



**Program Directory for
DB2 Server for VSE
and
Guest Sharing for VSE**

Version 7 Release 3, Modification Level 0

Program Number 5697-F42

for Use with
VSE/ESA

Document Date: March 2003

GI10-4999-02

Note!

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

This program directory, dated March 2003, applies to DB2 Server for VSE Version 7 (DB2 for VSE) Release 3, Modification Level 0 , Program Number 5697-F42 for the following:

COMPIDs	Feature Numbers	System Name
5697-F42-01	5821	VSE/ESA
5697-F42-01	5822	VSE/ESA
5697-F42-01	5824	VSE/ESA
5697-F42-01	6016	VSE/ESA

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The following terms, denoted by a double asterisk (**), used in this document, are trademarks of other companies as follows:

None

1.0 Chapter 1. Before You Begin

1.1 Program Materials.

An IBM program is identified by a program number and a feature code. The program number for DB2 for VSE is 5697-F42.

The program announcement material describes the features supported by DB2 for VSE. Ask your IBM marketing representative for this information if you have not already received a copy.

The following sections identify:

- The basic and optional program materials available with this program

1.1.1 Basic Machine-Readable Material

The distribution medium for this program is 9-track magnetic tape (written at 6250 BPI), 3480 cartridge, 1/4-inch tape cartridge or 4mm tape cartridge. The tape or cartridge contains all the programs and data needed for installation. Figure 1 describes the tape or cartridge. Figure 2 describes the file content of the program tape or cartridge.

Note: The program tape and cartridge contain “Restricted Materials of IBM.”

Figure 1. Basic Material: Program Tape

Medium	Feature Number	Physical Volume	External Label Identification	VOLSER
6250 tape *	5821	1	DB2 Server for VSE	N/A
		1	DB2 VSE Help Text	N/A
		1	DProp Capture for VSE	N/A
3480 cart.	5822	1	DB2 Server for VSE	N/A
		1	DB2 VSE Help Text	N/A
		1	DProp Capture for VSE	N/A
1/4 inch cart.	5824	1	DB2 Server for VSE	N/A
		1	DB2 VSE Help Text	N/A
		1	DProp Capture for VSE	N/A
4 mm cart.	6016	1	DB2 Server for VSE	N/A
		1	DB2 VSE Help Text	N/A
		1	DProp Capture for VSE	N/A

* Not available in Japan

Figure 2. Program Tape: File Content

VOLSER	File	Name
N/A	1	DB2 for VSE Copyright Records
N/A	2	DB2 for VSE History Files
N/A	3	DB2 for VSE Product
N/A	4	Tape Mark
N/A	5	Tape Mark

1.1.2 Optional Machine-Readable Material

The distribution medium for optional machine-readable material is 9-track magnetic tape (written at 6250 BPI), 3480 cartridge, 1/4-inch tape cartridge, or 4 mm tape cartridge. Figure 3, Figure 5 on page 3 and Figure 6 on page 3 describes the tape or cartridge.

Note: The optional machine-readable material (tape or cartridge) contains “Restricted Materials of IBM.”

Figure 3. Optional Material: Data Restore

Feature Number	Medium	Physical Volume	Tape Content	External Tape Label
5962 *	6250 tape	1	Data Restore for VSE	Data Restore VSE
5963	3480 cart.	1	Data Restore for VSE	Data Restore VSE
5952	1/4 inch cart.	1	Data Restore for VSE	Data Restore VSE
6045	4 mm cart.	1	Data Restore for VSE	Data Restore VSE

* Not available in Japan

Figure 4 (Page 1 of 2). Optional Material: DB2 Server for VSE Guest Sharing

Feature Number	Medium	Physical Volume	Tape Content	External Tape Label
5801 *	6250 tape	1	DB2 Server for VSE (GS)	DB2 Server for VSE (GS)
5802	3480 cart.	1	DB2 Server for VSE (GS)	DB2 Server for VSE (GS)
5804	1/4 inch cart.	1	DB2 Server for VSE (GS)	DB2 Server for VSE (GS)

Figure 4 (Page 2 of 2). Optional Material: DB2 Server for VSE Guest Sharing

Feature Number	Medium	Physical Volume	Tape Content	External Tape Label
6008	4 mm cart.	1	DB2 Server for VSE (GS)	DB2 Server for VSE (GS)

* Not available in Japan

Figure 5. Optional Material: Control Center

Feature Number	Medium	Physical Volume	Tape Content	External Tape Label
5988 *	6250 tape	1	Control Center for VSE	Control Center VSE
5989	3480 cart.	1	Control Center for VSE	Control Center VSE
5978	1/4 inch cart.	1	Control Center for VSE	Control Center VSE
6047	4 mm cart.	1	Control Center for VSE	Control Center VSE

* Not available in Japan

Figure 6. Optional Material: Query Management Facility (QMF)

Feature Number	Medium	Physical Volume	Tape Content	External Tape Label
6094 *	6250 tape	1	QMF for VSE	QMF for VSE V7 (E)
6092	3480 cart.	1	QMF for VSE	QMF for VSE V7 (E)
6091	1/4 inch cart.	1	QMF for VSE	QMF for VSE V7 (E)
6093	4 mm cart.	1	QMF for VSE	QMF for VSE V7 (E)

* Not available in Japan

1.2 Program Publications

The following sections identify the basic and optional publications for DB2 Server for VSE.

1.2.1 Displayable Softcopy Publications

Publications for DB2 Server for VSE are offered in displayable softcopy form. A subset of DB2 Server for VSE publications are translated into French, German and Japanese. These translated publications and all unlicensed manuals are included except for:

- DB2 Server for VSE & VM Overview
- DB2 Server for VSE & VM Licensed Program Specifications for VM Systems and for VSE Systems
- Memo to Users DB2 Server for VSE

The displayable manuals are part of the basic machine-readable material. The files are shipped on CD-ROM, where PDF and HTML versions of the library are provided. (Note: The DB2 Server for VSE Master Index and Glossary publication will not be available in HTML version.)

These displayable manuals can be viewed using an HTML browser installed on your system. The PDF versions can be viewed or printed, using the Adobe Acrobat Reader 4.0.

1.2.2 Basic Program Publications

Figure 7 identifies the basic program publications for DB2 Server for VSE. In addition to the displayable softcopy publications in 1.2.1, "Displayable Softcopy Publications," one copy of the following publications are included when you order the basic materials for DB2 Server for VSE. For additional copies, contact your IBM representative.

An asterisk(*) beside the Form Number indicates it contains "Restricted materials of IBM."

Figure 7. Basic Material: Unlicensed Publications

Publication Title	Form Number
Memo to Users DB2 Server for VSE	GI10-5010
DB2 Server for VSE & VM Overview	GC09-2806
DB2 Server for VSE & VM Licensed Program Specifications for VM Systems and for VSE Systems	GC09-2982

Figure 8. Basic Material: Licensed Publications

Publication Title	Form Number
DB2 Server for VSE & VM Diagnosis Guide and Reference	LC09-2907(*)

1.2.3 Optional Program Publications

Figure 9 identifies the optional program publications for DB2 for VSE. To order one or more copies, contact your IBM representative.

An asterisk(*) beside the Form Number indicates it contains "Restricted materials of IBM."

Figure 9. Optional Material: Unlicensed Publications

Publication Title	Form Number
DB2 Server for VSE Messages and Codes	GC09-2985
DB2 Server for VSE & VM SQL Reference	SC09-2989
DB2 Server for VSE System Administration	SC09-2981
DB2 Server for VSE & VM Database Administration	SC09-2888
DB2 Server for VSE & VM Operation	SC09-2986
DB2 Server for VSE & VM Interactive SQL Guide and Reference	SC09-2990
DB2 Server for VSE & VM Database Services Utility	SC09-2983
DB2 Server for VSE & VM Application Programming	SC09-2889
DB2 Server for VSE & VM Quick Reference	SC09-2988
DB2 Server for VSE & VM Performance Tuning Handbook	GC09-2987
DB2 Server for VSE Master Index and Glossary	SC09-2890

1.2.4 Program Source Materials

There are no source materials available for DB2 for VSE.

1.3 Program Support

This section describes the IBM support available for DB2 for VSE.

1.3.1 Preventive Service Planning

Before installing DB2 for VSE, check with your IBM Support Center or use either Information/Access or SoftwareXcel Extended to see whether there is additional Preventive Service Planning (PSP) information that you should know. To obtain this information, specify the following UPGRADE and SUBSET values:

Figure 10. PSP Upgrade and Subset ID

UPGRADE	SUBSET	RETAIN Release
DB2VSEVM730	DB2VSE	3NN

1.3.2 Statement of Support Procedures

Report any difficulties you have using this program to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Figure 11 identifies the component IDs (COMPID) for DB2 for VSE.

Figure 11. Component IDs

COMP ID	Component Name	CLC
5697-F42-01	DB2 Server for VSE V730	3NN

1.4 Program and Service Level Information

This section identifies the program and any relevant service levels of DB2 for VSE. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs integrated. Information about the cumulative service tape is also provided.

1.4.1 Program Level Information

This version of DB2 Server for VSE has incorporated all closed APARs from previous versions/releases at the time of the product General Availability.

1.4.2 Service Level Information

Check the DB2VSEVM730 PSP bucket for any additional PTFs that should be installed or any additional install information.

The following VSE APAR is required for Extended User Buffering support which has been enabled in DB2/VSE 7.3:

- DY45667

Please order this APAR and all its prerequisite and corequisite according to your VSE/ESA release.

Warning: without the previous APAR, you may experience Data corruption.

LE 1.4.1 is required. If password encryption is required, then LE 1.4.2 is required. This level is only available with VSE/ESA 2.6 and later. If you are using IBM TCP/IP, then service pack C should be installed.

CICS/TS PTF/APAR numbers, solving STORAGE PROTECT enabling problem:

- PQ47192

Please order this APAR and all its prerequisite and corequisite according to your VSE/ESA release.

If you are loading DB2 Server for VSE phases that are SVA eligible, you will need APAR PQ53159

Warning: You should bring your LE environment to the most current service level to avoid any potential problems in DB2 for VSE TCP/IP service.

1.4.3 Cumulative Service Tape

There is no cumulative service tape for DB2 for VSE.

1.5 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating DB2 Server for VSE.

1.5.1 System Requirements

This section describes the environment of the system required to install and use DB2 for VSE.

1.5.1.1 Operating System Requirements

DB2 for VSE operates under the VSE/ESA operating system release 2.5 or higher. A valid DB2 product key must be installed.

For password encryption support LE for VSE 1.4.2 or later is required to be able to use this feature.

1.5.1.2 Machine Requirements

One tape drive supported by VSE/ESA is required for installation.

1.5.1.3 Programming Requirements

1.5.1.3.1 Prerequisite Programs:

This section summarizes the program products required or recommended for the DB2 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 DB2 for VSE on a VSE system, you require an environment provided by VSE/Enterprise Systems Architecture Version 2 Release 5 later. DB2 for VSE requires VSE/VSAM, which comes included with this operating system.

This operating system also includes the following licensed program products that DB2 for VSE requires:

- VSE/POWER for Query/Report Writing support
- VSE/ICCF for an interactive development environment and
- CICS/VSE for online support.

The VSE/ESA Version 2 Release 5 system supplies the minimum requirements to support DB2 for VSE. However, the APARS described in "*Service Level Information*" must be applied.

Refer to the planning manual for your VSE system to determine whether DB2 for VSE is supported as an optional product.

If you have CICS Transactions that access local DB2 for VSE Server(s), you must use the restart resynchronization capability of CICS. *Section 2.6: Prepare the CICS Environment*, describes the CICS table updates needed to use restart resynchronization.

If you plan to use non-DB2 for VSE facilities to backup a database, you can use the VSE/VSAM Backup/Restore Feature.

Note: Backing up your data is vital to provide operational integrity.

Users of Double-Byte Character Set (DBCS) data should consider the following:

- PL/I programs using DBCS require no additional preprocessing (the PL/I compiler supports DBCS).
- DBCS variables and constants are not supported in FORTRAN and Assembler programs. This does not prevent you from using DBCS in dynamically defined SQL statements.
- In COBOL II Release 2 programs for VSE, SQL identifiers, SQL host variables, and SQL labels with DBCS characters can be used in SQL statements. The COBOL Kanji Preprocessor is not required.

A complete description of the software and hardware requirements is listed in chapter 1 of the *DB2 Server for VSE System Administration manual, GC09-2981*. Read this chapter before you begin your installation.

