dual logs). Change this parameter to N if you require only one log.

4   The procedure ARISDBSD executes the DBS utility in single user mode against the database.

5   Supply the current password for SQLDBA in the SQL CONNECT COMMAND (replace **oldpw**).

6   If you are migrating from releases prior to Version 3 Release 5, change the SHAREOPTIONS of all DB2 Server for VSE VSAM Clusters to '2' for the faster archive enhancements introduced in Version 3 Release 5. Please change **SQLCAT** to the usercatalog where your dataset was defined.

   Note: You can replace the data component name with the name generated by VSAM if the VSAM data set for the database has not been defined with the DATA (NAME((...)) statement. You can run

Migration Step 4: Format the DB2 Server for VSE Logs

This step is mandatory.

To migrate an existing database to Version 6 Release 1, format the DB2 Server for VSE logs. Prepare and execute the job shown in Figure 37.

```
// JOB ARIS61OD            FORMAT THE DB2 Server LOGS
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB        *-- DB2 Server DATABASE ID PROC          1
// EXEC PROC=ARIS61SL        *-- DB2 Server LIBRARY DEFINITION
// EXEC PGM=ARISQLDS,SIZE=AUTO,                                        X
         PARM='SYSMODE=S,STARTUP=L,LOGMODE=Y,DUALLOG=Y'               2
/*
/&
```

Figure 37. Job ARIS61OD (Formatting the DB2 Server for VSE Logs)

Notes for Figure 37:

- Refer to the *DB2 Server for VSE System Administration* manual for a description of the ARISQLDS startup parameters.

1 For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE Version 6 Release 1 sublibrary.

2 The DUALLOG parameter defines the number of DB2 Server for VSE logs used (two for dual logs). Change this parameter to N if you require only one log.

It is very important that you run ARIS61OD. Otherwise, you may have problems later when you restore database archives.

If you receive warning message ARI2010, you can ignore this message and continue to the next step.

Migration Step 5: Update the DB2 Server for VSE Catalog to the 6.1 Level

This step is mandatory.

To update the system catalog, prepare and run the job shown in Figure 38.

```
// JOB ARIS61PD      CREATE OR UPDATE THE SYSTEM CATALOG
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB        *-- DB2 Server DATABASE ID PROC              1
// EXEC PROC=ARIS61SL        *-- DB2 Server LIBRARY DEFINITION
// EXEC ARISQLDS,SIZE=AUTO,PARM='SYSMODE=S,STARTUP=M,LOGMODE=Y'   2
/*
/&
```

Figure 38. Job ARIS61PD (Creating the Version 6 Release 1 System Catalog)

Notes for Figure 38:

1 For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE Version 6 Release 1 sublibrary.

2 Specifying a LOGMODE of N has the benefit of avoiding logging. However, note that checkpoints are not triggered for a storage pool full condition with this LOGMODE, so this value should only be used when your storage pools contain a sufficient number of free pages to shadow the work done by migration.

A LOGMODE of Y or A can be specified so that checkpoints will be triggered during migration, thus releasing shadow pages back to the storage pool for reuse and avoiding the occurrence of a storage pool full condition.

It is also necessary to specify the SOSLEVEL startup parameter if any storage pool is more than 90% full. The default SOSLEVEL of 10 triggers a checkpoint only when a storage pool reaches this point from below, that is, from more than 10% free pages to the point with 10% free pages. When the percentage of free pages is already less than the SOSLEVEL, no checkpoint is triggered and shadow pages are not reclaimed.

Prior to migration, issue the SHOW DBEXTENT operator command to determine if any storage pool is over 90% full. Specify an SOSLEVEL according to the percentages of free pages in the storage pools. You must ensure that the SOSLEVEL you choose is lower than or equal to the percentage free in the pool with the least space. For example, if storage pool 1 is 93% used and storage pool 2 is 91% used, an SOSLEVEL of 7 or lower allows a checkpoint to be triggered no matter which storage pool reaches the checkpoint first.

Attention: If any storage pool is above 95% full, it is strongly recommended that one or more dbextents be added rather than specifying a smaller SOSLEVEL. Just specifying a lower SOSLEVEL cannot eliminate the possibility of having a storage pool full condition from occurring, especially when storage pools are approaching 100% full.

If job ARIS61PD fails, look up the resulting message in the *DB2 Server for VSE Messages and Codes* to determine the problem. You may have to restore your archive and previous code to correct the problem.

Migration Step 6: Reload the DBS Utility Package

This step is mandatory.

Create the DB2 Server for VSE Version 6 Release 1 of the DBS utility package in the database by preparing and executing the job shown in Figure 39.

A return code of 4 is acceptable from procedure ARIS040D and can be ignored.

```
// JOB ARIS61QD     CREATE DBS UTILITY PACKAGE
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB       *-- DB2 Server DATABASE ID PROC         1
// EXEC PROC=ARIS61SL       *-- DB2 Server LIBRARY DEFINITION
// EXEC PROC=ARIS040D       *-- CREATION OF DBS PACKAGE             2
/*
/&
```

Figure 39. Job ARIS61QD (Reloading the DBS Utility Package)

Notes for Figure 39:

1 For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE Version 6 Release 1 sublibrary.

2 Procedure ARIS040D executes ARISQLDS which in turn runs the application server in single user mode. It creates the package SQLDBA.ARIDSQL in the database.

Migration Step 7: Update the DB2 Server for VSE Database

This step is mandatory.

The ARIS61RD job, shown in Figure 40, does the following:

- Grants SELECT authority for the system catalog to PUBLIC.

- Grants CONNECT authority to ALLUSERS. You can revoke this authority later by performing "Migration Step 14: Revoke CONNECT Authority from ALLUSERS" on page 62.

- Updates SYSTEM.SYSOPTIONS, ensuring that a row exists in SYSTEM.SYSOPTIONS for each option. If no row exists for a specific option, a new row is inserted, and the default value is used. If a row does exist, the values for that row are not modified.

  For every row that exists, you receive a -803 SQLCODE. You can ignore these messages.

  While running this job, you may receive informational messages indicating that options are not set up correctly in SYSTEM.SYSOPTIONS. ARIS070D sets up the correct system options, and these messages should no longer occur after it has successfully completed. Refer to the *DB2 Server for VSE & VM SQL Reference* for a description of the valid SYSOPTIONs entries.

- Loads tables for CCSID support.

- Runs the UPDATE STATISTICS command for the SYS0001 dbspace.

- Builds the following sample tables:

  - DEPARTMENT
  - EMPLOYEE
  - PROJECT
  - ACTIVITY
  - EMP_ACT
  - PROJ_ACT
  - INVENTORY
  - SUPPLIERS
  - QUOTATIONS
  - PROJECTS
  - OPERATION.

Prepare and execute the ARIS61RD job to update the database. A return code of 6 from procedures ARIS070D and ARIS075D is acceptable and can be ignored.

```
// JOB ARIS61RD              UPDATE DB2 Server SYSTEM
// LIBDEF  PROC,SEARCH=(PRD2.DB2610)
// EXEC  PROC=ARIS61DB       *-- DB2 Server DATABASE ID PROC            1
// EXEC  PROC=ARIS61SL       *-- DB2 Server LIBRARY DEFINITION
// EXEC  PROC=ARIS070D       *-- UPDATE THE DB2 Server SYSTEM           2
// EXEC  PROC=ARIS075D       *-- RECREATE AND LOAD SAMPLE TABLES   3
/*
/&
```

Figure 40. Job ARIS61RD (Updating the DB2 Server for VSE System)

Notes for Figure 40:

1 For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE Version 6 Release 1 service libraries.

2 Procedure ARIS070D runs a DBS utility job that grants authorities, updates SYSTEM.SYSOPTIONS, updates SYSTEM.SYSCOLUMNS, and updates statistics for dbspace SYS0001. This DBS utility job also updates the SYSCHARSETS table. Expect several -803 error messages; these can be disregarded.

3 Procedure ARIS075D runs three DBS utility jobs. The first one drops the VIEWS SQLDBA.VEMPLP and SQLDBA.VPHONE, the SYNONYMS SQLDBA.INV and SQLDBA.QUO, and all the sample tables if they already exist in the database. The second and third jobs create and load all the sample tables.

You can verify the migrated database by running the supplied sample application programs that use the sample tables. For more information, refer to "Installation Step 10: Run the Sample Programs to Verify Installation" on page 42.

Migration Step 8: Migrate the HELP Text Tables

This step is mandatory.

This step migrates existing HELP Text tables from a previous SQL/DS version to DB2 Server for VSE Version 6 Release 1. It also drops the SQLDBA.SYSLANGUAGE table, and recreates it in the PUBLIC.SYS0001 dbspace. Any entries in SQLDBA.SYSLANGUAGE are lost; when it is recreated, it contains only an entry for mixed case American English.

A DBS utility return code of 6 or lower is acceptable.

This step removes any existing IBM-supplied HELP Text from the database. Any user-supplied HELP Text remains, but you have to restore the appropriate HELP Text language key in order to use it. Refer to the *DB2 Server for VSE System Administration* and *DB2 Server for VSE Database Administration* manuals for information.

```
// JOB ARIS61SD MIGRATING HELP TEXT TABLES
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB        *-- DB2 Server DATABASE ID PROC        1
// EXEC PROC=ARIS61SL        *-- DB2 Server LIBRARY DEFINITION
// EXEC PROC=ARIS061D        *-- MIGRATE HELP TEXT TABLES
/*
/&
```

Figure 41. Job ARIS61SD (Migrating the HELP Text Tables)

Note for Figure 41:

1   For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE Version 6 Release 1 sublibrary.

Migration Step 9: Reload English HELP Text into a Database

This step is optional.

If you do not want to load the DB2 Server for VSE HELP Text, skip this step.

You can reload the default version (American English) of the Version 6 Release 1 HELP Text into a database by running the job shown in Figure 42.

A return code of 6 from procedure ARIS062D is acceptable.

```
// JOB ARIS61TD      RELOAD ENGLISH HELP TEXT
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB       *-- DB2 Server DATABASE ID PROC          1
// EXEC PROC=ARIS61SL       *-- DB2 Server LIBRARY DEFINITION
// EXEC PROC=ARIS062D       *-- DELETE HELP TEXT AND MESSAGES  2
// EXEC PROC=ARIS059D       *-- ACTIVATE MESSAGES          3
/*
/&
```

Figure 42. Job ARIS61TD (Reloading the English HELP Text)

Notes for Figure 42:

- The steps executed by procedure ARIS062D, ARIS059D and ARIS380D run in the application server in single user mode against the identified database.

1   For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE 6.1.0 sublibrary.

2   Procedure ARIS062D removes either the DB2 Server for VSE messages or ISQL HELP Text or both from the database. Modify this procedure before running this job.

3   Procedure ARIS059D adds an entry to the SQLDBA.SYSLANGUAGE table for mixed case American English HELP Text into the database.

Install Language

Job control member ARIS61JZ, shown in Figure 43 on page 59, contains the JCL required to install a language. Modify the sample as required, with the following considerations:

- Change LANG=AME to the Short form of the language name, taken from the following list:

Language	Short Name
Mixed English	AME
Uppercase English	UCE
French	FRE
German	GER
Japanese	KAN
Chinese	HAN

- If you want only the ISQL Help text to be loaded, set HELP=ONLY. To install a National language in addition to the Help Text, set HELP=YES. If you do not want the Help Text to be loaded now, specify HELP=NO.

- Mount the tape containing the Help Text and change the CUU=xxx parameter to refer to the tape drive address.

- If you want this language to be the default language, set DEFAULT=YES; otherwise, set the value to NO.

```
| // JOB ARIS61JZ -- Install Language
| // LIBDEF PROC,SEARCH=(PRD2.DB2610)
| // EXEC PROC=ARIS380D,LANG=AME,HELP=ONLY,CUU=xxx
| /&
```

| *Figure 43. Job ARIS61JZ Install Language*

| **Notes to Figure 43:**

| This job will perform the following functions:

- Define a sublibrary for the language components

- Linkedit the message repository

- Update SQLDBA.SYSLANGUAGES with language key and language id

- Linkedit language specific parts

- Change the default language if requested

- Load Help text if requested.

Migration Step 10: Reload ISQL into a Database

This step is optional.

If the database does not contain the ISQL facility, skip this step.

If the ISQL facility is installed, execute the job shown in Figure 44 to install Version 6 Release 1 of ISQL.

All steps should end with a return code of 0 through 4.

This job is not supplied as a Z-type member. You can modify job control member ARIS61ED, which has been provided. Refer to "Installation Step 3: Install Optional Database Components" on page 33 for details.

```
 // JOB RELOAD ISQL
 // LIBDEF PROC,SEARCH=(PRD2.DB2610)
 // EXEC PROC=ARIS61DB    *-- DB2 Server DATABASE ID PROC          1
 // EXEC PROC=ARIS61SL    *-- DB2 Server LIBRARY DEFINITION
 // EXEC PROC=ARIS120D    *-- RELOAD ISQL PACKAGE                  2
 /*
 /&
```

Figure 44. Reloading ISQL

Notes for Figure 44:

1   For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE 6.1.0 sublibrary.

2   Procedure ARIS120D reloads the ISQL package in the database by running the application server in single user mode against that database.

Migration Step 11: Reload CCSID-Related Phases Package

This step is mandatory.

Job control member ARIS61WD, shown in Figure 45, contains the job control
statements to load the CCSID-related phases package into the database. After
making any changes, submit ARIS61WD for execution. All job steps should end
with a return code of 0 through 4.

```
// JOB ARIS61WD   RELOAD CCSID-RELATED PHASES PACKAGE
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61SL    *-- DB2 Server SERVICE/PRODUCTION LIBRARY ID
// EXEC PROC=ARIS61DB    *-- DB2 Server DATABASE ID PROC
// EXEC PROC=ARIS175D    *-- RELOAD CCSID-RELATED PHASES PACKAGE
/*
/&
```

Figure 45. Reloading CCSID-related Phases Package

Notes for Figure 45:

1 For procedures ARIS61DB and ARIS61SL, substitute your own procedures
or job control statements that identify your current database and the DB2
Server for VSE Version 6 Release 1 sublibrary.

2 Procedure ARIS175D reloads the CCSID-related phases package in the
database by running the application server in single user mode against that
database.

Migration Step 12: Load FIPS Flagger into a Database

This step is optional.

All steps should end with a return code of 0 through 4.

This job is not supplied as a Z-type member. You can modify the job control
member ARIS61ED, which has been provided.

```
// JOB LOAD FIPS FLAGGER
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB    *-- DB2 Server DATABASE ID PROC            1
// EXEC PROC=ARIS61SL    *-- DB2 Server LIBRARY DEFINITION
// EXEC PROC=ARIS360D    *-- LOAD FIPS FLAGGER PACKAGE       2
/*
/&
```

Figure 46. Loading FIPS flagger

Notes for Figure 46:

1 For procedures ARIS61DB and ARIS61SL, substitute your own procedures
or job control statements that identify your current database and the DB2
Server for VSE 6.1.0 sublibrary.

2 Procedure ARIS360D loads the FIPS flagger package in the database by
running the application server in single user mode against that database.

Migration Step 13: Determine the Primary Keys to be Recreated

This step is optional.

If you are migrating a database from SQL/DS Version 3 Release 1 or Version 3 Release 2, you should run this step.

This step uses job ARIS611D, shown in Figure 47, to list all the primary keys created in SQL/DS Version 3 Release 1 and Version 3 Release 2 which should be dropped and recreated after migrating to Version 6 Release 1. Dropping and recreating these primary keys ensures that the correct CCSID is used for these keys.

DB2 Server for VSE 6.1.0 supports a column CCSID attribute. For primary keys created in earlier SQL/DS Version 3 releases, the value of the CCSID attribute in SYSTEM.SYSKEYCOLS is null. In versions Version 3 Release 4 and later, this null CCSID value is assumed to be the database default for SBCS data. If the column on which the primary key is defined has been defined as FOR MIXED DATA (that is, the subtype is "M"), the CCSID assumed for the primary key will be incorrect. By dropping and recreating the primary key, the actual nonnull CCSID value is placed in SYSTEM.SYSKEYCOLS and no CCSID value must be assumed. Note that the CCSID value in SYSTEM.SYSKEYCOLS is only used by the system when the primary key column has a field procedure defined on it.

```
// JOB ARIS611D    LIST PRIMARY KEYS TO BE DROPPED AND RECREATED
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB       *-- DB2 Server DATABASE ID PROC        1
// EXEC PROC=ARIS61SL       *-- DB2 Server LIBRARY DEFINITION
// EXEC PROC=ARIS370D       *-- EXECUTE DBS UTILITY JOBS       2
/*
/&
```

Figure 47. Job ARIS611D (Listing Primary Keys Created in Version 3)

Notes for Figure 47:

- Before running this job, edit member ARISCON.A and supply a user ID and password that have DBA authority in the CONNECT command.

1 For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE Version 6 Release 1 sublibrary.

2 Procedure ARIS370D runs two DBS utility jobs. The first job issues a CONNECT command, and the second job lists the primary keys which should be dropped and recreated. The output of the job goes to SYSLST, so be sure your permanent assignments are set as needed.

Procedure ARIS370D invokes the ARISFKPY macro, which performs the query. The output from the query is a list of all primary keys which satisfy the following criteria:

- The key is a primary key.

- A field procedure is defined on the key.

- The subtype of the column on which the key is defined is "M" (FOR MIXED DATA).

This list is in order by the creator of the key and then the table on which the key is created. To ensure the correct CCSID is used, drop and recreate the primary keys using the ALTER TABLE statement.

Migration Step 14: Revoke CONNECT Authority from ALLUSERS

This step is optional.

In "Migration Step 7: Update the DB2 Server for VSE Database" on page 55, member ARISCTM granted CONNECT authority to ALLUSERS, which allows the DB2 Server for VSE online support to implicitly connect users. (See the *DB2 Server for VSE Database Administration* manual for more information on implicit CONNECT.) To revoke CONNECT authority from ALLUSERS, prepare and execute the job shown in Figure 48.

```
// JOB REVOKE ALLUSERS CONNECT
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB  *-- DB2 Server DATABASE ID PROC          1
// EXEC PROC=ARIS61SL  *-- DB2 Server LIBRARY DEFINITION
// EXEC PROC=ARISDBSD  *-- RUN DB2 Server IN SINGLE USER MODE    2
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
REVOKE CONNECT FROM ALLUSERS;
/*
/&
```

Figure 48. Revoking CONNECT Authority from ALLUSERS

Notes for Figure 48:

1   For procedures ARIS61DB and ARIS61SL, substitute your own procedures or job control statements that identify your current database and the DB2 Server for VSE Version 6 Release 1 sublibrary.

2   Procedure ARISDBSD runs the application server in single user mode against the identified database.

Migration Step 15: Reset the Password for User SQLDBA

This step is mandatory.

Prepare and execute the job shown in Figure 49 to change the password for user ID SQLDBA to one of your choice. It is important to change this password because it is listed in the documentation and is accessible to other users.

```
// JOB RESET SQLDBA PASSWORD
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB     *-- DB2 Server DATABASE ID PROC            1
// EXEC PROC=ARIS61SL     *-- DB2 Server LIBRARY DEFINITION
// EXEC PROC=ARISDBSD     *-- RUN DB2 Server IN SINGLE USER MODE     2
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
GRANT CONNECT TO SQLDBA IDENTIFIED BY newsqlpw;          3
/*
/&
```

Figure 49. Resetting the SQLDBA Password

Notes for Figure 49:

1   For procedures ARIS61DB and ARIS61SL, substitute your own procedures
          or job control statements that identify your current database and the DB2
          Server for VSE Version 6 Release 1 sublibrary.

2   Procedure ARISDBSD runs the application server in single user mode
          against the identified database.

3   Type the new password for user SQLDBA in place of **newsqlpw**.

Migration Step 16: Create CCSID-Related Phases

This step is mandatory.

This step creates the CCSID-related phases from the system catalog tables in the
database.

1. Punch out the Z-type job control member ARISCNVD.

2. Update the WORDISK, LIBRARY, and PARMS statements for your installation.
   The programs that refresh the phases take one parameter with the following
   format: 'USERID/PASSWORD/DATABASENAME', where 'USERID' is a user ID
   with DBA authority (defaults to SQLDBA if not specified). 'PASSWORD' is the
   connect password for the USERID (defaults to SQLDBAPW if not specified),
   and 'DATABASENAME' is the RESID of the database to connect to (if not
   specified, defaults to the currently connected database). The parameters are
   positional; for example, in order to specify the DATABASE, the USERID and
   PASSWORD must also be specified.