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: <ul style="list-style-type: none"> • Base refers to the database manager components that support batch applications, the pre-processors, and the utilities including the database services (DBS) utility. • ORA (online resource adapter) refers to the DB2 Server for VSE support for transaction processing (CICS*) environments. • ISQL refers to the terminal user query and report-writing facilities. 								

Figure 12. VSE Environments

Prerequisite programs should be installed before you begin to do any of the steps described in this manual.

1.5.2 DASD Storage Requirements

DASD storage requirements are described in *Chapter 2*.

Notes:

- National Language Versions of the DB2/VSE HELP TEXT and messages are included with the DB2 for VSE basic material.
- These allocations include approximately 25 percent free space to allow for maintenance.
- Maintain System History Program (MSHP) auxiliary history file are based on suggested values in the VSE/ESA System Control Statements manual for your VSE operating system.
- FB-512 devices include 0671, 3370, 9332, 9335, and 9336 storage devices.

1.5.3 Processor Storage Requirements

This section offers guidelines for estimating the processor resources needed for the database manager.

In general, a system operating in multiple-user mode, with CICS for both preplanned and unplanned (dynamic SQL, ISQL) query transactions, requires:

- Approximately 4 to 6 megabytes of storage for the database partition and its buffers.
- Approximately 6 to 10 megabytes of storage for CICS, the DB2 Server for VSE batch programs.

Following are suggestions on making detailed estimates of virtual storage requirements.

1.6 Virtual Storage Requirements of Components

The virtual storage requirements for the database manager include the space for the database manager itself, any application programs, buffers, VSAM control blocks, the package buffers, and dynamic storage requirements.

Figure 13 and Figure 14 on page 12 provide data for calculating the virtual storage needed for a particular installation of the database manager. The storage required varies depending on the mode of operation (single user mode or multiple-user mode) and the initialization parameter values used when the database manager is started.

The minimum dynamic storage required is **NCUSERS x 120000**. If the DRDA code is installed, the minimum is **NCUSERS x 170000**.

Figure 13 (Page 1 of 2). Initial Storage Requirements of DB2 Server for VSE Database Partitions

Formula/Constraints	Recommended Minimums for	
	Single-User Mode	Multiple-User Mode
DB2 Server for VSE Code 1, 12	4011168	3642056
Code for DRDA password encryption 16	0	0
Message Repository 12	250000	250000
DB2 Server for VSE Control Blocks		
• Base	140000	140000
• Lock Request Blocks NLRBS x 24 2, 3, 5 + 32	12320	60512
• Concurrent Scans Storage NCSCANS x 50 2, 3 x (NCUSERS+4) 2, 6	4500	13500
• Miscellaneous LRBs 8 x (First Prime Number > (NLRBS/4))	1048	5048
• Static Agent Storage below 16M NCUSERS x 57500 12	57500	287500
• Static Agent Storage anywhere NCUSERS x 50000	50000	250000
• Working Storage Area 12	109000	109000
• Working Storage Queue Headers 2, 3 32 + (2 + 2 x (NCUSERS + 4) + NPACKAGE x (NCUSERS + 1)) x 68	984	5472
• Package Control Blocks NCUSERS x NPACKAGE x 72 bytes 2, 3	72	3600
• Communications Control Blocks RMTUSERS x 710 2	0	0
• If TCP/IP Communications is used, add: (NCUSERS+4) x 501+36600 15	0	0
• Stored Procedure Caches (76 * the number of stored procedure servers) +(32 * the number of stored procedure server groups) +(for each procedure, 116 +the length of the LE options string (max 254) + (68 * the number of parameters))	0	0
DB2 Server for VSE Buffers		
• 4 x Maximum of ((the first power of 2 that is >= (NPAGBUF/8)) or 256) + (NPAGBUF x 4144)2	59040	125344
• 4 x Maximum of (the first power of 2 that is >= (NDIRBUF/8)) or 256) + (NDIRBUF x 560)2	8864	17824
Database Control Blocks		
• Base control blocks	88000	88000
• MAXDBSPC x 8 11	8000	8000
• MAXPOOLS x 18 11	576	576
• MAXEXTNT x 8 11	384	384

Figure 13 (Page 2 of 2). Initial Storage Requirements of DB2 Server for VSE Database Partitions

Formula/Constraints	Recommended Minimums for	
	Single-User Mode	Multiple-User Mode
Database I/O Control Blocks		
• NCUSERS x 216 x # of dbextents	2808	14040
• Minimum of (64 or NPAGBUF/10) x (NCUSERS+3) x 64 ¹⁴	1344	1536
VSAM Control Blocks		
• (NCUSERS x 1024 + 8192) x # of dbextents ^{4, 15}	119808	173056
• VSAM Catalogs ¹³	81920	81920
	-----	-----
	5007336 ^{7, 8}	5277368 ^{7, 8}

Note: The above numbers are in bytes.

¹ If the DRDA code is installed on the application server, an additional 1.8 megabytes is required (this applies to both multiple-user mode and single-user mode).

² The numbers for multiple-user mode assume the following defaults: NCUSERS (5), NPACKAGE (10), NCSCANS (30), NLRBS (2520), NLRBU (1000), NPAGBUF(30), NDIRBUF(30), RMTUSERS(0).

³ The numbers for single-user mode assume the following defaults: NCUSERS (1), NPACKAGE (1), NCSCANS (30), NLRBS (512), NLRBU (1000), NPAGBUF(14), and NDIRBUF(14).

⁴ The number of datasets = 15 (10 active dbextents + 1 directory dataset + 4 logs for dual and alternate logging)

⁵ The calculation for NLRBS is: NCUSERS x 2 + (NCUSERS x NLRBU)/2 + 10.

⁶ In single-user mode, NCSCANS x 50 x 3.

⁷ If you have coded an accounting exit, add its size to the total virtual storage requirements for both single and multiple-user mode.

If you have coded any field procedures, add their total size to the requirements for both single and multiple-user mode. In addition, add NCUSERS times the maximum working storage used by any of your field procedures. For more information on field procedures, see the *DB2 Server for VSE System Administration* manual.

⁸ Add the dynamic storage requirement of active agents.

⁹ The calculation for the default NPAGBUF is: 10 + 4 x NCUSERS

¹⁰ The calculation for the default NDIRBUF is: 10 + 4 x NCUSERS

¹¹ The recommended minimum assumes the defaults for MAXDBSPC (1000), MAXPOOLS (32), and MAXEXTNT (64).

¹² The following always reside below 16 megabytes: 1.3 megabytes of the DB2 Server for VSE Code, the Message Repository, and the Static Agent Storage below 16 megabytes, the Working Storage Area, and VSAM catalogs. If your application is running in single-user mode (SUM), you may go above the 16 megabyte line.

13 Assume 40 kilobytes for each VSAM catalog. The recommended minimum assumes two catalogs: the VSAM master catalog and one user catalog.

14 In single-user mode, minimum of (256 or NPAGBUF/2) x 192.

15 Approximately one-eighth of this will reside below 16 megabytes.

16 If DRDA password encryption is enabled, add 202Kb for the associated phase.

Figure 14. Virtual Storage Requirements of DB2 Server for VSE Components in the CICS Partition

ONLINE RESOURCE ADAPTER: Initialization, Termination, and Transaction Display	666 280 (See Note 2)
Global Control Blocks	1200 + 8 192 x Number of links from the CICS/VSE partition to the Database partition (See Note 3)
Execution Time Code	215 000
Execution Time Control Blocks	3 x Maximum number of CICS/VSE transactions that will access concurrently (See Note 3)
ISQL	613632 + Online resource manager requirements + 45000 for each ISQL user + 200000 for each additional message repository

Notes:

1. All numbers are in bytes.
2. The initialization/termination/transaction display code needs to be in the CICS partition only when the CIRA, CIRB, CIRC, CIRT, or CIRD transactions are active. For certain abnormal conditions, the system internally activates CIRT. (For more information, see the manual.) This value is calculated by adding the sizes of the following phases: ARIRCONT, ARIOLRM, ARIMS001, and ARICMOD. If CICS is not able to load the termination phase, the CICS/VSE system waits until storage becomes available. Shutdown is thus delayed, and the wait can be long. Shutdown must complete its process before online access to the database manager can be restarted. Therefore, it is important that the CICS partition contain enough virtual storage to allow the initialization/termination/transaction display code to run. (To avoid the problem of not being able to load the termination code at a critical time, consider specifying RES=YES in the DFHPPT entry for ARIRCONT.)
3. The global control blocks are maintained until CIRT (termination) completes its processing. If the virtual storage requirement for the control blocks is less than 32768 bytes, CICS provides the storage from its own pool. Otherwise, the partition's GETVIS area is used.
4. For execution time control blocks:
 - This storage requirement does not include the virtual storage used by the application transaction.

- The maximum number of CICS transactions that concurrently access the database manager is **not** the value NOLINKS (used by the CIRB transaction). The 3-kilobyte virtual storage area is required for a transaction from the time of the first database manager access until the end of the transaction.
- During online link initialization, a message buffer of 8192 bytes is obtained. This message buffer (mailbox) is used by the resource adapter to gather all the inputs generated by one SQL statement. The inputs are sent as one contiguous message to the database partition. If the SQL statement generates more input than 8192 bytes, the resource adapter attempts to get a larger message buffer from the partition's GETVIS area.

If the GETVIS fails due to insufficient storage, SQLCODE -932 and an indication (SQLERRD1) of the amount of storage required are returned to the transaction. If this occurs, either the GETVIS area must be made larger, or the transaction must be run when fewer transactions are active.

5. For online application programs, if the fetch/insert blocking option is in effect, add 8 kilobytes to the CICS partition size for each currently open cursor that qualifies for blocking.
6. The numbers shown in the figure do not include a user-written accounting exit.
7. If DRDA is used, add 1 megabyte to the CICS partition size to allow for the additional code in the online resource adapter.

Figure 15. Recommended Virtual Storage Increase for User Machine

DB2 Server for VM Component	Recommended Minimum Virtual Storage Increase for a VSE Partition (in Kilobytes)
Batch resource adapter	365 (if base code installed) 2260 (if DRDA code installed)
DBS utility	225 + batch resource adapter = 590 (base) 225 + batch resource adapter = 2485 (DRDA)
Any DB2 Server for VSE preprocessor (PL/I, Assembler, COBOL, FORTRAN, or C)	250 + batch resource adapter = 615 (base) 250 + batch resource adapter = 2510 (DRDA)
User program	User application size + batch resource adapter

Notes:

1. The batch resource adapter uses a minimum of 365 kilobytes of virtual storage in the batch (or VSE/ICCF) application's partition. This value must be added to the virtual storage requirements of the SQL application to arrive at the total VSE or VSE/ICCF partition size.
2. For programs running in multiple user mode, if the fetch/insert blocking option is in effect, add 8 kilobytes for each currently open cursor that qualifies for blocking.

3. If you have coded an accounting exit, a cancel exit or a TRANSPROC, add its size to the total virtual storage requirements.

1.7 CICS Dynamic Storage Considerations

The amount of virtual storage in the CICS dynamic area varies for ISQL. An average of 35 to 45 kilobytes for each user, plus 330 kilobytes, is recommended at the start. This supports most ISQL usage. The following variables can be considered to adjust the size of the dynamic area:

- Use of SELECT
- Use of routines
- Other CICS transactions.

1.7.1 Use of SELECT

The row length is the only variable that affects the amount of storage needed by a SELECT result: the number of rows retrieved from a SELECT has no effect on this.

Before retrieving any rows from tables, ISQL gets a buffer to hold enough storage for two screens of rows. If more than two screens are retrieved, this buffer is reused. (The number of rows depends on the size of the terminal screen.)

The number of columns referenced in a SELECT command in ISQL is limited to 45. ISQL uses the length of the retrieved columns not the number of column references to determine the buffer size. The storage needed is the number of rows for two screens, multiplied by the length of one row. (Note that the length of the row may be larger than the length of the screen.) If the storage required for the buffer exceeds 32 kilobytes, not all selected columns are displayed or the user receives an error message.

The SET VARCHAR and FORMAT VARCHAR ISQL commands change the size of the row and thus the size of the buffer.

1.7.2 Use of Routines

CICS temporary storage can be either MAIN or AUXILIARY, as determined by the TSP parameter in your SIT. If MAIN storage is used, the delta for ISQL users should be increased. The amount of storage required is based on the number of lines in the routines and the number of concurrent routines being run. The amount of storage for each line of a routine is 254 bytes.

If AUXILIARY storage is used, routines do not affect ISQL virtual storage requirements. Routines are read into CICS temporary storage before the first command of the routine is run.

Other CICS Transactions

The numbers given here are delta numbers for ISQL. They do not include any storage for other CICS transactions that your installation has.

1.7.3 CICS Temporary Storage Queues

CICS temporary storage queues can be defined as nonrecoverable. Recoverable temporary storage queues are incompatible with ISQL operation.

1.8 Initial Considerations for Installing DB2 Server on a VSE System

1.8.1 Loading 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 copies DB2 Server for VSE installation tape in the VSE library PRD2.DB2730.

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

If you have received your DB2 Server for VSE as part of your VSE/ESA order, see the VSE/ESA Installation Manual 'Installing a Program from the VSE/ESA Extended Base Tape'

1.8.2 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....7.3.0
- The library for the product is PRD2
- The sublibrary for the product is DB2730.

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 16 on page 16. Figure 17 on page 16 shows a sample report from a scan job.

```

// JOB SCAN TAPE
* *****
* PLEASE MOUNT DB2 SERVER R7.3.0 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 16. Scanning the DB2 Server for VSE 730 Distribution Library

```

RESTORE * TAPE=SYS006 SCAN=YES
L059I BACKUP FILE ID = 'DB2/VSE...7.3.0'
L123I HISTORY FILE FOUND ON TAPE
L091I SUBLIBRARY PRD2.DB2730 FOUND ON INPUT TAPE
  APPROXIMATE SPACE REQUIREMENT:  27856 LIBRARY BLOCKS
  3375 :   1115 TRACKS =    92 CYLINDERS 11 TRACKS
  3380 :    899 TRACKS =    59 CYLINDERS 14 TRACKS
  3390 :    845 TRACKS =    56 CYLINDERS  5 TRACKS
  9345 :    996 TRACKS =    66 CYLINDERS  6 TRACKS
  FBA :   55732 BLOCKS
L113I RETURN CODE OF RESTORE IS 0

```

Figure 17. Sample Report from the Scan Job

1.9 IBM Supplied Installation Aids

To help you install DB2 Server for VSE, or migrate existing databases, sample job control members are supplied as Z-type source members on the installation tape.

Some of the job control members will require modifications before submitting them for execution. These members and the required changes are discussed in the preparation, installation and migration chapters.

A REXX exec is supplied to aid in the modification and execution of these jobs. You can also punch these members out of the installation library into VSE/ICCF or another editor, for changes and submission.

2.0 Chapter 2. Preparing to Install DB2 Server for VSE 7.3

To prepare to install DB2 Server for VSE:

1. Read "Appendix A: How to Use the Job Manager".
2. Read "Planning for Installation" in the DB2 Server for VSE System Administration Manual
3. Ensure that the VSE operating system and all necessary programs are already installed and running correctly. (See "Prerequisite Programs" in Chapter 1)
4. Review this document completely before installing DB2 Server for VSE. For any optional steps, understand why the step is optional.
5. Review the section on service considerations, check for any prerequisite program temporary fixes (PTFs). Contact the IBM Support Center, or access with Information/Access or IBM Link, to see whether there is any additional preventative service planning (PSP) information which you should be aware of.
6. Complete all of the mandatory steps in this chapter, and any optional ones that apply to your installation. These steps are shown in Figure 18.

Step	Optional/ Mandatory	Automated/ Manual	Description
1	M	Manual	Set up the VSE Environment
2	M	Manual	Allocate DASD for the Distribution Library
3	M ¹	Manual	Allocate DASD for the Starter Database
4	M	Manual	Restore the DB2 Server for VSE Distribution Library
5	O	Manual	Prepare the CICS Environment
6	O	Automated	Define CICS programs and Transactions
7	O	Automated	Setup the SQLGLOB and BIND files
8	M ¹	Automated	Define VSAM Data Sets for the Starter Database
9	M	Automated	Update Labels for the New Datasets

Figure 18. Preparation Steps

Note:

1. The Starter Database is mandatory for Installation, and optional for Migration

Figure 19 on page 18 includes the global variables required in the Preparation Step.

Parameter Name	Default value	Description	Used in member:
GLOBCAT	VSESP.USER.CATALOG	The default VSAM catalog where SQLGLOB resides	ARIS73CD, ARISSTD
BINDFILE	DB2.BIND.MASTER	This is the name of the dataset which will hold the global variables	ARIS73CD, ARISSTD, ARIS737D, ARISIQBD
BINDWFILE	DB2.BIND.WORKF	This is the name of the dataset which will hold the preprocessor bind packages.	ARIS73CD, ARISSTD, ARIS739D
MASTERFILE	DB2.SQLGLOB.MASTER	This is the name of the dataset which will hold the global variables	ARIS73CD, ARISSTD, ARIS738D, ARISGDEF
ATYPE	CYL	The type of allocation unit for database IDCHMC DEFINE. The default allocation unit is Cylinders. Use BLK for FBA devices, or CYL for (E) CKD devices	ARIS73CD, ARIS737D, ARIS739D

Figure 19. Description of global parameters

2.1 Preparation Step 1: Setup the VSE Environment

This step is mandatory

If you are migrating from a previous release of DB2 for VSE, 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 Requester, 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 7.3 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 2: Link-Edit the DB2 Server for VSE 7.3 Online Support Components"*.

VSE/REXX Version 6 Release 1 must be enabled.

2.1.1 DB2 Server for VSE Key Enablement

Users on VSE/ESA Version 2 Release 5 and later, who want to run DB2 Server for VSE, are required to install a DB2 permanent product activation key, or a DB2 "90-day trial mode" product key.

VSE/ESA Version 2 Release 5 and later is shipped with a DB2 "90-day trial mode" product key. After the 90-day trial period is over, it is necessary to supply a DB2 permanent product key. This DB2 permanent product key is supplied automatically from IBM whenever an order is placed for DB2 Server for VSE & VM.

DB2 product enabling is driven by a phase which can be generated by the following EXEC IVALPKEY. The statement to execute IVALPKEY is supplied by VSE/ESA Version 2 Release 5, and later, in the member SKUSERBG in ICCF library 59.

```
// EXEC IVALPKEY,PARM='PRODUCT=DB2 KEY=0000-1111-2222-3333-4444 CUSTINFC  
0=C111-111-1111'
```

The key that appears in this EXEC statement is the DB2 "90-day trial mode" product key. Please note that the 90-day trial period starts when IVALPKEY is run (and not when DB2 Server for VSE is installed). Each time DB2 Server for VSE is accessed, message ARI4027W is displayed informing you of the number of days left within the 90-day trial period.

Once you have completed a license agreement for DB2 Server for VSE, you will replace the string shown in the sample EXEC statement with the DB2 permanent product activation key.

IVALPKEY must be run whenever the VSE/ESA operating system is IPLed. Therefore, it is recommended that you place the job to execute IVALPKEY on the POWER RDR queue so that it is released automatically at each IPL of the VSE/ESA system during background processing.

If IVALPKEY is not run when the VSE/ESA operating system is IPLed, DB2 Server for VSE cannot be installed, migrated or started.

2.2 Preparation Step 2: Allocate DASD for the Distribution Library

This step is mandatory

APPROXIMATE SPACE REQUIREMENT: 30,000 LIBRARY 1K BLOCKS.

DASD Storage Requirements for DB2 Server for VSE Library

APPROXIMATE SPACE REQUIREMENT: 30,000 LIBRARY BLOCKS		
DASD Device Type	Approximate Library Space Required	MSHP History File Space Required
3375	120 cylinders	15 tracks
3380	74 cylinders	15 tracks
3390	70 cylinders	15 tracks
9345	84 cylinders	15 tracks
FB-512	60,000 blocks	900 blocks

Figure 20. DASD Storage Requirements for DB2 Server for VSE Library

Notes:

1. These allocations include free space to allow for maintenance.
2. If you are installing versions of the DB2 Server for VSE HELP text or messages in languages other than English, then you may consider an extra 400 library blocks for each supported language.
3. 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.

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

2.3 Preparation Step 3: 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.

Figure 21 shows the approximate size of the Starter Database on various devices.

<i>Figure 21. Recommended Starter Database DASD Sizes</i>					
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 Extend					
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 Figure 21:

- 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 type. 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.

2.4 Preparation Step 4: Restore the 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.

If you have received your DB2 Server for VSE as part of your VSE/ESA order, see the VSE/ESA Installation Manual 'Installing a Program from the VSE/ESA Extended Base Tape'

Alternatively, you may create the job control member shown in Figure 22 to restore the Distribution Library. Mount the distribution tape and run your modified job.

```
// JOB ARIS73AD          INSTALL DB2 Server
// MTC REW, cuu          *-- REWIND TAPE
// ASSGN SYS002, cuu1    *-- AUXILIARY HISTORY FILE
// ASSGN SYS005,UA      *-- NO RESTORE TO XXXXXX
// ASSGN SYS006, cuu    *-- DISTRIBUTION TAPE
// OPTION CATAL
// EXEC MSHP
INSTALL PRODUCT FROMTAPE ID='DB2/VSE....7.3.0' - *--ACTUAL TAPE ID (1)
PROD IN=PRD2.DB2730 *-- IDENTIFICATION OF LIBRARIES (2)
DEFINE HISTORY AUX EXTENT=xxx:yyy
/*
// MTC RUN, cuu
/ &
```

Figure 22. Job ARIS73AD (Using MSHP to Install DB2 Server for VSE)

Notes for Figure 22:

- 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....7.3.0'** is the actual ID of the tape.

(2) If necessary, replace **PRD2.DB2730** with the library and sublibrary names you used in Figure 22.

2.5 Preparation Step 5: Prepare the CICS Environment

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.

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

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 7.3 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 23 on page 24 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.DB2730,...)
// UPSI 1          (1)
*
*
*
// DLBL SQLBIND,'DB2.BIND.MASTER',,VSAM=catalog,DISP=(OLD,KEEP) (5)
// DLBL SQLGLOB,'DB2.SQLGLOB.MASTER',,VSAM=catalog,DISP=(OLD,KEEP)
// DLBL ARITRAC,'TRACE.FILE1',
// EXTENT ,VOLXXX,1,0,nnn,120 (5)(6)
// ASSGN SYS007,cnn
*
*
*
// ASSGN SYS098,uuu (2)
// EXEC DFHSIP,SIZE=nnnnK *-- DETERMINATION OF THE CICS SUBPOOL SIZE (3)
// EXEC DFHSIP,SIZE=DFHSIP,PARAM='DSALIMIT=6M...' *-- FOR CICS/TS(3)
*
*
*
| Optional CICS System      | *
| Initialization Parameter | (4)
| Override Statements      | *
*
*
/*
/ &

```

Figure 23. Starting the CICS System for Use with ISQL

Notes for Figure 23:

- (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 (**uuu**). 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) For CICS/VSE, 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. (**nnnn**) specified depends on the CICS configuration.
- FOR CICS/TS, the dynamic subpool size is specified with the DSALIMIT startup parameter.
- If the CICS system is being run in a VSE/ICCF environment:

- Replace the EXEC statement shown in Figure 23 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 7.3 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.
- (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 specified 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 "Preparation Step 8: Setup the SQLGLOB and BIND files" 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 (see Figure 32 on page 36).

- (6) 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'
```

2.5.1 CICS Table Entries Required by DB2 Server for VSE 7.3

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. 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)*.

Beside 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" and in "CICS Restart Resynchronization Support" in this chapter. 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 for CICS/ESA, refer to *Appendix F, "Additional CICS and VSE Updates for the DB2 Server System"*.

2.5.2 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 non-recoverable, 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 DB2 for VSE with CICS TS, the following System Initialization (DFHSIT) parameters are obsolete. Refer to the CICS Release Guide below for a complete list of obsolete DFHSIT parameters.

AMXT=
EXEC= (command level is mandatory)
EXITS= (the user-exit interface is always enabled)
MONITOR= (replaced by new monitoring parameters)

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 (see *"Installation Step 7: Grant SCHEDULE Authority"*).

2.5.2.1 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.

2.5.2.2 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 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.

2.5.2.3 Entries in DFHFCT for DB2 Server for VSE

The entries in sample ARIS73FC, a PROC-type member, should be placed in the

Terminal definitions can also be made in the CICS System definition facility. 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 7.3  FCT ENTRIES          *
*****
*
* * * * *
*          GLOBAL Variables
* * * * *
*
SQLGLOB DFHFCT TYPE=FILE,          X
  ACCMETH=(VSAM),                  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),                  X
  FILE=SQLBIND,                    X
  FILSTAT=(ENABLED,OPENED),        X
  SERVREQ=BROWSE,                  X
  RSL=PUBLIC,                      X
  STRNO=2

```

Figure 24. DFHFCT Sample entries

For CICS/TS, the file definitions can be made in the CICS System Definition facility.