3. Re-catalog the job control member ARISCNVD.

4. Execute job ARISCNVD to generate the CCSID-related phases.

Note: The application server must be running in multiple user mode in another
           partition when you run this job. Refer to "Installation Step 5: Selecting
           National Language Support" on page 35 on how to do this.

Migration Step 17: System Customization Activities

This step lists further administration and customization activities you should
consider at this time. These are:

- Rebind your application program packages using the REBIND PACKAGE DBS
  utility command. If you do not do this, all your application programs will be

dynamically preprocessed again at runtime. Refer to the *DB2 Server for VSE & VM Database Services Utility* manual for more information.

- Change the setting of the CHARNAME parameter for the database and initialize the user partition since the default after migration is ENGLISH. The CCSID defaults for the application server are determined when a CHARNAME is chosen.

- Set database CCSID support for user tables that existed prior to migration.

- Set database options, such as double-byte character set (DBCS) support and character subtype.

- Drop and recreate any EXPLAIN tables that were created in a previous release. You can use the A-type source member ARISEXP to help you do this.

- Users of local date/time exits should reset the values for DATE and TIME in SYSTEM.SYSOPTIONS to LOCAL if they were changed in "Migration Step 1: Space Verification and DATE/TIME Option Verification" on page 50.

- Set up Stored Procedures.

Refer to the *DB2 Server for VSE System Administration* manual for information to help you define procedures for operating DB2 Server for VSE and for the information you need to perform the activities listed above.

Chapter 5. Maintenance Activities

DB2 Server for VSE maintenance includes adding new components (because they were not installed initially) and replacing existing ones (because of service updates). Both types of activities are discussed below. The actions described in this chapter require that DB2 Server for VSEhas been installed and that a database has been generated.

The IBM-supplied procedures and source members for installing DB2 Server for VSE components assume that the user ID is SQLDBA, and that the password is SQLDBAPW. If the password has been changed, it should be reassigned before the reinstallation activity. The technique for changing the password is shown when needed in each description below.

Note: The processing described in this chapter invokes the application server in single user mode with LOGMODE=Y. If the database was last accessed with LOGMODE=A (DB2 Server for VSE archiving on), do an archive and a COLDLOG for the database before proceeding.

DBS Utility Maintenance

Reloading the DBS Utility Package (SQLDBA.ARIDSQL)

The DBS utility package must be reloaded in all databases if there is a service update to the A-type source member ARIDSQLP. To reload it, prepare and run the job control statements shown in Figure 50.

Refer to the information supplied with each DB2 Server for VSE service update to see if you should take this action.

```
// JOB RELOAD DBS UTILITY
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61SL    *-- DB2 Server LIBRARY DEFINITION       1
// EXEC PROC=ARIS61DB    *-- CURRENT DATABASE IDENTIFICATION     2
// EXEC PROC=ARISDBSD    *-- RUN DB2 Server IN SINGLE USER MODE  3
CONNECT SQLDBA IDENTIFIED BY currentpw;
GRANT CONNECT TO SQLDBA IDENTIFIED BY SQLDBAPW;
/*
// EXEC PROC=ARIS040D    *-- CREATE DBS UTILITY PACKAGE          4
// EXEC PROC=ARISDBSD    *-- RUN DB2 Server IN SINGLE USER MODE  5
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
GRANT CONNECT TO SQLDBA IDENTIFIED BY newpw;
/*
/&
```

Figure 50. Reloading the DBS Utility Package

Notes for Figure 50:

- Procedures ARISDBSD and ARIS040D run the application server in single user mode against the identified database.

1   Procedure ARIS61SL identifies the DB2 Server for VSE sublibraries.

2 Procedure ARIS61DB identifies the starter database. You can substitute the procedures or job control statements that identify the database being updated.

3 Reset the password for the user ID SQLDBA to SQLDBAPW before executing procedure ARIS040D. The first execution of procedure ARISDBSD changes the password for the user SQLDBA to SQLDBAPW. Supply the current password **currentpw** in the SQL CONNECT command.

4 Procedure ARIS040D creates the package SQLDBA.ARIDSQL in the databasefrom the DB2 Server for VSE A-type source member ARIDSQLP. The user ID SQLDBA must execute this step.

If the database view SQLDBA.SYSUSERLIST exists when you run this step, the step ends with a return code of 0. If this view does not exist, this step ends with a return code of 4.

5 After procedure ARIS040D is executed, you should reset the password for the user SQLDBA to a password of your choice. The second execution of the procedure ARISDBSD changes the password for the user **SQLDBA**. Supply the password of your choice (**newpw**) in the SQL GRANT command.

Messages and HELP Text Maintenance

Installing the HELP Text after DB2 Server for VSE Installation

If you have already generated a database without the American English HELP Text, you can add it later. To install or reinstall the HELP Text into an existing database, prepare and run the job control statements shown below.

```
// JOB REINSTALL HELP TEXT
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61SL    *-- DB2 Server LIBRARY DEFINITION          1
// EXEC PROC=ARIS61DB    *-- STARTER DATABASE IDENTIFICATION        2
// EXEC PROC=ARISDBSD    *-- RUN DB2 Server IN SINGLE USER MODE      3
CONNECT SQLDBA IDENTIFIED BY currentpw;
GRANT CONNECT TO SQLDBA IDENTIFIED BY SQLDBAPW;
/*
// EXEC PROC=ARIS059D    *-- ACTIVATE MESSAGES                       4
// EXEC PROC=ARIS380D,LANG=AME,HELP=ONLY,CUU=                      5 6
// EXEC PROC=ARISDBSD    *-- RUN DB2 Server IN SINGLE USER MODE      7
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
GRANT CONNECT TO SQLDBA IDENTIFIED BY newpw;
/*
/&
```

Figure 51. Reinstalling the HELP Text into the Database

Notes for Figure 51:

- Procedures ARISDBSD, ARIS059D, and ARIS060D run the application server in single user mode against the identified database.

1 Procedure ARIS61SL identifies the DB2 Server for VSE sublibraries.

2   Procedure ARIS61DB identifies the starter database. You can substitute the procedure or job control statements that identify the database being updated.

3   Reset the password for the user SQLDBA to SQLDBAPW before executing procedures ARIS059D and ARIS060D. The first execution of procedure ARISDBSD changes the password for the user SQLDBA to SQLDBAPW. Supply the current password (**currentpw**) in the SQL CONNECT command.

4   Procedure ARIS059D adds a language entry to the SQLDBA.SYSLANGUAGE table. This step must be executed. A return code of 6 is acceptable and can be ignored.

5   Procedure ARIS380D reloads the DB2 Server for VSE ISQL HELP Text into the database. This step must be executed by the user SQLDBA. The source members it reads assume that the password is SQLDBAPW.

          The DB2 Server for VSE HELP Text tables SQLDBA.SYSTEXT1, SQLDBA.SYSTEXT2, and SQLDBA.SYSLANGUAGE must exist in the database when you run this procedure.

6   Mount the Help Text tape from the Distribution Material. Code the CUU= with the value of the tape drive address.

7   After procedure ARIS380D is executed, you should reset the password for the user SQLDBA to a password of your choice. The second execution of procedure ARISDBSD changes the password for the user SQLDBA. Supply the password of your choice (**newpw**) in the SQL GRANT command.

Removing Messages and HELP Text from Your DB2 Server for VSE System

To remove the messages and/or the HELP Text after the initial installation, prepare and run the job control statements shown in

Attention:

- Procedure ARIS062D deletes **all** ISQL HELP Text for a specified language, **including** topics provided by the database administrator.

- Procedure ARIS063D deletes **all** ISQL HELP Text for ALL languages, **including** topics provided by the database administrator.

```
// JOB REMOVE HELP TEXT
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61SL    *-- DB2 Server LIBRARY DEFINITION           1
// EXEC PROC=ARIS61DB    *-- STARTER DATABASE IDENTIFICATION         2
// EXEC PROC=ARISDBSD    *-- RUN DB2 Server IN SINGLE USER MODE      3
CONNECT SQLDBA IDENTIFIED BY currentpw;
GRANT CONNECT TO SQLDBA IDENTIFIED BY SQLDBAPW;
/*
* Use one or the other of the next two statements, but not both.
* See notes 4 and 5 for a brief description.
// EXEC PROC=ARIS062D    *-- REMOVE MESSAGES AND/OR HELP TEXT   4
// EXEC PROC=ARIS063D    *-- DELETE ALL HELP TEXT              5
// EXEC PROC=ARISDBSD    *-- RUN DB2 Server IN SINGLE USER MODE      6
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
GRANT CONNECT TO SQLDBA IDENTIFIED BY newpw;
/*
/&
```

Figure 52. Removing ISQL HELP Text and Messages from the Database

Notes for Figure 52:

- Procedures ARISDBSD, ARIS062D, and ARIS063D run the application server in single user mode against the identified database.

1 Procedure ARIS61SL identifies the DB2 Server for VSE service and production libraries.

2 Procedure ARIS61DB identifies the starter database. You can substitute the procedure or job control statements that identify the database being updated.

3 Reset the password for the user SQLDBA to SQLDBAPW before executing procedure ARIS062D or ARIS063D. The first execution of procedure ARISDBSD changes the password for the user SQLDBA to SQLDBAPW. Supply the current password (**currentpw**) in the SQL CONNECT command.

4 Procedure ARIS062D removes the DB2 Server for VSE messages and/or ISQL Help Text from the database. This step must be executed by the user SQLDBA. The source members it reads assume that the password for user ID SQLDBA is SQLDBAPW.

   Change ARIS062D before running it to specify which languages you want to delete, and whether the messages are to be deleted too, or just the HELP Text.

   Note: The messages for one language **must** remain.

   The DB2 Server for VSE HELP Text tables SQLDBA.SYSTEXT1, SQLDBA.SYSTEXT2, and SQLDBA.SYSLANGUAGE must exist in the database when you run this procedure.

5 ARIS063D deletes **all** the HELP Text for **all** languages.

6 After procedure ARIS062D (or ARIS063D) is executed, you should reset the password for the user SQLDBA to a password of your choice. The second execution of procedure ARISDBSD changes the password for the user SQLDBA. Supply the password of your choice (**newpw**) in the SQL GRANT command.