2.5.3 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 25 on page 29 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 25. DFHJCT Examples for CICS Journaling

Notes for Figure 25:

- 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.

2.5.4 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 25 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.

2.5.5 CICS Transaction Server (TS) considerations

CICS internal security and therefore the CICS Sign-On table (DFHSNT) has been withdrawn in CICS TS for VSE/ESA 2.4. Instead, any external security manager (ESM) may be used that conforms to the VSE/ESA RACROUTE interface. Alternatively, the basic form of external security manager VSE/ESA 2.4 may be used. The BSM provides sign-on and transaction attach security only.

When using an ESM, refer to the relevant documentation supplied with the ESM on defining DB2 for VSE user id(s), operator data and transaction security. If the BSM is used, DB2 for VSE userids in the DFHSNT and DB2 for VSE transactions must be defined using the VSE Interactive Interface

As the CICS TS System Definition (CSD) file is not compatible with earlier versions of CICS (e.g. CICS 2.3), a separate CSD file must be defined and all DB2 for VSE entries added using the DFHCSDUP utility provided with CICS TS.

For DB2 for VSE with CICS TS, the following System Initialization (DFHSIT) parameters are obsolete. Refer to the CICS Release Guide below for a complete list of obsolete DFHSIT parameters.

AMXT=
EXEC= (command level is mandatory)
EXITS= (the user-exit interface is always enabled)
MONITOR= (replaced by new monitoring parameters)

For more information on installing DB2 for VSE V7.3 with CICS TS, refer to the following publications:

CICS Release Guide	GC33-1645
CICS Migration Guide	GC33-1646
CICS Resource Definition Guide	SC33-1653

2.6 Preparation Step 6: Define DB2 Server Programs and Transactions to CICS

Job name is ARIS73JD.

This step is mandatory if you will be using ISQL or online CICS transactions.

Job ARIS73JD is used to define resources to the CICS System Definition file, specifically Programs and Transactions.

Start Job Manager - see Figure 82 on page 90.

Parameter Name	Default value	Description
LIST	VSELIST	Name of the CICS definition List to which the DB2 groupo has been added. The List is referenced during CICS startup.
GROUP	DB2730	Name of the group that contains the run time routines and is in the group list used during CICS startup.
CICSFILE	CICS.CSD	The VSAM catalog where CICSFILE resides
CSDCAT	VSESP.USER.CATALOG	The VSAM catalog where CICSFILE resides
TRANSEC	2	
ISQL	Y	Definitions will be made for ISQL. Specify N to indicate that ISQL is not used.
CICSTS	Y	Specify N to use the CICS/VSE system definitions. The default Y, will make CICS Transaction Server entries.

Figure 26. The parameters for ARIS73JD

Expected return code is 4.

2.7 Preparation Step 7: Setup the SQLGLOB and BIND files

This step is mandatory if you will be using ISQL or online CICS transactions, or developing applications to access remote databases using DRDA.

This step is optional for Migration.

If you have used the default name for your existing DB2 system, then you should use a different dataset name, if you are performing the installation process, and will be running both DB2 for VSE releases.

The SQLGLOB file is used to contain DB2 Server for VSE Global variables. Refer to the *DB2 Server for VSE System Administration Manual* for more information.

When referencing the SQLGLOB file, after it has been defined, it is required to code the DISP=(OLD,KEEP) parameter on the DLBL.

2.7.1 Defining the Global Variable File (SQLGLOB)

Job ARIS738D will be submitted to the VSE environment, followed by the jobs ARISGDEF, ARIS737D, and ARIS739D.

Parameter Name	Default value	Description
VOLUME	XXXXXX	The volume in the VSAM catalog, where the dataset will be defined
ATYPE1	TRACKS	The default allocation unit is Tracks. Use BLK for FBA devices.
ALLOC1	15	This is the primary space allocation for the VSAM dataset. The size of the dataset is based on the number of CICS users of DB2 for VSE. There will be one record for each user who does not use the system global defaults, and will use his/her own. The default allocation is sufficient for about 6000 users.
ALLOC2	5	This is the secondary space allocation for the VSAM dataset. The allocation unit is in tracks.

Figure 27. The parameters for ARIS738D

See global parameters.

The expected return code is 0. Return code 12 means that MASTERFILE already exists.

2.7.2 Updating the SQLGLOB file with IBM-Supplied Global Defaults

Submit ARISGDEF to update the SQLGLOB file with the IBM-supplied global SQLGLOB default values.

See global parameters.

Expected return code is 0.

2.7.3 Defining the Preprocessor Bind File

ARIS737D is only required if you will be using DRDA CICS Application Requestor support. This dataset is a repository for preprocessor bind package records, that will be bound to remote application servers.

Parameter Name	Default value	Description
BINDCAT	VSESP.USER.CATALOG	The VSAM catalog where BINDFILE resides
VOLUME	XXXXXX	The volume in the VSAM catalog, where the BINDFILE will be defined
ALLOC1	10	This is the primary space allocation for the VSAM dataset. The size of the dataset is based on the number of bind files contained in it, and on the size of the packages. The allocation unit is ATYPE parameter.
ALLOC2	5	This is the secondary space allocation for the VSAM dataset. The size of the dataset is based on the number of bind files contained in it, and on the size of the packages. The allocation unit is ATYPE parameter.

Figure 28. The parameters for ARIS737D

Expected return code is 0. Return code 12 means that BINDFILE already exists.

2.7.4 Defining the Preprocessor Bind Work File (BINDWFILE)

ARIS739D is only required if you will be using DRDA CICS Application Requestor support. This dataset is required by the preprocessor when creating bind packages, that will be bound to remote application servers.

Parameter Name	Default value	Description
BINDWCAT	VSESP.USER.CATALOG	The VSAM catalog where BINDFILE resides
VOLUME	XXXXXX	The volume in the VSAM catalog, where the BINDFILE will be defined
ALLOC1	1	This is the primary space allocation for the VSAM dataset. The size of the dataset is based on the size of the packages. The allocation unit is Cylinders
ALLOC2	1	This is the secondary space allocation for the VSAM dataset. The size of the dataset is based on the size of the packages. The allocation unit is Cylinders

Figure 29. The parameters for ARIS739D

Expected return code is 0. Return code of 12 means that BINDWFILE already exists.

2.7.5 Converting the ISQL Bind File to a VSAM File

ARISIQBD is only required if you will be using DRDA CICS Application Requestor support. The ISQL package is required by ISQL, to be installed on remote application servers. ARISIQBD will store the supplied A-type member ARISIQBD in the Bind file.

Parameter Name	Default value	Description
BINDCAT	VSESP.USER.CATALOG	The VSAM catalog where BINDFILE resides

Figure 30. The parameters for ARISIQBD

Expected return code is 0.

If the ISQL bind file cannot be stored on the VSAM dataset, the following message is displayed on the VSE console:

```
ISQL BIND FILE CANNOT BE BUILT DUE TO ERROR
```

Otherwise, the following message will be displayed:

```
ISQL BIND FILE BUILT SUCCESSFULLY
```

2.8 Preparation Step 8: Define VSAM Data Sets for the Starter Database

Job name is ARIS73CD.

This step is mandatory for installation and optional for Migration.

ARIS73CD is only required if you will be building the starter database. This job contains two steps: create a VSAM user catalog and create the datasets required for the starter database. If you will be creating the database in an existing catalog, then set the NEWUSERCAT parameter to NO and you may omit the (*) entries. Refer to the *DB2 Server for VSE Administration Manual*.

You should initially install the Starter Database, because it helps you to ensure that DB2 Server for VSE is installed correctly. If you are migrating from a previous release of DB2(or 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*.

Figure 31 (Page 1 of 2). The parameters for ARIS73CD

Parameter Name	Default value	Description
DBCAT	SQLCAT	This is the name of the user catalog which will hold the starter database

Figure 31 (Page 2 of 2). The parameters for ARIS73CD

NEWUSERCAT	YES	Submit job control to create the new user catalog
SPACE (*)	1	This is the minimum DASD space required for the new user catalog. Space unit allocation defined using parameter ATYPE - see Figure 19 on page 18
VOLUME1 (*)	XXXXXX	The volume in the new VSAM catalog.
SPACE1 (*)	117	This is the minimum DASD space required for the starter database. Space unit allocation defined using parameter ATYPE - see Figure 19 on page 18
DIRFILE	SQL.BDISK.STARTER.DB	Directory extent
SPACE2	34	Size for the database directory extent. Space unit allocation defined using parameter ATYPE - see Figure 19 on page 18
VOLUME2	XXXXXX	The volume on which directory extent resides
LOGFILE	SQL.LOGDSK1.STARTER.DB	Log extent
SPACE3	08	Size for the log extent. Space unit allocation defined using parameter ATYPE - see Figure 19 on page 18
VOLUME3	XXXXXX	The volume on which log extent resides
EXTFILE	SQL.DDSK1.STARTER.DB	Data extent
SPACE4	72	Size for the data extent. Space unit allocation defined using parameter ATYPE - see Figure 19 on page 18
VOLUME4	XXXXXX	The volume on which data extent resides

Expected return code is 0.

Note:

- We recommend that you use a VSAM user catalog for the Starter Database.
- The allocations used in this job are defined for 3390 DASD. If you use other DASD, refer to Figure 21 on page 21.
- Read *"Appendix A: What should you keep in mind"*.

2.9 Preparation Step 9: Updating Labels for the new datasets

Job name is ARISSTDL.

This step is Mandatory.

The job will add the labels for the new datasets to the standard label area.

It is recommended that the labels for the new datasets (SQLGLOB, SQLBIND, and BINDWKF) be added to the system standard labels at system initialization. Please refer to the *"VSE/ESA System Control Statements"* and the *"VSE Guide to System Functions"* for more information.

Parameter Name	Default value	Description
BINDCAT	VSESP.USER.CATALOG	The VSAM catalog where BINDFILE resides
BINDWCAT	VSESP.USER.CATALOG	The VSAM catalog where BINDWFILE resides

Figure 32. The parameters for ARISSTD

Also see global parameters.

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

Expected return code is 0.

3.0 Chapter 3. Installing DB2 Server for VSE

To install this product:

1. Read "Appendix A: How to Use the Job Manager".
2. Refer to Appendix B, "Techniques Used for Installation" for a description of how to adapt the IBM-supplied materials to your local needs.
3. Complete the steps in Chapter 2, "Preparing to Install DB2 Server for VSE 7.3"
4. Perform all the mandatory steps in this chapter, and any of the optional ones that apply to your installation (See Figure 33).

Note: If you are migrating from a previous release of DB2 Server for VSE, you may only need to perform "Installation Step 2". 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 step again before continuing.

Step	Optional/ Mandatory	Automated/ Manual	Description
1	Mandatory	Manual/ Automated	Set up DBNAME Directory
2	Optional	Automated	Link-Edit the DB2 Server for VSE online Support Components
3	Mandatory	Automated	Generate the Starter Database
4	Optional	Automated	Install Optional Database Components
5	Mandatory	Automated	Reload CCSID-Related Phases Package
6	Optional	Automated	Selecting National Language Support
7	Optional	Automated	Grant Schedule Authority
8	Mandatory	Automated	Start the Application Server in Multiple User Mode
9	Mandatory	Automated	Create CCSID-Related Phases
10	Optional	Automated	Run the Sample Programs to verify Installation
11	Optional	Manual	Run ISQL to Verify Installation
12	Optional	Manual	Stop the Application Server
13	Optional	Manual	Add New Users to the Database
14	Optional	Manual	Change the Database Administrator Password
15	Optional	Manual	System Customization Activities

Figure 33. Steps to Install DB2 Server for VSE Version 7 Release 3

Parameter Name	Default value	Description	Used in member:
PROC1	ARIS73DB	DB2 Server DATABASE ID Proc	ARIS73WD
COMPILELIB	PRD2.DB2730	Library for cataloging PHASE type members	ARISCNVD, ARIS6ASD, ARIS6C2, ARIS6CD, ARIS6PLD, ARIS6FTD
WDISK	SYSWK1	Sequential workdisk volume	ARISCNVD, ARIS6ASD, ARIS6C2, ARIS6CD, ARIS6PLD, ARIS6FTD
START	xxxx	Start track or block allocated for SYSPUNCH and SYSIPT.	ARISCNVD, ARIS6ASD, ARIS6C2, ARIS6CD, ARIS6PLD, ARIS6FTD
FOR	xxxx	Extent size in tracks or blocks allocated for SYSPUNCH and SYSIPT.	ARISCNVD, ARIS6ASD, ARIS6C2, ARIS6CD, ARIS6PLD, ARIS6FTD
GLOBFILE	DB2.SQLGLOB.MASTER	This is the name of the dataset which will hold the global variables	ARIS6ASD, ARIS6CD, ARIS6PLD, ARIS6FTD
CATALOG	VSESP.USER.CATALOG	The VSAM catalog where SQLGLOB resides	ARIS6ASD, ARIS6CD, ARIS6PLD, ARIS6FTD
LELIB	PRD2.SCEEBASE	Language Environment library	ARIS6C2D, ARIS6CD, ARIS6PLD

Figure 34. Description of global parameters

3.1 Installation Step 1: Setup the DBNAME Directory

Job name is ARISBDID.

This step is mandatory.

1. Punch the A-type source member ARISDIRD.
2. Update the DBNAME and other parameters. See *"DB2 Server for VSE System Administration"* manual *"Chapter 2: Setting Up the DBNAME Directory"* for information about the input file format and syntax.
3. Re-catalog the A-type source member ARISDIRD.

Start Job Manager - see Figure 82 on page 90.

Job ARISBDID (see Figure 35 on page 39) converts A-type source member ARISDIRD into an assembler source file, which will be assembled and link-edited into the Ddbname Directory Phase (ARICDIRD.PHASE).


```

// SETPARM ISMIGR=%%MIGRATION%%
// IF ISMIGR='NO' THEN
// GOTO GENERATE
// EXEC REXX=ARICCDID, PARM='%%PLIB%%.%%INPUT%% %%LIB1%%.%%OUTPUTA%%'
/. GENERATE
// LIBDEF *,SEARCH=%%LIB1%%
// LIBDEF PHASE,CATALOG=%%COMPILELIB%%      *-- UPDATE LIBRARY
// EXEC REXX=ARICBDID,PARM='%%LIB1%%.%%OUTPUTB%%' (1)
// IF $RC < 4 THEN
// GOTO EXITOK
/. ERREXIT
* SQL/DS DBNAME DIRECTORY CANNOT BE BUILT DUE TO ERROR
// GOTO SQLDONE
/. EXITOK
* SQL/DS DBNAME DIRECTORY BUILT SUCCESSFULLY
/. SQLDONE

```

Figure 35. Job ARISBDID (Setup DBNAME directory)

Notes for Figure 35:

- (1) %%LIB1%%.%%OUTPUTB%% is the input Ddbname Directory source member. The default parameter is: 'PRD2.DB2730.ARISDIRD.A' - see Figure 36.

Parameter Name	Default value	Description
MIGRATION	NO	Should be 'NO' for Installation process
OUTPUTB	ARISDIRD.A	Member containing defaults for DBNAME
LIB1	PRD2.DB2730	Installation Library

Figure 36. The parameters for ARISBDID

A return code of 2 is acceptable for this job. ARICDIRD.PHASE and ARICDBND.PHASE are created.

3.2 Installation Step 2: Link-Edit the DB2 Server for VSE Online Support Components

Job name is ARIS73BD.

This step is optional.

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

Job control member ARIS73BD is used to link-edit the online support components. The link-edit will include the CICS interface modules DFHEAI and DFHEAI0, found in the CICS PRD1.BASE sublibrary. The output is cataloged to the installation library by default. If you want to use your own libraries, change the parameter value.

If you do not want ISQL support, and only want support for your own CICS online applications, then set the ARIS140D, ARIS150D, and ARIS160D parameters to *.

Parameter Name	Default value	Description
CICSLIB	PRD1.BASE	This is the name of the sublibrary where CICS components are installed. ¹
ARIS140D	//	Default parameter to include ISQL support. Enter * to omit this job.
ARIS150D	//	Default parameter to include ISQL support. Enter * to omit this job.
ARIS160D	//	Default parameter to include ISQL support. Enter * to omit this job.

Figure 37. The parameters for ARIS73BD

Note: (1) The library search path is:

```
// LIBDEF *,SEARCH=(%%LIBNAME%%,%%CICSLIB%%,PRD2.CONFIG)
where LIBNAME is the installation library name. See Figure 83 on page 91.
```

Expected return code is 0.

3.3 Installation Step 3: Generate the Starter Database

Job name is ARIS73DD.

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

Member ARIS73DD, shown in Figure 38 on page 41, is used to generate the Starter Database. 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 ARIS73DD 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*

There are no non-global parameters for ARIS73DD.

```

// JOB ARIS73DD          DATABASE DBGEN AND SET UP
// LIBDEF PROC,SEARCH=(%LIBNAME%)
// DLBL VSEUCAT,'%CATALOG%',,VSAM
// DLBL SQLGLOB,'%GLOBFILE%',0,VSAM,CAT=VSEUCAT,DISP=(OLD,KEEP)
// EXEC PROC=ARIS73SL    *-- DB2 SERVICE/PRODUCTION LIBRARY ID PROC
// EXEC PROC=ARIS73DB    *-- DB2 DATABASE ID PROC          (1)
// EXEC PROC=ARIS030D    *-- GENERATE THE STARTER DATABASE (2)
// EXEC PROC=ARIS040D    *-- PREPARE THE DBS UTILITY        (3)
// IF $RC>4 THEN
// GOTO EXITERR
// EXEC PROC=ARIS050D    *-- FINISH DATABASE SET UP        (4)
// EXEC PROC=ARIS055D    *-- LOAD SAMPLE TABLES AND ROUTINES (5)
// GOTO EXITOK
/. EXITERR
* UNACCEPTABLE ERROR OCCURED.
* PLEASE INVESTIGATE.
  CANCEL
/. EXITOK
/&

```

Figure 38. Job ARIS73DD (Generating a Database)

Expected return code is 6.

Notes:

1. Procedure ARIS73DB contains the job control statements that identify the database files, log, directory, and database extents. For more information about ARIS73DB, refer to "Embedding Database Identification Statements". on page 87 Section 7.3.
2. Procedure ARIS030D generates the Starter Database by reading A-type source member ARISDBG for the database in Figure 39 on page 42. These statements determine the configuration and maximum size of the database being generated. By changing this 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 2: Set Up the VSE Environment". 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.ARIDSQLP.
 - Loads tables for CCSID support.
 - Acquires three public dbspaces: HELPTTEXT, ISQL, and SAMPLE.
 - Creates the SQLDBA.SYSLANGUAGE table in the dspace 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."HELPTTEXT". SQLDBA.SYSTEXT2INDEX.
- Creates the ISQL sample routine table EXAMPLE.ROUTINE, and an index for it named EXAMPLE.RINDEX.
- Creates view SQLDBA.SYSUSERLIST in 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 creates 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
INTERNAL 80 1024 1
END

```

Figure 39. A-type source member ARISDBG

Note: It is important to understand the VALUES specified in ARISDBG. These can have an impact in a production Database. For details about the syntax of these control statements, refer to the *DB2 Server for VSE System Administration* manual.

3.4 Installation Step 4: Install Optional Database Components

Job name is ARIS73ED.

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 ARIS73ED 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 ARIS73ED that create that component.

If you do not want ISQL support, then set the ARIS110D, ARIS120D, ARIS130D parameters to *.

Parameter Name	Default value	Description
ARIS110D	//	Install ISQL
ARIS120D	//	Install ISQL
ARIS130D	//	Install ISQL

Figure 40. The parameters for ARIS73ED

Expected return code is 0.

Note:

- The ARIS73ED 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".
- Procedure ARIS080D installs the DB2 Server for VSE online support, which you need to run ISQL or any of your own interactive applications.
- "Installation Step 3: 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.
- Procedure ARIS360D loads the FIPS flagger into the database. For more information on the FIPS flagger, see the *DB2 Server for VSE & VM Application Programming*.

3.5 Installation Step 5: Reload CCSID-Related Phases Package

Job name is ARIS73WD.

This step is mandatory.

Job control member ARIS73WD, contains the job control statements to load the CCSID-related phases package into the database. Procedure ARIS175D reloads the CCSID-related phases package in the database by running the application server in single user mode or multiple user mode against that database(defined in DBNAME Directory).

Parameter Name	Default value	Description
SUM	Y	Load CCSID-Related Package in Single User Mode. Code N to use Multiple User Mode.
DBNAME	SQLDS	Database to load the CCSID-Related Package to in Multiple User Mode.

Figure 41. The parameters for ARIS73WD

Expected return code is 4.

3.6 Installation Step 6: Selecting National Language Support

Job name is ARIS73HZ.

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.

Parameter Name	Default value	Description
PAGES	8192	Number of pages acquired for the HELPTXT DBSpace. Default value 8192 is enough to define 3 languages.

Figure 42. The parameters for ARIS73HZ

Expected return code is 0.

3.6.1 Install Language and ISQL Help Text

The ARIS73JZ Z-type member calls the ARIS380D PROC-type member that was modified according to the parameters specified in ARISIVAR file when you started the Installation Step (Chapter 3). If you have modified the parameters used in ARIS380D (Figure 44 on page 46) in ARISIVAR file after executing Installation Step 1, you might need to update ARIS380D file manually before submitting ARIS73JZ.

This is only necessary if the Help Text Dbspace is not large enough to hold the addition of this language. As supplied, DB2 Server for VSE has 8192 pages assigned for the PUBLIC.HELPTXT dbspace. This is sufficient for the Help Text for 3 languages.

Language List:

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

Parameter Name	Default value	Description
LANGUAGE	AME	Short form of the language name, taken from the language list.
HELP	NO	If you want only the ISQL help text to be loaded, change value to 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 keep current value.
CUU	181	Tape drive address.
DEFAULTL	NO	If you want this language to be the default language, set DEFAULTL parameter to YES. Otherwise, set the value to NO.

Figure 43. The parameters for ARIS73JZ

Parameter Name	Default value	Description
NLSLIB	PRD2.DB273 (For AME) Note: There is no '0' at the end of PRD2.DB273.	Language Library. Note: The name of NLSLIB must not exceed 5 characters, since NLS suffix is 3 characters - making library name 8 characters. The NLS suffix will be added during the execution of the program. The suffix is generated by procedure ARIS385D. For LANG=AME library will be PRD2.DB2730 For LANG=FRE library will be PRD2.DB273S03,etc.
CLIB	PRD2.DB2730	The Installation Library

Figure 44. The parameters for ARIS380D

Note: Read "Appendix A: What should you keep in mind."

ARIS73JZ job will perform the following functions:

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

Expected return code is 0, however, return code 6 is acceptable.

3.7 Installation Step 7: Grant SCHEDULE Authority

Job name is ARIS73FD.

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 4: 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", 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 ARIS73FD, shown in Figure 45 on page 47. From the following example,


```
// EXEC PGM=DFHSIP,SIZE=DFHSIP,PARM='APPLID=OMYGW001 ...
```

you would GRANT SCHEDULE to OMYGW001

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 43 and "Stopping the DB2 Server for VSE Online Support" on page 46. For details on the CICS APPLID, refer to the *CICS* manuals.

Parameter Name	Default value	Description
NAME	DBDCCICS	CICS application name (APPLID=name)
NAMEPW	SQLDBAPW	Password
SUM	Y	Load CCSID-Related Package in Single User Mode. Code N to use Multiple User Mode.
DBNAME	SQLDS	Database to load the CCSID-Related Package to in Multiple User Mode.

Figure 45. The parameters for ARIS73FD

Expected return code is 0.

3.8 Installation Step 8: Start the Application Server in Multiple User Mode

Job name is ARIS73GD.

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

Parameter Name	Default value	Description
DBNAME	SQLDS	SQLDS is the RESID of the database to connect to the DBNAME parameter of the database server.

Figure 46. The parameters for ARIS73GD and ARIS73GZ

You should verify the installation by performing this step through "Installation Step 12: 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 in that manual.

IBM-supplied job control member ARIS73GD 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 2: Set Up the VSE Environment".

Note: When DB2 Server started successfully, you will see the following message on the console:

ENTER A PARTITION NUMBER TO START THE OTHER JOBS :

Please, enter any available partition class with sufficient resource.

3.9 Installation Step 9: Create CCSID-Related Phases

Job name is ARISCNVD.

This step is mandatory and must be executed while the database server is active.

Parameter Name	Default value	Description
PARMS	SQLDBA/SQLDBAPW/SQLDS	SQLDBA is user id with DBA authority, SQLDBAPW is the connect password, SQLDS is the RESID of the database to connect to the DBNAME parameter of the database server.

Figure 47. The parameters for ARISCNVD

Note: See global parameters for installation.

Expected return code is 0.

3.10 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 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.

ARIS6ASD preprocesses, assembles, link-edits, and runs the assembler.

See global parameters.

Expected return code is 0.

ARIS6C2D preprocesses, assembles, link-edits, and runs COBOL.

Parameter Name	Default value	Description
COBLIB	CMPLR22.COBVSE	Default library for Cobol compiler

Figure 48. The parameters for ARIS6C2D

See global parameters.

Expected return code is 0.

ARIS6CD preprocesses, assembles, link-edits, and runs C (DO NOT run this job if C is not installed on your system)

Parameter Name	Default value	Description
C-LIB	CMPLR22.CVSE	Default library for C compiler

Figure 49. The parameters for ARIS6CD

See global parameters.

Expected return code is 2.

ARIS6FTD preprocesses, assembles, link-edits, and runs FORTRAN (DO NOT run this job if FORTRAN is not installed on your system)

Parameter Name	Default value	Description
FRTLIB	COMPILE.COMPILE	Default library for Fortran Compiler

Figure 50. The parameters for ARIS6FTD

See global parameters.

Expected return code is 4.

ARIS6PLD preprocesses, assembles, link-edits, and runs PL/I (DO NOT run this job if PL/I is not installed on your system)

Parameter Name	Default value	Description
PLDLIB	COMPILE.COMPILE	Default library for PL/I Compiler

Figure 51. The parameters for ARIS6PLD

See global parameters.

Expected return code is 4.

3.11 Installation Step 11: Run ISQL to Verify Installation

3.11.1 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 6" and "Preparation Step 7".

3.11.1.1 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 7: Grant SCHEDULE Authority".

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 "Installation Step 1: Set Up the DBNAME Directory").

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 7: Grant SCHEDULE Authority".)
- 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.

3.11.2 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 6" and Preparation Step 7".
- There is enough CICS dynamic storage for ISQL (900 kilobytes).
- ISQL was installed successfully during "Installation Step 4: Install Optional Database Components".
 - 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.

3.11.3 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. options that were installed.

Figure 52 shows 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 52. 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".)

3.11.4 Stopping ISQL

To end the display and terminate the ISQL session:

Type the ISQL display command:

```
END
```

Type the ISQL session termination command:

```
EXIT
```

3.12 Installation Step 12: Stop the Application Server

3.12.1 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.

3.12.2 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.

3.12.3 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 Fx (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 1140I  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 53. 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.

3.13 Post-Installation Activities

3.14 Installation Step 13: 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 54 uses the DBS utility to add a new user ID with DBA authority to the database.

```

// JOB ADD USERIDS
// LIBDEF PROC,SEARCH=(PRD2.DB2730)
// EXEC PROC=ARIS73PL  *-- 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 54. Adding New User IDs to the Database

Notes for Figure 54:

- 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 9: Start the Application Server in Multiple User Mode" 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.

3.15 Installation Step 14: Change the Database Administrator Password

This step is optional for the installation and migration process, but highly recommended.

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

```
// JOB ARIS73VD      CHANGE SQLDBA PASSWORD
// LIBDEF PROC,SEARCH=(PRD2.DB2730)
// EXEC PROC=ARIS73PL  *-- 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 55. Job ARIS73VD (Example of Changing the SQLDBA Password in the Database)

Notes for Figure 55:

- **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 9: Start the Application Server in Multiple User Mode".

- (1) Replace **newpw** with a new password.

3.16 Installation Step 15: 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. See *DB2 Server for VSE System Administration* manual
- Install and activate the DRDA Application Requestor code.
- Prepare to Use TCP/IP. See the chapter "Using TCP/IP with DB2 Server for VSE" in *DB2 Server for VSE System Administration* manual.
- Define a dual log data set and alternate log data set.
- 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.

Note. The JCL used to start up the database with Stored Procedure Support must contain a statement that defines the logical device 097 to enable POWER to find and execute the JCL that starts the stored procedure handler. An example is illustrated below:

```
// ASSGN SYS097,SYSPCH
```

The information currently provided on the device assignment with SYS098 in Section "Stored Procedure Servers" of Chapter 11 Stored Procedure in the *DB2 Server for VSE System Administration* manual is incorrect.

- Set up the schema stored procedures and load the packages for the schema stored procedures if you plan to use DB2 Server for VM database as a server that can be accessed by JDBC /CLI clients using DB2 UDB v8 or later See Appendix F, "Preparing the Schema Stored Procedures for JDBC/CLI Clients " in the *DB2 Server for VSE & VM Database Administration* manual for details.

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.

3.16.1 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.

3.16.2 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 entry. 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.

SETPFIX LIMIT=40K must also be coded in the JCL.

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.

3.16.3 VSE Guest Sharing Installation Checklist

Here is the checklist for setting up guest sharing support for DB2/VSE

- Preparation Step 1: Setup VSE Environment
- Preparation Step 2: Allocate Dasd for the Distribution Library
- Preparation Step 4: Restore the Distribution Library
- Preparation Step 5: Prepare the CICS Environment
- Preparation Step 6: Define DB2 Server Programs and Transactions
- Preparation Step 7: Setup the SQLGLOB and SQLBIND Files
- Preparation Step 9: Update Standard Labels
- Installation Step 1: Setup the DBNAME Directory
- Installation Step 2: link Edit Online Support Components
- Installation Step 4: Install Optional Database Components
- Installation Step 5: Reload CCSID-Related Phases Package
- Installation Step 6: Select National Language Support
- Installation Step 7: Grant Schedule Authority
- Installation Step 9: Create CCSID-Related Phases
- Installation Step 9: Run Sample Programs to Verify Installation
- Installation Step 9: Run ISQL to Verify Installation

To set up the DBNAME directory for DB2/VSE, you must first determine the RESID and DBNAME of the DB2/VM database server. Often they are the same name, but they can be different. The DBNAME is the same as the DBNAME parameter used on the DB2/VM SQLSTART command. The RESID was determined when SQLDBGEN was done. It corresponds to the filename of some of the DB2/VM database definition files, resid SQLFDEF Q and resid SQLDBGEN Q. If the DB2/VM server is running, the SHOW INITPARM operator command can be issued. The DBNAME and RESID can be taken from that output.

Set up the ARISDIRD.A file specifying the RESID as the APPLID and the DBNAME as the DBNAME. Set up system default and/or partition defaults if desired. The TPN, SYSID and REMTPN fields should be blank. DB2/VSE determines that guest sharing is to be used if the APPLID field does not begin with SYSARIO.

After the ARISDIRD.A file has been cataloged into the DB2/VSE library, ARISBDID job must be run to generate the DBNAME directory phase. For example:

```
TYPE=HOSTVM
DBNAME=VMDB1
RESID=DB2VM1
SYSDEF=Y
```

Figure 56. DBNAME directory

In an application use

```
CONNECT uid IDENTIFIED BY upass TO VM_DB
```

In CICS, to activate the online resource adapter for the VM database, use

```
CIRB ,,,, VM_DB
```

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

4.0 Chapter 4. Migrating an Existing Database

DB2 Server for VSE 7.3.0 supports migration from SQL/DS 3.1.0 and later.

To migrate an existing database to Version 7 Release 3:

1. Read *"Appendix A: How to Use the Job Manager"*.
2. If an earlier release was loaded into the shared virtual area (SVA), remove those earlier phases from the SVA before running the migration Refer to *"DB2 Server for VSE Link Books"* for a list of the phases that are eligible for the SVA.
3. Complete steps in:
 - Chapter 2, Preparing to Install DB2 Server for VSE 7.3:
 - "Preparation Step 2: Set up the VSE Environment"
 - "Preparation Step 3: Allocate DASD for the Distribution Library"
 - "Preparation Step 5: Restore the DB2 Server for VSE Distribution library."
 - "Preparation Step 8: Setup the SQLGLOB and BIND files"
 - Chapter 3, Installing DB2 Server for VSE:
 - "Installation Step 2: Link-Edit the DB2 Server for VSE 7.3 Online Support Components"
4. For each pre-Version 7 Release 3 database, perform all the mandatory steps in this chapter, and all the optional steps that apply to your database. See Figure 57

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.

Figure 57 (Page 1 of 2). Steps to Migrate an Existing Database to Version 7 Release 3

Step	Optional	Vs 3.5 & up	Vs 3.4	Description
1	Optional	Manual	Manual	Space Verification and DATE/TIME Option Verification
2	Mandatory	Manual	Manual	Archiving a Database
3	Mandatory	Automated	Manual	Prepare the Database for Migration
4	Mandatory	Automated	Manual	Migrate the DBNAME Directory
5	Mandatory	Automated	Automated	Format the DB2 Server for VSE logs
6	Mandatory	Automated	Automated	Update the DB2 Server for VSE Catalog to the 7.3
7	Mandatory	Automated	Automated	Reload the DBS Utility Package
8	Mandatory	Automated	Automated	Update the DB2 Server for VSE Database
9	Mandatory	Automated	Automated	Migrate the HELP Text Tables
10	Optional	Automated	Automated	Reload English Help Text into a Database
11	Optional	Automated	Automated	Reload ISQL into a Database
12	Mandatory	Automated	Automated	Reload CCSID-Related Phases Package
13	Optional	Automated	Automated	Load FIPS Flagger into a Database

<i>Figure 57 (Page 2 of 2). Steps to Migrate an Existing Database to Version 7 Release 3</i>				
14	Optional ¹	Automated	Automated	Determine the Primary Keys to be Recreated
15	Optional	Automated	Automated	Revoke connect Authority from ALLUSERS
16	Mandatory	Automated	Automated	Reset the Password for User SQLDBA
17	Mandatory	Automated	Automated	Start Application Server in multiple user mode
18	Mandatory	Automated	Automated	Create CCSID-Related Phases
19	Mandatory	Manual	Manual	System Customization Activities

Note 1: If you are migrating a database from SQL/DS Vs 3.1 or Vs 3.2, you should run this step

Parameter Name	Default value	Description	Used in member:
PROC1	ARIS61DB	This is the procedure which contains disk labels for the existing database.	All

Figure 58. Description of Global Parameters.

Every Migration Step runs job ARIS73SL and parameters for this job are:

Parameter Name	Default value	Description
CLIB	PRD2.DB2730	Library where you want to catalog any member

Figure 59. Job ARIS73SL (DB2 Server Library Definitions)

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

This step is mandatory.

4.1.1 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*.

4.1.2 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 ARIS73PD. Job ARIS733D is discussed in "Migration Step 6: Update the DB2 Server for VSE Catalog to the 7.3 Level". Refer to the *DB2 Server for VSE System Administration* manual for instructions on adding dbextents.

4.1.3 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.

4.2 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*.

4.3 Migration Step 3: Prepare the Database for Migration

Job name is ARIS73ND.

This step is mandatory.

Before submitting ARISIMGJ to start the Job Manager, you **must**:

- Recatalog the procedure with existing Database identification labels (default value for 6.1 is ARIS61DB) into the Installation library (default value is PRD2.DB2730) - See Figure 83 on page 91.
This procedure is used in all migration jobs - see Figure 58 on page 60.
- Recatalog the procedure which includes library search path for an existing database (default value is ARIS61SL) into the Installation library (default value is PRD2.DB2730) - See Figure 83 on page 91.
This procedure is used in ARIS73ND Z-type member - see Figure 60 on page 63.
- If you plan to reload non-English version of HELP Text into a database, you must manually modify and recatalog ARIS062D PROC-type member. See "Migration Step 10: Reload English HELP Text into a Database."

Start Job Manager - see Figure 82 on page 90.

The ARIS73ND job is shown in Figure 60 on page 63. 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.

The parameters for ARIS73ND are:

Parameter Name	Default value	Description
PROC2	ARIS61SL	Library search path for the existing database.
ALTLOG	Y	The ALTLOG parameter defines whether an inactive log is available in the system. If LOGMODE=L, the inactive log will be used once the ARCHPCT value is reached. Set this to N if an inactive log is not used.
DUALLOG	Y	The DUALLOG parameter defines whether dual logging is used in the system. Set this to N if dual logging is not used.
OLDPW	SQLDBAPW	Supply current password for SQLDBA.

Figure 60. Job ARIS73ND (Prepare the Database for Migration)

Expected return code is 0.

If you are migrating from releases prior to Version 3.5 you must update ARIS73ND manually to alter the SHAREOPTIONS of the DB2 Server for VSE VSAM Clusters to '4'. See Figure 61