Online Resource Adapter Control Maintenance

Installing Online Resource Adapter Control after DB2 Server for VSE Installation

If you have already generated a database without online resource adapter control, you can add it later as follows:

1. Link-edit the online support as described below.

2. Run procedure ARIS080D to grant CONNECT authority to PUBLIC and SCHEDULE authority to the CICS system.

3. Review "Installation Step 6: Grant SCHEDULE Authority" on page 37 to determine if procedure ARIS080D granted SCHEDULE authority to the correct user ID.

The procedures for installing these tables are found in "Preparation Step 5: Prepare the CICS System for DB2 Server for VSE" on page 11.

Re-Link-Editing Online Resource Adapter Control

If you must re-link-edit online resource adapter control after the initial installation of DB2 Server for VSE, prepare and run the job control statements shown in Figure 53.

Refer to the information supplied with each DB2 Server for VSE service update to see if you should take this action.

```
// JOB RELINK ONLINE RESOURCE ADAPTER CONTROL
// LIBDEF *,SEARCH=(PRD2.DB2610,PRD1.BASE,PRD2.CONFIG),            X
             CATALOG=PRD2.DB2610                                1
// EXEC PROC=ARIS090D    *-- LINK-EDIT ONLINE RESOURCE ADAPTER CONTROL 2
/*
/&
```

Figure 53. Re-Link-Editing Online Resource Adapter Control

Notes for Figure 53:

• This job specifies the standard CICS libraries in the LIBDEF search path. If required, modify the job to search your own CICS libraries.

1 This job requires that you specify the DB2 Server for VSE sublibrary into which the linkage editor output is cataloged; in this job, the output is cataloged in the PRD2.DB2610 sublibrary. Specify your own if it has a different name. If you have installed a National Language, then specify the sublibrary into which the language was installed in the LIBDEF SEARCH chain (before PRD2.DB2610), and also as the value for the LIBDEF CATALOG parameter.

2 Procedure ARIS090D link-edits the DB2 Server for VSEonline resource adapter control into the DB2 Server for VSE sublibrary. It must not be changed. This link-edit job will include the CICS interface modules DFHEAI and DFHEAI0 found in the CICS PRD1.BASE sublibrary, or your own CICS libraries.

Restart the CICS system after the link-edit is successfully completed. For information, refer to "Preparation Step 5: Prepare the CICS System for DB2 Server for VSE" on page 11.

ISQL Maintenance

Installing ISQL after DB2 Server for VSE Installation

If you have already generated a database without ISQL, you can add it later as follows:

1. Reload the ISQL package (SQLDBA.ARIISQL).
2. Re-link-edit ISQL.
3. Re-link-edit the ISQL ITRM terminal transaction.
4. Re-link-edit the ISQL ITRX terminal extension.

Instructions for each of these tasks follow immediately.

Reloading the ISQL Package (SQLDBA.ARIISQL)

If you reload the ISQL package SQLDBA.ARIISQL after the initial DB2 Server for VSE installation, prepare and execute the job control statements shown in Figure 54. The package must be reloaded in all applicable databases if there is a service update to A-type source member ARIISQLM.

Refer to the information supplied with each DB2 Server for VSE service update to see if you should take this action.

```
// JOB RELOAD ISQL
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61SL     *-- DB2 Server LIBRARY DEFINITION           1
// EXEC PROC=ARIS61DB     *-- STARTER DATABASE IDENTIFICATION    2
// EXEC PROC=ARISDBSD     *-- RUN DB2 Server IN SINGLE USER MODE      3
CONNECT SQLDBA IDENTIFIED BY currentpw;
GRANT CONNECT TO SQLDBA IDENTIFIED BY SQLDBAPW;
/*
// EXEC PROC=ARIS120D     *-- RELOAD THE ISQL PACKAGE             4
// EXEC PROC=ARISDBSD     *-- RUN DB2 Server IN SINGLE USER MODE      3
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW;
GRANT CONNECT TO SQLDBA IDENTIFIED BY newpw;
/*
/&
```

Figure 54. Reloading the ISQL Package

Notes for Figure 54:

- The steps executed by procedures ARISDBSD and ARIS120D run the application server in single user mode against the identified database.

1 Procedure ARIS61SL identifies the DB2 Server for VSE sublibraries.

2 Procedure ARIS61DB identifies the starter database. You can substitute the procedure or job control statements that identify the database being updated.

3 The password for the user SQLDBA must be reset to SQLDBAPW before procedure ARIS120D is executed. The first execution of procedure ARISDBSD changes the password for the user SQLDBA to SQLDBAPW. Supply the current password (**currentpw**) in the SQL CONNECT command. After procedure ARIS120D is executed, the password for the user SQLDBA should be reset to a password of your choice. The second execution of procedure ARISDBSD changes the password for the user SQLDBA. Supply the password of your choice (**newpw**) in the SQL GRANT command.

4 Procedure ARIS120D reloads the package SQLDBA.ARIISQL into the database from the DB2 Server for VSEA-type source member ARIISQLM. This step must be executed by the user SQLDBA.

This step successfully completes with a return code of 0 through 4.

Re-Link-Editing ISQL

To re-link-edit ISQL after initial installation, prepare and execute the job control statements shown in Figure 55.

Refer to the information supplied with each DB2 Server for VSE service update to see if you should take this action.

```
// JOB RELINK ISQL
// LIBDEF *,SEARCH=(PRD2.DB2610,PRD1.BASE,PRD2.CONFIG),                X
              CATALOG=PRD2.DB2610                                      1
// EXEC PROC=ARIS140D    *-- LINK-EDIT ISQL                            2
/*
/&
```

Figure 55. Re-Link-Editing ISQL

Notes for Figure 55:

- This job specifies the standard CICS libraries in the LIBDEF search path. If required, modify the job to search your own CICS libraries.

1 This job requires that you specify the DB2 Server for VSE sublibrary into which the linkage editor output is cataloged; in this job, the output is cataloged in the PRD2.DB2610 sublibrary. Specify your own if it has a different name. If you have installed a National Language, then specify the sublibrary into which the language was installed in the LIBDEF SEARCH chain (before PRD2.DB2610), and also as the value for the LIBDEF CATALOG parameter.

2 Procedure ARIS140D link-edits the DB2 Server for VSE ISQL facility into the DB2 Server for VSE library. It must not be changed. This link-edit job will include the CICS interface modules DFHEAI and DFHEAI0 found in the CICS PRD1.BASE sublibrary, or your own CICS libraries.

The CICS system must be restarted after the link-edit is successfully completed. See "Preparation Step 5: Prepare the CICS System for DB2 Server for VSE" on page 11. Alternatively, you can access the new phase by executing the CICS CEMT master command after the link-edit is successfully completed. Refer to the CICS manuals for information on this command.

Re-Link-Editing the ISQL ITRM Terminal Transaction

To re-link-edit the ISQL ITRM terminal transaction after initial installation, prepare and execute the job control statements shown in Figure 56. This is required by a service update to the ISQL ITRM terminal transaction program module.

Refer to the information supplied with each DB2 Server for VSE service update to see if you should take this action.

```
// JOB RELINK ISQL ITRM TERMINAL TRANSACTION PROGRAM
// LIBDEF *,SEARCH=(PRD2.DB2610,PRD1.BASE,PRD2.CONFIG),              X
              CATALOG=PRD2.DB2610                                     1
// EXEC PROC=ARIS150D   *-- LINK-EDIT ITRM TERMINAL TRANSACTION      2
/*
/&
```

Figure 56. Re-Link-Editing the ISQL ITRM Terminal Transaction

Notes for Figure 56:

- This job specifies the standard CICS libraries in the LIBDEF search path. If required, modify the job to search your own CICS libraries.

1   This job requires that you specify the DB2 Server for VSE sublibrary into which the linkage editor output is cataloged; in this job, the output is cataloged in the PRD2.DB2610 sublibrary. Specify your own if it has a different name. If you have installed a National Language, then specify the sublibrary into which the language was installed in the LIBDEF SEARCH chain (before PRD2.DB2610), and also as the value for the LIBDEF CATALOG parameter.

2   Procedure ARIS150D link-edits the DB2 Server for VSE ISQL facility ITRM terminal transaction module into the DB2 Server for VSE library. It must not be changed. This link-edit job will include the CICS interface modules DFHEAI and DFHEAI0 found in the CICS PRD1.BASE sublibrary, or your own CICS libraries.

The CICS system must be restarted after the link-edit is successfully completed. See "Preparation Step 5: Prepare the CICS System for DB2 Server for VSE" on page 11. Alternatively, you can access the new phase by executing the CICS CEMT master command after the link-edit is successfully completed. Refer to the CICS manuals for information on this command.

Re-Link-Editing the ISQL ITRM Terminal Extension Program

To re-link-edit the ISQL ITRM terminal extension program after initial installation, prepare and execute the job control statements shown in Figure 57 on page 73. This is required by a service update to the ISQL ITRM terminal extension program module.

Refer to the information supplied with each DB2 Server for VSE service update to see if you should take this action.

```
// JOB RELINK ISQL ITRM TERMINAL EXTENSION PROGRAM
// LIBDEF *,SEARCH=(PRD2.DB2610,PRD1.BASE,PRD2.CONFIG),                 X
               CATALOG=PRD2.DB2610                                      1
// EXEC PROC=ARIS160D   *-- LINK-EDIT ITRM TERMINAL EXTENSION           2
/*
/&
```

Figure 57. Re-Link-Editing the ISQL ITRM Terminal Extension Program

Notes for Figure 57:

- This job specifies the standard CICS libraries in the LIBDEF search path. If required, modify the job to search your own CICS libraries.

1 This job requires that you specify the DB2 Server for VSE sublibrary into which the linkage editor output is cataloged; in this job, the output is cataloged in the PRD2.DB2610 sublibrary. Specify your own if it has a different name. If you have installed a National Language, then specify the sublibrary into which the language was installed in the LIBDEF SEARCH chain (before PRD2.DB2610), and also as the value for the LIBDEF CATALOG parameter.

2 Procedure ARIS160D link-edits the DB2 Server for VSE ISQL facility ITRM terminal extension program module into the DB2 Server for VSE library, and must not be changed. This link-edit job will include the CICS interface modules DFHEAI and DFHEAI0 found in the CICS PRD1.BASE sublibrary, or your own CICS libraries.