```
* Step 3 - ALTER DB2 Server for VSAM Clusters SHAREOPTIONS
// EXEC PGM=IDCAMS,SIZE=AUTO
  ALTER SQL.BDISK.STARTER.DB.DATA -
    SHAREOPTIONS(4) -
    CATALOG(SQLCAT)
  ALTER SQL.LOGDSK1.STARTER.DB.DATA -
    SHAREOPTIONS(4) -
    CATALOG(SQLCAT)
  ALTER SQL.DDSK1.STARTER.DB.DATA -
    SHAREOPTIONS(4) -
    CATALOG(SQLCAT)
```

Figure 61. Alter DB2 Server VSAM Clusters Shareoptions

Please change SQLCAT to the usercatalog where your dataset was defined.

4.4 Migration Step 4: Migrate the DBNAME Directory

Job name ARISBDID.

This step is mandatory.

ARISBDID (See Figure 35 on page 39) executes VSE/REXX exec ARICCDID, which migrates previous versions (R350, R510 & R610) of the Dbnam Directory source file (originally 'ARISDIRD.A') to the restructured Directory source format.

The output from this Procedure can then be used as input to the new ARICBDID Procedure to create the Dbnme Directory Phases(ARICDIRD.PHASE and ARICDBND.PHASE).

Parameter Name	Default value	Description
MIGRATION	YES	This is a migration process
INPUT	mem_name.type	This is the old version Directory Source member to be migrated.
OUTPUTA	mem_name.type	This is the new DBNAME member name Note: There is NO default for either member name.
OUTPUTB	ARISDIRD.A	Member containing defaults for DBNAME
LIB1	PRD2.DB2730	Installation Library, where OUTPUTA will be stored
PLIB	PRD2.DB2xxx	Existing library for old version of DBNAME
COMPILELIB	PRD2.DB2730	Library where PHASE type members cataloged

Figure 62. The parameters for ARISBDID

Expected return code is 0.

4.5 Migration Step 5: Format the DB2 Server for VSE Logs

Job name is ARIS73OD.

This step is mandatory.

To migrate an existing database to Version 7 Release 3, format the DB2 Server for VSE logs.

Parameter Name	Default value	Description
ALTLOG	Y	The ALTLOG parameter defines whether an inactive log is available in the system. If LOGMODE=L, the inactive log will be used once the ARCHPCT value is reached. Set this to N if an inactive log is not used.
DUALLOG	Y	The DUALLOG parameter defines whether dual logging is used in the system. Set this to N if dual logging is not used.

Figure 63. The parameters for ARIS73OD

It is very important that you run ARIS73OD. 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.

Refer to *VSE System Administration* manual for installation on logging.

Expected return code is 0.

4.6 Migration Step 6: Update the DB2 Server for VSE Catalog to the 7.3 Level

Job name is ARIS73PD.

This step is mandatory if you are migrating a database from

Version 5.1 or prior to Version 5.1. Do **not** execute this step if you are migrating a database from Version 6.1 or later.

ARIS73PD updates the system catalog.

Parameter Name	Default value	Description
LOGMOD	Y	Specifying a LOGMODE of N has the benefit of avoiding logging. However, not 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.
SOSLEVEL	{empty}	If storage pool is more than 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, a SOSLEVEL of 7 or lower allows a checkpoint to be triggered no matter which storage pool reaches the checkpoint first.

Figure 64. The parameters for ARIS73PD

Note: To determine if any storage pool is over 90% issue the SHOW DBEXTENT prior to migration.

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.

Expected return code is 0.

4.7 Migration Step 7: Reload the DBS Utility Package

Job name is ARIS73QD.

This step is mandatory.

Create the DB2 Server for VSE Version 7 Release 3 of the DBS utility package in the database by executing ARIS73QD job.

A return code of 4 is acceptable from procedure ARIS040D and can be ignored. Procedure ARIS040D executes ARISQLDS which in turn runs the application server in single user mode. It creates the package SQLDBA.ARIDSQ in the database.

Accepted return code is 8, if it results from SQL 'DROP' statement. Otherwise return code should be 4.

4.8 Migration Step 8: Update the DB2 Server for VSE Database

Job name is ARIS73RD.

This step is mandatory.

The ARIS73RD job 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 15: Revoke CONNECT Authority from ALLUSERS".
- 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 ARIS73RD job to update the database. A return code of 6 from procedures ARIS070D and ARIS075D is acceptable and can be ignored.

Note:

- 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".

Expected return code is 6.

4.9 Migration Step 9: Migrate the HELP Text Tables

Job name is ARIS73SD.

This step is mandatory.

ARIS73SD migrates existing HELP Text tables from a previous SQL/DS version to DB2 Server for VSE Version 7 Release 3. 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 manuals for information.

Acceptable return code is 6.

4.10 Migration Step 10: Reload English HELP Text into a Database

Job name is ARIS73TD.

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 7 Release 3 HELP Text into a database by running the ARIS73TD job.

For the parameters required see "Installation Step 6: Selecting National Language Support, Install Language".

Acceptable return code is 6.

4.10.1 Install Language.

Job name is ARIS73JZ.

See "Installation Step 5 - Install Language".

4.11 Migration Step 11: Reload ISQL into a Database

Job name is ARIS73LZ.

This step is optional.

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

You can Reload ISQL by running ARIS73LZ job.

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

Note:

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

Expected return code is 0.

4.12 Migration Step 12: Reload CCSID-Related Phases Package

Job name is ARIS73WD.

This step is mandatory.

ARIS73WD contains the job control statements to load the CCSID-related phases package into the database.

Note:

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

Parameter Name	Default value	Description
SUM	Y	Load CCSID-Related Package in Single User Mode. Code N to use Multiple User Mode.
DBNAME	SQLDS	Database to load the CCSID-Related Package to in Multiple User Mode.

Acceptable return code is 4.

Figure 65. The parameters for ARIS73WD

4.13 Migration Step 13: Load FIPS Flagger into a Database

Job name is ARIS73KZ.

This step is optional.

Note:

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

Acceptable return code is 4.

4.14 Migration Step 14: Determine the Primary Keys to be Recreated

Job name is ARIS731D.

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 ARIS731D 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 7 Release 3. Dropping and recreating these primary keys ensures that the correct CCSID is used for these keys.

DB2 Server for VSE 7.3.0 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.

Note:

- 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.

Expected return code is 0.

4.15 Migration Step 15: Revoke CONNECT Authority from ALLUSERS

Job name is ARIS73MZ.

This step is optional.

In "Migration Step 8: Update the DB2 Server for VSE Database", member ARISCTM granted CONNECT authority to ALLUSERS, which allows the DB2 Server for VSE online support to implicitly connect users. (See the *Database Administration* manual for more information on implicit CONNECT.) To revoke CONNECT authority from ALLUSERS, prepare and execute the job ARIS73MZ.

Note:

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

Acceptable return code is 0.

4.16 Migration Step 16: Reset the Password for User SQLDBA

Job name is ARIS73NZ.

This step is mandatory.

Parameter Name	Default value	Description
NEWPW	NEWPW	The new password for user SQLDBA.

Figure 66. The parameters for ARIS73NZ

Note:

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

Expected return code is 0.

4.17 Migration Step 17: Start the Application Server in multiple user mode

Job name is ARIS73GZ.

This step is mandatory.

See "Installation Step 8: Start the Application Server in Multiple User Mode" for more information.

Expected return code is 0.

4.18 Migration Step 18: Create CCSID-Related Phases

Job name is ARISCNVD.

This step is mandatory and must be executed while the database server is active (See "Migration Step 17: Start the Application Server in multiple user mode").

For ARISCNVD parameters see Installation step 9.

Expected return code is 0.

4.19 Migration Step 19: 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. Dynamic bind preprocessing is only done once. 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.
- Set up the schema stored procedures and load the packages for the schema stored procedures if you plan to use DB2 Server for VM database as a server that can be accessed by JDBC /CLI clients using DB2 UDB v8 or later See Appendix F, "Preparing the Schema Stored Procedures for JDBC/CLI Clients " in the DB2 Server for VSE & VM Database Administration manual for details.

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".

- Set up Stored Procedures to define PSERVERS and cataloging procedures.

Note. The JCL used to start up the database with Stored Procedure Support must contain a statement that defines the logical device 097 to enable POWER to find and execute the JCL that starts the stored procedure handler. An example is illustrated below:

```
// ASSGN SYS097,SYSPCH
```

The information currently provided on the device assignment with SYS098 in Section "Stored Procedure Servers" of Chapter 11 Stored Procedure in the *DB2 Server for VSE System Administration* manual is incorrect.

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.

5.0 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 VSE has 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 proceed

5.1 DBS Utility Maintenance

5.1.1 Reloading the DBS Utility Package (SQLDBA.ARIDSQPL)

The DBS utility package must be reloaded in all databases if there is a service update to the A-type source member ARIDSQPL. To reload it, prepare and run the job control statements shown in Figure 67.

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.DB2730)
// EXEC PROC=ARIS73SL    *-- DB2 Server LIBRARY DEFINITION    (1)
// EXEC PROC=ARIS73DB    *-- 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 67. Reloading the DBS Utility Package

Notes for Figure 67:

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

- (1) Procedure ARIS73SL identifies the DB2 Server for VSE sublibraries.
- (2) Procedure ARIS73DB 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 database from the DB2 Server for VSE A-type source member ARIDSQL P. 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.

5.2 Messages and HELP Text Maintenance

5.2.1 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.DB2730)
// EXEC PROC=ARIS73SL    *-- DB2 Server LIBRARY DEFINITION      (1)
// EXEC PROC=ARIS73DB    *-- 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 68. Reinstalling the HELP Text into the Database

Notes for Figure 68:

- Procedures ARISDBSD, ARIS059D, and ARIS060D run the application server in single user mode against the identified database.
- (1) Procedure ARIS73SL identifies the DB2 Server for VSE sublibraries.
 - (2) Procedure ARIS73DB 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.

5.2.2 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 Figure 69 on page 76

Attention:

- Procedure ARIS062D deletes all ISQL HELP next 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.DB2730)
// EXEC PROC=ARIS73SL   *-- DB2 Server LIBRARY DEFINITION   (1)
// EXEC PROC=ARIS73DB   *-- 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 69. Removing ISQL HELP Text and Messages from the Database

Notes for Figure 69:

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

- (1) Procedure ARIS73SL identifies the DB2 Server for VSE service and production libraries.
- (2) Procedure ARIS73DB 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.

5.3 Online Resource Adapter Control Maintenance

5.3.1 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" 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".

5.3.2 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 70

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.DB2730,PRD1.BASE,PRD2.CONFIG),          X
//          CATALOG=PRD2.DB2730                                (1)
// EXEC PROC=ARIS090D      *-- LINK-EDIT ONLINE RESOURCE ADAPTER CONTROL (2)
/*
/ &
```

Figure 70. Re-Link-Editing Online Resource Adapter Control

Notes:

- 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.DB2730 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.DB2730), 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

5.4 ISQL Maintenance

5.4.1 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.

5.4.2 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 71. 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.DB2730)
// EXEC PROC=ARIS73SL    *-- DB2 Server LIBRARY DEFINITION    (1)
// EXEC PROC=ARIS73DB    *-- 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 71. Reloading the ISQL Package

Notes for Figure 71:

- The steps executed by procedures ARISDBSD and ARIS120D run the application server in single user mode against the identified database.
- (1) Procedure ARIS73SL identifies the DB2 Server for VSE sublibraries.
 - (2) Procedure ARIS73DB 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.

5.4.3 Re-Link-Editing ISQL

To re-link-edit ISQL after initial installation, prepare and execute the job control statements shown in Figure 72

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.DB2730,PRD1.BASE,PRD2.CONFIG),          X
//          CATALOG=PRD2.DB2730                                (1)
// EXEC PROC=ARIS140D    *-- LINK-EDIT ISQL                    (2)
/*
/ &
```

Figure 72. Re-Link-Editing ISQL

Notes for Figure 72:

- 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.DB2730 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.DB2730), 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". 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.

5.4.4 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 73. 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.DB2730,PRD1.BASE,PRD2.CONFIG),          X
//                   CATALOG=PRD2.DB2730                      (1)
// EXEC PROC=ARIS150D *-- LINK-EDIT ITRM TERMINAL TRANSACTION (2)
/*
/ &
```

Figure 73. Re-Link-Editing the ISQL ITRM Terminal Transaction

Notes for Figure 73:

- 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.DB2730 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.DB2730), 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". 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.