The CICS system must be restarted after the link-edit is successfully completed. See "Preparation Step 5: Prepare the CICS System for DB2 Server for VSE" on page 11. Alternatively, you can access the new phase by executing the CICS CEMT master command after the link-edit is successfully completed. Refer to the CICS manuals for information on this command.

You can use operator commands to search the file for a new copy. See the appropriate CICS manual for details.

CCSID-Related Phases Maintenance

Reloading the CCSID-Related Phases Package (SQLDBA.ARIRSQR)

The CCSID-related phases package must be reloaded in all applicable databases if there is a service update to A-type source member ARIRSQRM. To reload it, run job control member ARIS61WD shown in Figure 58 on page 74.

Refer to the information supplied with each DB2 Server for VSE service update to see if you should take this action.

```
|  // JOB ARIS61WD    RELOAD CCSID-RELATED PHASES PACKAGE
|  // LIBDEF PROC,SEARCH=(PRD2.DB2610)
|  // EXEC PROC=ARIS61SL   *-- DB2 Server LIBRARY DEFINITION
|  // EXEC PROC=ARIS61DB   *-- STARTER DATABASE IDENTIFICATION
|  // EXEC PROC=ARIS175D   *-- RELOAD CCSID-RELATED PHASES PACKAGE
|  /*
|  /&
```

| *Figure 58. Reloading the CCSID-Related Phases Package*

| **Notes for Figure 58:**

| • For procedures ARIS61DB and ARIS61SL, substitute your own procedures or
| job control statements that identify your current database and the DB2 Server
| for VSE Version 6 Release 1 sublibrary.

| • Procedure ARIS175D reloads the CCSID-related phases package in the
| database by running the application server in single user mode against that
| database.

Recreating the CCSID-Related Phases

| To recreate the CCSID-related phases after initial installation, execute job
| ARISCNVD (supplied as a Z-type job control member). You must recreate the
| CCSID-related phases after any updates are made to the SYSTEM.SYSCCSIDS,
| SYSTEM.SYSCHARSETS, or SYSTEM.SYSSTRINGS system catalog tables. Refer
| to "Migration Step 16: Create CCSID-Related Phases" on page 63 for details.

FIPS Flagger Maintenance

Reloading the FIPS Flagger Package (SQLDBA.ARIFCRD)

The FIPS flagger package must be reloaded in all applicable databases if there is a
service update to A-type source member ARIFCRDM. To reload it, prepare and run
the job control statements shown in Figure 59.

Refer to the information supplied with each DB2 Server for VSE service update to
see if you should take this action.

```
// JOB RELOAD FIPS FLAGGER
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61SL   *-- DB2 Server LIBRARY DEFINITION            1
// EXEC PROC=ARIS61DB   *-- STARTER DATABASE IDENTIFICATION          2
// EXEC PROC=ARISDBSD   *-- RUN DB2 Server IN SINGLE USER MODE       3
CONNECT SQLDBA IDENTIFIED BY currentpw
GRANT CONNECT TO SQLDBA IDENTIFIED BY SQLDBAPW
/*
// EXEC PROC=ARIS360D   *-- RELOAD THE FIPS FLAGGER                  4
// EXEC PROC=ARISDBSD   *-- RUN DB2 Server IN SINGLE USER MODE       3
CONNECT SQLDBA IDENTIFIED BY SQLDBAPW
GRANT CONNECT TO SQLDBA IDENTIFIED BY newpw
/*
/&
```

Figure 59. Reloading the FIPS Flagger Package

Notes for Figure 59:

- The steps executed by procedure ARISDBSD and procedure ARIS360D run the application serverin single user mode against the identified database.

1   Procedure ARIS61SL identifies the DB2 Server for VSE sublibraries.

2   Procedure ARIS61DB identifies the starter database. For procedure ARIS34DB, you can substitute the procedure or job control statements that identify the database being updated.

3   The password for the user SQLDBA must be reset to SQLDBAPW before procedure ARIS360D is executed. The first execution of procedure ARISDBSD changes the password for the user SQLDBA to SQLDBAPW. You must supply the current password (**currentpw**) for the user SQLDBA in the SQL CONNECT command shown. After procedure ARIS360D is executed, the password for the user SQLDBA should be reset to a password of your choice. The second execution of the procedure ARISDBSD changes the password for the user SQLDBA. Supply the password of your choice (**newpw**) for the user SQLDBA in the SQL GRANT command.

4   The step executed by procedure ARIS360D reloads the package SQLDBA.ARIFCRD into the database from the DB2 Server for VSE A-type source member ARIFCRDM. The step must be executed by the user SQLDBA.

      This step is successfully completed with a return code of 0 through 4.

DB2 Server for VSE Library Maintenance

In a VSE environment, a production sublibrary is required for DB2 Server for VSE.

Replacing DB2 Server for VSE

To replace DB2 Server for VSE:

1. Purge the existing sublibrary as described below.

2. Restore DB2 Server for VSE through MSHP by following "Preparation Step 4: Restore the DB2 Server for VSE Distribution Library" on page 10.

3. Perform the link-edits in "Installation Step 1: Link-Edit the DB2 Server for VSE 6.1 Online Support Components" on page 29.

Purging DB2 Server for VSE Libraries

To purge existing sublibraries of all entries relating to DB2 Server for VSE, prepare and execute the job control statements shown in Figure 60.

```
// JOB PURGE DB2 Server VSE VERSION 6.1 LIBRARIES
// EXEC LIBR,PARM='MSHP'
ACCESS SUBLIB=PRD2.DB2610                    1
DELETE ARI*.*
/*
/&
```

Figure 60. Purging DB2 Server for VSE VSE Libraries

Note for Figure 60:

1   The ACCESS statement must contain the name of the sublibrary that contains DB2 Server for VSE. Change this name as required.

DB2 Server for VSE Link Books

Table 2 shows the relationships between DB2 Server for VSE components, link books, and phase names. Refer to it when re-link-editing DB2 Server for VSE phases.

Notes:

1. Only the following DB2 Server for VSE phases are eligible for the VSE shared virtual area (SVA):

ARICDIRD	ARIDBS	ARIPRPA	ARIPRPC
ARIPRPF	ARIPRPP	ARIRBARM	ARISQLDS
ARIXRDS			

If you install all of the phases eligible for SVA into the VSE shared virtual area, allocate an additional 4.1 megabytes of storage to the SVA.

Table 2 (Page 1 of 2). Link Books for the DB2 Server for VSE Components

Component	Link Book	Phases
DB2 Server for VSE Copyright	None	$$$COSQL
DBSS / DSC	ARISLKDD ARISLKMD	ARISQLDS ARICMOD
VSE Dependent Functions	ARISLKED	ARISD00D ARISD01D ARISD10D ARISD11D ARISD12D ARISD13D ARISD14D ARISD15D ARISD16D ARISD20D ARISD21D ARISD22D ARISD23D ARISD24D ARISD25D ARISD26D ARISD30D ARISD31D ARISD32D ARISD33D ARISD34D
RDS with DRDA	ARISLKRA	ARIXRDS
RDS without DRDA	ARISLKRD	ARIXRDS
User Exit Router	ARISLKXD	ARIXSXR
DBMS	ARISLK1D	ARISDBMS
Assembler Preprocessor	ARISLKAD	ARIPRPA
Flagger Semantic Routines	ARISLK4D	ARIFFVL
Flagger View Analysis Routines	ARISLK5D	ARIFBVL
Flagger LGP tables modules	ARISLK7D	ARIFF00 ARIFS00 ARIFB00
C Preprocessor	ARISLK6D	ARIPRPB
COBOL Preprocessor	ARISLKCD	ARIPRPC
PL/I Preprocessor	ARISLKPD	ARIPRPP
FORTRAN Preprocessor	ARISLKTD	ARIPRPF
DBS Utility	ARISLKUD	ARIDBS
Batch Resource Adapter	ARISLKBD	ARIRBARM
Online Resource Adapter	ARISLKZD	ARI0OLRM
DBNAME Directory Generator	ARISLK8D	ARICBDID
DBNAME Directory Services	ARISLKDA	ARICDIRD
APPC-to-XPCC Exchange Transaction	ARISLK9D	ARICAXED
Trace Formatter	ARISLKFD	ARIMTRA
Directory Expander	ARISLKQD	ARIMEXBD
Online Resource Adapter Control (ENABLE/DISABLE CICS Resource Adapter)	ARISLKYD	ARIRCONT
ISQL Mainline Transaction	ARISLKID	ARIISQL
ITRM Terminal Transaction program	ARISLKJD	ARIITRM
ITRM Terminal Extension Program	ARISLKLD	ARIITRX
Abend Checking Support for LE/VSE	None	ARICABC
Message Repository (American English)	None	ARIMS001

DRDA2 Support	ARISLKVD ARISLKOD ARISLKND ARISLKWD	ARICDEBD ARICDRAD ARICDAXD ARICDR2
COBOL II Dynamic Support	None	ARIPADR4 ARIPADR5 ARIPRDI ARISSMA
		Note: You can use Z-type source member ARIS51LP to create these Phases.
CCSID-Related Phases	ARISLKQZ ARISLKRZ ARISLKSZ	ARIRRFCD ARIRRFRD ARIRRFSD
CBND Mainline Transaction	ARISLKBA	ARIPCBND
CBND sub-transaction	ARISLKCA	ARIPCB2D
SQLGLOB File Default Setting Program	ARISLKGZ	ARICGDEF
ISQL Package Conversion Program	ARISLKBZ	ARICIQBD

Appendix A. Techniques Used for Installation

The following are techniques used in some of the DB2 Server for VSE installation procedures and members:

- Embedding database identification statements
- Embedding DB2 Server for VSE library identification statements
- Using READ MEMBER statements
- Running the DBS utility in single user mode
- Suppressing preprocessor output.

Embedding Database Identification Statements

The IBM-supplied procedure ARIS61DB contains the DLBL statements that identify the components of the starter database. No program is executed by this procedure. It is executed first in the example job control members to embed the database DLBL statements needed by DB2 Server for VSE (program ARISQLDS).

You can replace the references to ARIS61DB with actual database DLBL statements, or with references to your own procedures set up for this purpose.

Embedding DB2 Server for VSE Library Identification Statements

The IBM-supplied procedure ARIS61SL contains the library identification (LIBDEF) statements for most of the installation steps for a database. The IBM-supplied procedure ARIS61PL contains the LIBDEF statements for normal use of DB2 Server for VSE.

The LIBDEF statements in procedures ARIS61SL and ARIS61PL are not unique to a particular database. They are included whenever a set of DB2 Server for VSE libraries is needed.

You can replace the references to ARIS61SL and ARIS61PL with your own LIBDEF statements, or with references to your own procedures set up for this purpose.

Using the READ MEMBER Statement

DB2 Server for VSE can read input from a source member with a statement of the form:

```
READ MEMBER member-name[.member-type] [(NOCONT]
```

Note: The square brackets [ ] indicate an optional parameter.

member-name
> Specifies a source member in the DB2 Server for VSE library.

member-type
> Specifies the source member type. The default is ".A". For example, either **BOOK1** or **BOOK1.A** is correct.

NOCONT Specifying NOCONT prevents READ MEMBER from continuing to read from SYSIPT. It also ensures that the EOF indicator is returned. If NOCONT is NOT specified, subsequent records are read from SYSIPT after the end of member.

A READ MEMBER statement:

- Can occur anywhere between byte 1 and byte 71 of a SYSIPT record.

- Is accepted only if it occurs immediately after an EXEC statement or another READ MEMBER statement.

- Is accepted after a SCHEMA or RELOAD PACKAGE command if the INFILE specified is SYSIPT. The NOCONT option is required to properly end the input file.

- Is accepted after a DATALOAD command if the INFILE specified is (*). An ENDDATA command is required at the end of the input data records, whether the end of data is inside the member or in SYSIPT.

- Must not follow other SYSIPT data records. However, SYSIPT data records can follow it if the NOCONT option is not specified.

- Is not intended to be used outside of the DB2 Server for VSE installation process. Using READ MEMBER to include members with SQL INCLUDE statements results in errors.

You can place SYSIPT data immediately after an EXEC statement and not use a READ MEMBER statement.

Running the DBS Utility in Single User Mode

The job control example shown in Figure 61 starts the application server in single user mode (SYSMODE=S). When the application server is initialized, it passes control to the application program specified by the PROGNAME parameter (in this situation, the DBS utility program ARIDBS).

During the DB2 Server for VSE installation process, the DBS utility is run without DB2 Server for VSE logging (LOGMODE=N). All other DB2 Server for VSE initialization parameters are allowed to default.

```
// JOB START SINGLE
// LIBDEF PROC,SEARCH=(PRD2.DB2610)
// EXEC PROC=ARIS61DB   *-- STARTER DATABASE IDENTIFICATION
// EXEC PROC=ARIS61PL   *-- DB2 Server LIBRARY DEFINITION
     .
Optional statements for the application program,
such as TLBL and DLBL statements.
     .
// EXEC ARISQLDS,SIZE=AUTO,PARM='SYSMODE=S,LOGMODE=N,PROGNAME=ARIDBS'
     .
SYSIPT input to the DBS utility application program.
     .
/*
/&
```

Figure 61. Example of Running the DBS Utility in Single User Mode

Note: For procedure ARIS61DB, you can substitute your own procedure or job control statements, to start the application server using your own database.

Suppressing Preprocessor Output

SYSPCH and SYSLST output from the DB2 Server for VSE Assembler preprocessor is suppressed during the database installation process. It is not required because only access modules are being built for the database. Assignment and label information for SYSPCH is not needed when the SYSPCH output is suppressed. The assignment and label information is only required for output to disk file.

Preprocessor parameters NOPRINT (NOPR) and NOPUNCH (NOPU) are used. Refer to the *DB2 Server for VSE Application Programming* manual for a complete description of the preprocessor parameters.

Preprocessor diagnostic messages are always written to SYSLST.

Appendix B. Procedures Provided by IBM

This appendix lists the procedures provided by IBM for your use. Any procedures not documented in this manual are included in the *DB2 Server for VSE System Administration* manual.

Procedure	Purpose
ARISDBSD	Run the DBS Utility in DB2 Server for VSE Single User Mode
ARIS030D	Generate the Starter Database
ARIS040D	Create the DBS Utility Package
ARIS050D	Finish Database Generation
ARIS055D	Load Sample Table and Routines
ARIS059D	Activate the Messages for Language xxxx
ARIS060D	Install ISQL HELP Text into the Database
ARIS061D	Migrate the HELP Text Tables
ARIS062D	Deactivate a Language and/or Delete HELP Text for a Specific Language
ARIS063D	Delete all HELP Text for **all** Languages
ARIS070D	Update the DB2 Server for VSE System
ARIS075D	Drop, Recreate, and Load the Sample Tables
ARIS080D	Grant SCHEDULE Authority to DBDCCICS
ARIS090D	Link-edit Online Resource Adapter Control
ARIS110D	Create/Grant ISQL Tables/Authorizations
ARIS120D	Reload the ISQL Package
ARIS130D	Complete the Installation of ISQL
ARIS140D	Link-edit ISQL
ARIS150D	Link-edit ISQL ITRM Terminal Transaction
ARIS160D	Link-edit ISQL ITRM Terminal Extension Program
ARIS170D	Link-edit DB2 Server for VSE Batch Resource Adapter
ARIS175D	Reload the CCSID-related Phases Package
ARIS180D	Link-edit DB2 Server for VSE Trace Formatter
ARIS185D	Link-edit DB2 Server for VSE Directory Expander
ARIS190D	Link-edit DB2 Server for VSE DBSS/DSC
ARIS250D	Add and Delete Dbextents
ARIS61DB	Starter Database Identification Statements
ARIS61PL	DB2 Server for VSE Production Library Definition
ARIS61SL	DB2 Server for VSE Optional Service/Production Library Definition
ARIS360D	Load FIPS flagger

ARIS370D	List Primary Keys to be Dropped and Recreated
ARIS380D	User entry for NLS Installation
ARIS385D	Procedure to install NLS and Load Help Text
ARIS390D	Load initial record to SQLGLOB VSAM file
ARIS395D	Load initial record to SQLBIND VSAM file

Appendix C. A-Type Source Members

This appendix identifies the members that are distributed as DB2 Server for VSE A-type source members. The members contain sample input used during installation and migration.

Member	Contents
ARIDSQLP	Source Code of the DBS Utility Package
ARIFCRDM	FIPS Flagger Package
ARIISQLM	ISQL Package
ARIPREPF	Prep parm file for preparing DBSU at installation
ARIRCAN	User Cancel Exit Support Macro
ARIRMAR	User Cancel Exit Support Macro
ARIRSQRM	CCSID-related Phases Package
ARISADD	Sample Input to Add/Delete Dbextent Function
ARISAMDB	SQL Statements to be Executed by the DBS Utility to Build Sample Tables
ARISAMPI	SQL Statements to be Executed by the DBS Utility to Load the Sample ISQL Routines into the Database
ARISCAT	Required Input to Database Generation
ARISCMDB	DBS Utility Commands to Drop Sample Tables
ARISCON	SQL CONNECT Command to be Executed by the DBS Utility
ARISCTM	Database Catalog Migration Authorization Updates
ARISCTMP	System Catalog SYSTEM.SYSOPTIONS Updates
ARISDBG	Control Statements to Generate the Starter Database (Input to ARIS030D)
ARISDBU	SQL Statements to be Executed by the DBS Utility to Finish Database Generation (Input to ARIS050D)
ARISDIRD	Directory of all DBNAMEs and TPNs in the VSE system
ARISDTM	Commands to Update Datetime Defaults
ARISEXP	DBS Utility Input to Create the New EXPLAIN Tables
ARISFPKY	SQL Statements Used by the DBS Utility to List Primary Keys to be Dropped and Recreated
ARISI20	Input to ARIS110D (ISQL Installation)
ARISI21	Input to ARIS130D (ISQL Installation)
ARISMMDB	Commands that Create Manufacturing Sample Tables
ARISS001	Commands to Add American English Entry on SQLDBA.SYSLANGUAGE table
ARISTCF	Commands to the DBS Utility for Installing the Chinese Help Text (Input to ARIS060D)

ARISTC1	Commands to the DBS Utility for Installing the Chinese Help Text (Input to ARIS060D)
ARISTC3	Commands to the DBS Utility for Installing the Chinese Help Text (Input to ARIS060D)
ARISTFF	Commands to the DBS Utility for Installing the French Help Text (Input to ARIS060D)
ARISTF1	Commands to the DBS Utility for Installing the French Help Text (Input to ARIS060D)
ARISTF3	Commands to the DBS Utility for Installing the French Help Text (Input to ARIS060D)
ARISTGF	Commands to the DBS Utility for Installing the German Help Text (Input to ARIS060D)
ARISTG1	Commands to the DBS Utility for Installing the German Help Text (Input to ARIS060D)
ARISTG3	Commands to the DBS Utility for Installing the German Help Text (Input to ARIS060D)
ARISTJF	Commands to the DBS Utility for Installing the Japanese Help Text (Input to ARIS060D)
ARISTJ1	Commands to the DBS Utility for Installing the Japanese Help Text (Input to ARIS060D)
ARISTJ3	Commands to the DBS Utility for Installing the Japanese Help Text (Input to ARIS060D)
ARISTUF	Commands to the DBS Utility for Installing the Uppercase English Help Text (Input to ARIS060D)
ARISTU1	Commands to the DBS Utility for Installing the Uppercase English Help Text (Input to ARIS060D)
ARISTU3	Commands to the DBS Utility for Installing the Uppercase English Help Text (Input to ARIS060D)
ARISTXF	Commands to the DBS Utility for Installing the Mixed English Help Text (Input to ARIS060D)
ARISTX1	Commands to the DBS Utility for Installing the Mixed English Help Text (Input to ARIS060D)
ARISTX3	Commands to the DBS Utility for Installing the Mixed English Help Text (Input to ARIS060D)
ARIS5ASD	Sample Assembler Language Application Program to Manipulate the Sample Tables (see note below)
ARIS5CBD	Sample COBOL Application Program to Manipulate the Sample Tables (see note below)
ARIS5CD	Sample C Application Program to Manipulate the Sample Tables (see note below)
ARIS5FTD	Sample FORTRAN Application Program to Manipulate the Sample Tables (see note below)
ARIS5PLD	Sample PL/I Application Program to Manipulate the Sample Tables (see note below)

ARIS61FC	Sample File Control Table Entries for SQLBIND and SQLGLOB
ARIUXDT	User Date Conversion Routine
ARIUXIT	User Exit Router Routine
ARIUXTM	User Time Conversion Routine
FP102CY	Sample field procedure for cultural sorting for the Cyrillic code page (Regions: Russia, Bulgaria, Serbia and Montenegro).
FP870L2	Sample field procedure for cultural sorting for the Latin 2 code page (Regions&colon Slovenia, Poland and Romania).

Note: Members ARIS5ASD, ARIS5CD, ARIS5CBD, ARIS5FTD, and ARIS5PLD are shown in the *DB2 Server for VSE Application Programming*. They serve as coding examples for application programmers.

You can punch the A-type members listed in this appendix by using the JCL statements shown in Figure 62. Replace **XXXXXXXX** with the name of a member.

```
// JOB PUNCH
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                               *
* PURPOSE: JOBSTREAM TO PUNCH OUT MEMBER XXXXXXXX.A             *
*                                                               *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
// EXEC LIBR,PARM='MSHP'
   ACCESS SUBLIB=PRD2.DB2610
   PUNCH  XXXXXXXX.A
/*
/&
```

Figure 62. Example of JCL Required to Punch A-Type Members

Appendix D. Z-Type Source Members

This appendix identifies the members that are distributed as DB2 Server for VSE Z-type source members. The members contain sample JCL. Any members not documented in this manual are included in the *DB2 Server for VSE System Administration* manual.

Member	Contents
ARISBDID	DBNAME Directory Generation Job Control
ARISCNVD	Job Control to Refresh CCSIDs-Related Phases
ARISGDEF	Job Control to set SQLGLOB file default value
ARISIQBD	Job Control to generate ISQL bind file
ARIS6ASD	DB2 Server for VSE Sample Assembler Program Job Control
ARIS6CBD	DB2 Server for VSE Sample COBOL Program Job Control
ARIS6CD	DB2 Server for VSE Sample C Program Job Control
ARIS6C2D	DB2 Server for VSE Sample COBOL II Program Job Control
ARIS6FTD	DB2 Server for VSE Sample FORTRAN Program Job Control
ARIS6PLD	DB2 Server for VSE Sample PL/I Program Job Control
ARIS61AD	Job Control to prepare for installation and restore the Distribution Library
ARIS61BD	Job Control to Do DB2 Server for VSE Link-Edits
ARIS61CD	Job Control to Define the VSAM Master Catalog and the VSAM Data Sets
ARIS61DD	Job Control to Generate and Install Starter Data Base
ARIS61ED	Job Control to Install Optional DB2 Server for VSE Components
ARIS61FD	Job Control to Optionally Grant SCHEDULE Authority to CICS
ARIS61GD	Job Control to Start DB2 Server for VSE in Multiple User Mode
ARIS61HD	Job Control to Add and Delete Dbextents
ARIS61HZ	Job Control to Enlarge HELPTEXT Dbspace
ARIS61ID	Job Control to Increase the Size of the Directory
ARIS61JD	Job Control to Define CICS Programs and Transactions
ARIS61JZ	Job Control to Install National Language
ARIS61KD	Job Control to Define CICS DB2 for VSE DRDA Programs and Transactions for CICS
ARIS61ND	Job Control to Cold Log and Change the Password for User SQLDBA
ARIS61OD	Job Control to Format the DB2 Server for VSE Logs
ARIS61PD	Job Control to Create the Version 6 Release 1 System Catalog
ARIS61QD	Job control to Create the DBS Utility Package
ARIS61RD	Job Control to Update the DB2 Server for VSE System

ARIS61SD	Job Control to Migrate the Help Text Tables
ARIS61TD	Job Control to Reload the English Help Text
ARIS61VD	Job Control to Change the Password for User SQLDBA
ARIS61WD	Job Control to Reload the CCSID-Related Phases Package
ARIS611D	List Primary Keys to be Dropped and Recreated
ARIS612D	Enable DRDA Server Support
ARIS613D	Remove DRDA Server Support
ARIS614D	Linkedit LE/VSE Abend Checking Support
ARIS615D	Job Control to Enable DRDA AR Support
ARIS616D	Job Control to Remove DRDA AR Support
ARIS617D	Job Control to Define VSAM Preprocessor Bind File
ARIS618D	Job Control to define SQLGLOB VSAM file
ARIS619D	Job Control to define BINDWKF VSAM file

You may punch the Z-type source members presented in this appendix using the JCL in Figure 63. Replace **XXXXXXXX** with the name of a member.

```
// JOB PUNCH ZTYPE
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                   *
* PURPOSE: JOBSTREAM TO PUNCH OUT MEMBER XXXXXXXX.Z                 *
*                                                                   *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
// EXEC LIBR,PARM='MSHP'
   ACCESS SUBLIB=PRD2.DB2610
   PUNCH  XXXXXXXX.Z
/*
/&
```

Figure 63. Example of JCL Required to Punch Z-Type Members

Appendix E. Additional CICS and VSE Updates for the DB2 Server System

Chapters 2 and 3 of this manual presented the basic CICS and VSE requirements for DB2 Server for VSE. This appendix describes additional entries you may choose to make. Only the CICS and VSE entries related to DB2 Server for VSE are described here: for information about CICS entries to control access to ISQL, see the *DB2 Server for VSE System Administration* manual.

This appendix is not a tutorial on CICS or VSE installation and customization. For complete descriptions of product usage, refer to the applicable CICS and VSE manuals.

Additional Updates Required for the CICS Monitoring Facility

If DB2 Server for VSE will be used in an online environment, and if your system will use the CICS Monitoring Facility, update these CICS tables:

DFHJCT   Journal Control Table

DFHMCT   Monitor Control Table

DFHFCT   File Control Table

DFHSIT   System Initialization Table.

DFHTCT   Terminal Control Table

These entries are described in the following sections.

DFHJCT Entries

Define a journal used for the CICS system log in the DFHJCT. Specify JFILEID=SYSTEM in a DFHJCT TYPE=ENTRY macro.

Also define a journal used to record the monitoring facility output data in a DFHJCT TYPE=ENTRY macro as a user journal. Specify a JFILEID value between 02 and 99. Specify FORMAT=SMF for the user journal so that the SMF block format is used instead of the CICS block format.

Figure 64 shows an example of how to code your DFHJCT. Here, a CICS system log is allocated to a 3380 DASD device, and an DB2 Server user journal is assigned to a tape device.

```
DFHJCT TYPE=INITIAL,SUFFIX=jj          1
DFHJCT TYPE=ENTRY,                                               X
       JFILEID=SYSTEM,                                           X
       BUFSIZE=1024,                                             X
       BUFSUV=1024,                                              X
       JOUROPT=(CRUCIAL,INPUT),        2                         X
       JTYPE=DISK1,                                              X
       OPEN=INITIAL,                                             X
       DEVADDR=sysxxx,                 3                         X
       JDEVICE=3380
DFHJCT TYPE=ENTRY,                                               X
       JFILEID=nn,                     4                         X
       BUFSIZE=4096                                              X
       BUFSUV=4096,                                              X
       FORMAT=SMF,                                               X
       JTYPE=TAPE1,                                              X
       OPEN=INITIAL,                                             X
       DEVADDR=sysyyy,                 5                         X
       JDEVICE=TAPE
DFHJCT TYPE=FINAL
END    DFHJCTBA
```

Figure 64. DFHJCT Examples for CICS Monitoring Facility

Notes for Figure 64:

- CICS journal files must be formatted before use. See the CICS manuals for information on CICS journal files.

1   The SUFFIX value **jj** must be supplied in the DFHSIT JCT=**jj** parameter.

2   Use of the **CRUCIAL** parameter causes the CICS system to ABEND if the log is inaccessible. This condition usually occurs because of a permanent I/O error which makes the log unreadable. Consequently, it may not be possible to correctly recover all resources.

   An alternative and preferable procedure is not to specify **CRUCIAL**, in which case the operator is notified with a DFH4513 message, and the CICS system continues. The operator should then perform a nonimmediate shutdown of the CICS system, but before starting it again with a new log, should backup recoverable resources so the backups are properly synchronized with the new log.

3   **sysxxx** is the logical unit address for the CICS system log journal (JFILEID=SYSTEM) assigned to a 3380 DASD file.

4   The JFILEID value **nn** must be between 02 and 99. This value must also be supplied as the DFHMCT TYPE=RECORD entry DATASET parameter value.

5   **sysyyy** is the logical unit address for the DB2 Server user journal (JFILEID=**nn**) assigned to a tape file.

DFHMCT Entries

Figure 65 shows an example of how to code your DFHMCT to activate all the DB2 Server clocks and counters. Refer to the *DB2 Server for VSE & VM Performance Tuning Handbook* for a description of these clocks and counters.

```
   DFHMCT TYPE=INITIAL,SUFFIX=mm          1
 *
 * CLOCK/COUNTER FOR TIME WAITING FOR A LINK
 *
   DFHMCT TYPE=EMP,ID=(PP,16),CLASS=PERFORM,PERFORM=SCLOCK(1)          2
   DFHMCT TYPE=EMP,ID=(PP,17),CLASS=PERFORM,PERFORM=PCLOCK(1)
 *
 * TIME USER HOLDS A LINK
 *
   DFHMCT TYPE=EMP,ID=(PP,18),CLASS=PERFORM,PERFORM=SCLOCK(2)
   DFHMCT TYPE=EMP,ID=(PP,19),CLASS=PERFORM,PERFORM=PCLOCK(2)
 *
 * TIME IN DB2 Server for VSE PARTITION
 *
   DFHMCT TYPE=EMP,ID=(PP,20),CLASS=PERFORM,PERFORM=SCLOCK(3)
   DFHMCT TYPE=EMP,ID=(PP,21),CLASS=PERFORM,PERFORM=PCLOCK(3)
 *
 * DB2 Server FUNCTION COUNTERS (4 COUNTERS) FOR LINK USAGE AND ALLOCATION
 *
   DFHMCT TYPE=EMP,ID=(PP,22),CLASS=PERFORM,PERFORM=(MLTCNT(1,4))
 *
 * CICS/VS USER JOURNAL
 *
   DFHMCT TYPE=RECORD,CLASS=PERFORM,DATASET=nn,MAXBUF=2040,FREQ=100  3
   DFHMCT TYPE=FINAL
          END
```

Figure 65. DFHMCT Example for CICS Monitoring Facility

Notes for Figure 65:

1   The DFHMCT TYPE=**INITIAL** macro defines the SUFFIX value **mm** to be used for the DFHSIT MCT parameter value.

2   The DFHMCT TYPE=**EMP** macros define clocks and counters to record the DB2 Server monitored events.

3   The DFHMCT TYPE=**RECORD** macro identifies the CICS user journal to which the data is to be sent for each class of data being collected (in this case, the performance class). The DATASET value **nn** specified must correspond to the DFHJCT JFILEID value specified for the user journal.

To include support for the CICS Monitoring Facility, use the CICS RDO tool (CEDA):

```
     CEDA ADD GROUP(DFHSTAND) LIST(VSELIST)
     CEDA ADD GROUP(DFHJRNL) LIST(VSELIST)
```

Replace VSELIST with the value specified for GRPLIST in your DFHSIT or CICS startup JCL.

DFHSIT Entries

The DFHSIT macro must include:

- CMP=YES to identify the monitoring program.

- JCP=2$ to identify journal control programs without dynamic transaction backout.

- JCT=(**jj**<,...>) where **jj** is the SUFFIX parameter value specified in the DFHJCT macro.

- MCT=**mm** where **mm** is the SUFFIX parameter value specified in the DFHMCT macro.

- MONITOR=PER to record performance class information. The operator can later use the CSTT transaction to activate or deactivate any of the monitoring classes. For example:

```
CSTT MONITOR,ON=PER
```

Additional Updates for DB2 Server Accounting

If DB2 Server accounting is to be used, you must:

- Provide CICS Restart Resynchronization capability, as described under "CICS Restart Resynchronization Support" on page 19.

- Include VSE/ESA job accounting. The parameter JA=YES must be specified on the IPL SYS command.

Additional Updates for CIRB Auto-Initiation

If CICS sequential device support is to be used to auto-initiate the CIRB transaction, update the CICS DFHTCT table.

DFHTCT Entries Required for Card Reader Line Printer Support

When a CRLP (card reader, line printer) device is defined in the DFHTCT, the CIRB transaction can be automatically executed by including the CIRB statement in the CICS startup job stream.

Figure 66 on page 95 shows an example of how you might code your DFHTCT entry for CRLP support.

```
DFHTCT TYPE=SDSCI,                                    X
       DEVADDR=SYSIPT,                                X
       DEVICE=2540,                                   X
       DSCNAME=READER
DFHTCT TYPE=SDSCI,                                    X
       DEVADDR=SYSLST,                                X
       DEVICE=1403,                                   X
       DSCNAME=PRINTER
DFHTCT TYPE=LINE,                                     X
       ACCMETH=BSAM,                                  X
       TRMTYPE=CRLP,                                  X
       ISADSCN=READER,                                X
       OSADSCN=PRINTER,                               X
       INAREAL=80
DFHTCT TYPE=TERMINAL,                                 X
       TRMIDNT=SAMA,                                  X
       TRMTYPE=CRLP,                                  X
       TRMSTAT=TRANSCEIVE
```

Figure 66. DFHTCT Examples for CRLP Support

After the CRLP device has been defined in the DFHTCT, the CIRB statement can be included in the CICS startup job stream. Code it just as you would if entering it from a terminal. Include '\' at the end of the statement to indicate the end of data. Following is an example of auto-initiating CIRB using CRLP support.

```
// EXEC DFHSIP,SIZE=nnnnK
CIRB PASSWORD,3,PRODCICS,0\
/*
```

Figure 67. Auto-initiating CIRB using CRLP support

When the CICS system is initialized, the CIRB transaction is automatically invoked. Do not include a CSSF GOODNIGHT statement following the CIRB statement. This allows the CIRB statement to be processed in all CICS startup modes (COLD, AUTO, or EMER).

DFHTCT Entries Required for Sequential DASD Support

When a sequential DASD device is defined in the DFHTCT, the CIRB statement can be read from a sequential DASD data set.

Figure 68 on page 96 shows an example of how you might code your DFHTCT entry for sequential DASD support.

```
      DFHTCT TYPE=SDSCI,                           X
             DEVADDR=SYS001,                       X
             DEVICE=2314,                          X
             DSCNAME=DISKIN1
      DFHTCT TYPE=SDSCI,                           X
             DEVADDR=SYS006,                       X
             DEVICE=2314,                          X
             DSCNAME=DISKOT1
      DFHTCT TYPE=LINE,                            X
             ACCMETH=SEQUENTIAL,                   X
             TRMTYPE=DASD,                         X
             ISADSCN=DISKIN1,                      X
             OSADSCN=DISKOT1,                      X
             INAREAL=80
      DFHTCT TYPE=TERMINAL,                        X
             TRMIDNT=SAMB,                         X
             TRMSTAT=(TRANSCEIVE)
```

Figure 68. DFHTCT Examples for Sequential DASD Support

To use sequential DASD support, two sequential DASD data sets must be defined.
These can be either Sequential Access Method (SAM) data sets or SAM-managed
VSAM data sets.

The input data set (DISKIN1 in Figure 68) must contain the CIRB statement.
Depending upon the data set type, a utility such as DITTO or VSAM IDCAMS can
be used to load the CIRB statement to the input data set. Load the CIRB statement
just as you would if entering it from a terminal. Include '\' at the end the statement
to indicate the end of data. The output data set (DISKOT1 in Figure 68) contains
the messages from the CIRB initialization process.

When DASD data sets are used to simulate a CICS terminal, provide DLBL,
EXTENT, and ASSGN job control statements (depending upon the access method).
When the CICS system is initialized, the CIRB statement is automatically invoked.
Do not include a CSSF GOODNIGHT statement following the CIRB statement. This
allows the CIRB statement to be processed in all CICS startup modes (COLD,
AUTO, or EMER).

Additional Updates Required for the Online Resource Adapter DRDA Router Tracing

DB2 Server for VSE uses VSAM files (or VSE/VSAM Space Management for the
SAM feature) to store trace records. CICS/VSE treats SAM files as **Extrapartition
Transient Data**. Transient data queues are called **destinations**. They must be
predefined in a table known as the destination control table (DCT).

Data directed to of from an external destination is called extrapartition data and
consists of sequential records that are fixed-length or variable-length, blocked or
unblocked. The record format for an extrapartition destination must be defined in
the DCT by the system programmer.

Note that Transient data queue definitions point to an associated data definition
(DLBL/TLBL) statement in the CICS start-up JCL.

If Online Resource Adapter DRDA Router Tracing will be used in an online environment (for example, the SQLGLOB parameter TRACERA or TRACEDRRM or TRACECONV is ON), the following steps are required for creating trace records:

1. Define the SAM file to CICS. This involves updating the DCT.

2. Add the appropriate TLBL, DLBL, EXTENT and ASSGN JCL statements to the CICS startup JCL to define file ARITRAC.

Figure 69 shows an example of how to code your DFHDCT to define the Resource Adapter trace file to CICS.

```
* Use one of the following SDSCI entries - not BOTH
* This definition is used if tracing to TAPE
DFHDCT   TYPE=SDSCI,        1                    X
         BLKSIZE=4096,                           X
         BUFNO=1,                                X
         DSCNAME=ARITRAC,                        X
         RECFORM=VARBLK,                         X
         DEVICE=TAPE,                            X
         DEVADDR=SYS018,    2                    X
         FILABL=STD,                             X
         ERROPT=IGNORE,                          X
         RECSIZE=4088,                           X
         REWIND=UNLOAD,                          X
         TYPEFLE=OUTPUT
* This definition is used if tracing to Disk
DFHDCT   TYPE=SDSCI,        1                    X
         BLKSIZE=4096,                           X
         BUFNO=1,                                X
         DSCNAME=ARITRAC,                        X
         RECFORM=VARBLK,                         X
         DEVICE=DISK,                            X
         ERROPT=IGNORE,                          X
         RECSIZE=4088,                           X
         TYPEFLE=OUTPUT


DFHDCT   TYPE=EXTRA,                             X
         DESTID=ARIT,                            X
         DSCNAME=ARITRAC,                        X
         OPEN=INITIAL,      3                    X
         RESIDNT=YES,                            X
         RSL=PUBLIC         4
```

Figure 69. DFHDCT Example

Notes for Figure 69:

1   The "TYPE=SDSCI" definitions do not include a **MODNAME=name** parameter. Because this operand is omitted, a standard VSE name is generated for calling the logic module when the DCT is link-editted.

2   Code **DEVADDR** with the symbolic unit address. This operand is not required for disk data sets when the symbolic address is provided through the EXTENT system control statement.

3   **OPEN=DEFERRED** may be used. In this case, the command **CEMT SET QUEUE (ARIT) ENABLED OPEN** must be used to open the file.

4 **RSL=0** or **RSL=number** may also be used. In these cases, any transactions defined with RSLC(YES) may not be able to access the ARITRAC file. See the *CICS/VSE Resource Definition (Macro)* manual for more details.

The output of the Online Resource DRDA Router trace can be directed to either tape or disk.

To direct the output to tape, include a TLBL statement in your CICS startup job control for generating a trace. An example of a TLBL statement for a trace output file is as follows:

```
// ASSGN SYS018,181
// TLBL ARITRAC,'DB2.ARITRAC'
```

To direct the output to disk, include a DLBL, an EXTENT, and an ASSGN statement in the CICS startup job control for generating a trace.

The following is an example of the job control required for a trace output DASD file.

```
// ASSGN SYS018,DISK,VOL=&vol,SHR
// DLBL ARITRAC,'DB2.ARITRAC',0,SD
// EXTENT SYS018,&vol,1,0,195,90
```

Bibliography

This bibliography lists publications that are referenced in this manual or that may be helpful.

DB2 Server for VSE Publications

- *DB2 Server for VSE Application Programming*, SC09-2662

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- *DB2 Server for VSE Diagnosis Guide and Reference*, LC09-2673

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- *IBM SQL Reference, Version 2, Volume 1*, SC26-8416

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- *Dictionary of Computing*, ZC20-1699

- *APL2 Programming: Using Structured Query Language*, SH21-1056

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Related Feature Publications

- *Control Center Installation and Operations Guide for VSE*, GC09-2679

- *IBM Replication Guide and Reference*, S95H-0999

DB2 Server version
VSE Installation Checklist

Notes:

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

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