5.4.5 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 74. This is required by a service up date 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.DB2730,PRD1.BASE,PRD2.CONFIG),          X
// EXEC PROC=ARIS160D *-- LINK-EDIT ITRM TERMINAL EXTENSION (1)
/*
/
```

Figure 74. Re-Link-Editing the ISQL ITRM Terminal Extension Program

Notes for Figure 74:

- 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.DB2730 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.DB2730), 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". 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.

5.5 CCSID-Related Phases Maintenance

5.5.1 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 ARIS73WD shown in Figure 75.

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

```
// JOB ARIS73WD      RELOAD CCSID-RELATED PHASES PACKAGE
// LIBDEF PROC,SEARCH=(PRD2.DB2730)
// EXEC PROC=ARIS73SL  *-- DB2 Server LIBRARY DEFINITION
// EXEC PROC=ARIS73DB  *-- STARTER DATABASE IDENTIFICATION
// EXEC PROC=ARIS175D  *-- RELOAD CCSID-RELATED PHASES PACKAGE
/*
/ &
```

Figure 75. Reloading the CCSID-Related Phases Package

Notes for Figure 75:

- 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 7 Release 3 sublibrary.
- Procedure ARIS175D reloads the CCSID-related phases package in the database by running the application server in single user mode against that database.

5.5.2 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" for details.

5.6 FIPS Flagger Maintenance

5.6.1 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 76 on page 83

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.DB2730)
// EXEC PROC=ARIS73SL   *-- DB2 Server LIBRARY DEFINITION   (1)
// EXEC PROC=ARIS73DB   *-- 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 76. Reloading the FIPS Flagger Package

Notes for Figure 76:

- The steps executed by procedure ARISDBSD and procedure ARIS360D run the application server in single user mode against the identified database.
- (1) Procedure ARIS73SL identifies the DB2 Server for VSE sublibraries.
 - (2) Procedure ARIS73DB 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.

5.7 DB2 Server for VSE Library Maintenance

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

5.7.1 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".
3. Perform the link-edits in "Installation Step 1: Link-Edit the DB2 Server for VSE 7.3 Online Support Components".

5.7.2 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 77

```
// JOB PURGE DB2 Server VSE VERSION 7.3 LIBRARIES
// EXEC LIBR,PARM='MSHP'
ACCESS SUBLIB=PRD2.DB2730          (1)
DELETE ARI*.*
/*
/ &
```

Figure 77. Purging DB2 Server for VSE Libraries

Note for Figure 77:

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

5.8 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.

Note:

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

ARICDIRD
ARIPRPF
ARIXRDS

ARIDBS
ARIPRPP

ARIPRPA
ARIRBARM

ARIPRPC
ARISQLDS

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.

Currently there is a problem loading these phases in SVA. APAR PQ53159 has been opened to address this issue.

Table 2. Link Books for the DB2 Server for VSE Components

<i>Figure 78 (Page 1 of 2). Link Books for the DB2 Server for VSE Components</i>		
Component	Link Book	Phases
DB2 Server for VSE Copyright	None	\$\$\$COSQL
DBSS / DSC	ARISLKDD ARISLKMD	ARISQLDS ARICMOD
VSE Dependent Functions	ARISLKED	ARISD000 ARISD010 ARISD100 ARISD110 ARISD120 ARISD130 ARISD140 ARISD150 ARISD160 ARISD200 ARISD210 ARISD220 ARISD230 ARISD240 ARISD250 ARISD260 ARISD300 ARISD310 ARISD320 ARISD330 ARISD340
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
FORTTRAN Preprocessor	ARISLKTD	ARIPRPF
DBS Utility	ARISLKUD	ARIDBS
Batch Resource Adapter	ARISLKBD	ARIRBARM
Online Resource Adapter	ARISLKZD	ARIOOLRM
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 ARISLKN0 ARISLKNW	ARICDEBD ARICDRAD ARICDAXD ARICDR2

Figure 78 (Page 2 of 2). Link Books for the DB2 Server for VSE Components

COBOL II Dynamic Support	None	ARIPADR4 ARIPADR5 ARIPRDI ARISSMA Note: 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	ARIPCND
CBND sub-transaction	ARISLKCA	ARIPCBD
SQLGLOB File Default Setting Program	ARISLKGZ	ARICGDEF
ISQL Package Conversion Program	ARISLKBZ	ARICIQBD
Password encryption routine for online resource adapter	ARISLKSZ	ARICSCC
Password encryption routine for batch resource adapter and server	ARISLKSE	ARICSEC
TCP/IP online resource adapter	ARISLKTZ	ARICTCC
TCP/IP batch resource adapter	ARISLKTE	ARICTCP

6.0 Appendix A. How to Use the Job Manager

IMPORTANT: READ THIS APPENDIX BEFORE STARTING THE INSTALLATION.
--

6.1 Overview of Installation and Migration

This section is an introduction to the installation of DB2 Server for VSE Version 7 Release 3 (7.3) and the migration of existing databases to 7.3. At the beginning of chapters 2 through 4, you can find an outline of the preparation, installation and migration steps in each chapter.

An installation aid is supplied to help with the installation and migration processes. Some steps in Chapters 2 through 4 utilize this aid, and some are performed manually.

6.2 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 7.3, and Chapter 3, Installing DB2 Server for VSE. You do not perform any of the steps in Chapter 4, Migrating an Existing Database.

6.3 Migration

If you are migrating from a previous release, follow the relevant steps in Chapter 2 on Preparation, and the Migration steps in Chapter 4. Of course, you might follow the installation process to build a starter database for initial application testing, and then perform the migration process for your existing databases.

As part of your preparation to migrate your existing database to the DB2 Server for VSE Version 7 Release 3, you should review the Appendix in the DB2 Server for VSE System Administration manual that discusses the differences between your existing system, and Version 7 Release 3.

6.4 Optional Steps

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

6.5 The Job Manager

The Job Manager is a set of REXX Exec, Job Control members, and parameter tables, to assist in the DB2 Server for VSE Installation and Migration processes. REXX program ARISIMGR controls the overall job flow, based on the contents of the job list control tables(supplied as Z-type members). There are job lists for Preparation steps(ARISITBP), for Installation steps(ARISITBI), and for Migration steps(ARISITBM).

The Job Manager selects the job control member from the job list, extracts the member from the library, modifies the JCL, submits the job, evaluates the execution, posts the results, and then repeats the process. Modifications to the job control members are based on substituting variables in the JCL, using the parameters in ARISIVAR(a Z-type member).

6.5.1 How Parameter Substitution Works

The Job Manager reads variables stored in ARISIVAR (a Z-type member).

Before starting the Job Manager:

1. Punch and modify the sample ARISIVAR from your installation library.
2. Re-catalog ARISIVAR to your installation library.

Note:

- Make sure to preserve the structure of ARISIVAR member.
- You do not need to update parameters for a step, you are not planning to execute.

The parameter table (see ARISIVAR a Z-type member) has one line for each parameter for each job. The lines of the parameter table are in the following format:

Job name	The job name that requires Parameter(s)
Parameter name	The variable name in the job JCL
Value of the parameter	The value of the parameter that can be changed

Figure 79. The description of parameters in ARISIVAR

The parameter table also has one line for each global parameter. These parameters are used in more than one job, but apply only within the start/end group being processed.

Parameter name	GLOBAL (constant keyword)
Parameter name	This name appears in a JCL for the job
Value of the parameter	This is actual value of the global parameter, which can be changed

Figure 80. The description of Global parameters in the ARISIVAR

6.5.2 How Job List Works

The job list is used by the Job Manager to determine the jobs required by each step (Preparation/ Installation or Migration).

Job's name	Name of member in the distribution library
Job's type	Type of member in the distribution library
Return code	<ul style="list-style-type: none"> RC = 'X' - job did not complete successfully or has not run before. RC=number, job has run and RC contains the return code of the job.
MAXRC	MAXRC maximum return code allowed for this job to continue the installation process.
Is job Optional?	O - Optional, M - Mandatory (for Installation part)
Is job Optional?	O - Optional, M - Mandatory (for Migration part)
Is input required?	<ul style="list-style-type: none"> YES - input required (get variables from ARISIVAR) NO - input is not required. <p>Note: If the only required parameter is installation library name or a global variable, then input marked as 'NO'</p>
Stop Job Manager?	<ul style="list-style-type: none"> YES - stop the execution of the Job Manager after this step. NO - continue the execution of the Job Manager.

Figure 81. Description of each column in a job list

Note: Every parameter in a job list must be in upper case, separated from other parameters by one blank space.

Here is an example of a job list for the Preparation Step:

```
ARIS73JD Z X 4 0 M YES NO
```

In the example, ARIS73JD is a Z type member, which was not executed yet. The maximum return code allowed for ARIS73JD is 4. ARIS73JD is Optional step in Preparation for Installation, but mandatory step in Preparation for Migration. The ARIS73JD requires parameters from ARISIVAR and the execution of the Job Manager will not stop after this step.

As ARIS73JD is submitted to your VSE system, the Job Manager will compare the maximum return code from the execution to MAXRC. If the job completes with a return code greater than MAXRC, the Job Manager stops.

6.5.2.1 How to Run All Jobs Again

If you have multiple databases and want to execute Preparation, Installation, or Migration Step again this section will explain how to do it. You can choose one of the following:

1. Punch a Job List corresponding to the step you want to execute:
 - ARISITBP - Job List for Preparation Step
 - ARISITBI - Job List for Installation Step
 - ARISITBM - Job List for Migration Step

Change the "Return Code" fields (See Figure 81 on page 89) for all jobs with "X" and re-catalog the Job list to the installation library.

WARNING: When changing the records in the file, note that the fields must be separated by only one blank.

2. See Figure 83 on page 91.

6.5.3 Starting the Job Manager

IMPORTANT: Modify ARISIVAR Z-type member with the appropriate parameters. If you subsequently change ANY ARISIVAR global variables you MUST restart the Job Manager.

After successful modification of ARISIVAR control table, punch and submit job control member ARISIMGJ.Z from the distribution library, which will start execution of Job Manager.

```
* $$ JOB JNM=ARISIMGJ,CLASS=x (1)
* $$ LST CLASS=V,DEST=(,userid) *modify accordingly
// JOB ARISIMGJ JCL TO START MANAGER EXEC
// LIBDEF *,SEARCH=(PRD2.DB2730) *modify accordingly
// EXEC REXX=ARISIMGR
/*
/&
* $$ EOJ
```

Figure 82. Starting the Job Manager

- (1) For *CLASS* specify any available partition to run the Job Manager.

Note: ARISSTDL Z-type member must run in background partition, thus for the Preparation Step do not submit the Job Manager to run in background partition. See Figure 83 on page 91:

Note: ARISIMGJ Job will always complete with the return code of 0. You must check the return code of the executed job and rely on the messages from the Job manager to make sure that the execution was successful.
See "How the Job Results are Evaluated".

6.5.3.1 User Interface

```

F4 0004 *****
F4 0004     PREPARE FOR INSTALLATION/MIGRATION PROCESS
F4 0004 *****
F4 0004 ENTER INSTALLATION LIBRARY NAME (PRD2.DB2730  default) Q Exit (1)
F4-0004
4
F4 0004 YOU HAVE SELECTED  PRD2.DB2730
F4 0004 PRESS ENTER TO CONTINUE OR ENTER ANOTHER LIBRARY NAME
F4 0004                                     Q Exit
4
F4 0004 ENTER PARTITION NUMBER: (default 4)                               Q Exit (2)
F4-0004
0
F4 0004 YOU HAVE SELECTED  0
F4 0004 PRESS ENTER TO CONTINUE OR ENTER ANOTHER PARTITION NUMBER
F4-0004
4
F4 0004 PLEASE SELECT ONE OF THE FOLLOWING :
F4 0004 FOR PREPARATION....  ENTER (P)
F4 0004 FOR INSTALLATION...  ENTER (I)
F4 0004 FOR MIGRATION.....  ENTER (M)
F4 0004                                     Q Exit
4 p
F4 0004 IF PREPARATION FOR:                                           Q Exit
F4 0004 INSTALLATION... PLEASE ENTER (I)
F4 0004 MIGRATION..... PLEASE ENTER (M)
F4-0004
4 i
F4 0004 DO YOU WANT TO EXECUTE ALL JOBS? {Y|N-default}                Q Exit (3)
F4-0004
4 n
F4 0004 IF YOU WANT TO START FROM A SPECIFIC JOB ENTER 1                (4)
F4 0004 IF YOU WANT TO EXECUTE ONLY ONE STEP      ENTER 2 (Default)    (5)
F4 0004                                     Q Exit
4 2
F4 0004 ENTER THE JOB NAME YOU WANT TO EXECUTE (ex. ARIS73JD):
F4 0004                                     Q Exit
4 aris73jd
F1 0001 1Q47I  F4 ARIS73JD 00021 FROM (JCL) , TIME=12:45:32
BG 0000 * ** JOB JNM=ARIS73JD,CLASS=0,DISP=D
BG 0000 * ** LST CLASS=V,DISP=D,DEST=(,XXXXXX)
BG 0000 // JOB ARIS73JD DEFINE DB2730 PROGRAMS AND TRANSACTIONS

```

Figure 83. Sample user answers when running the Job Manager

Notes for Figure 83:

- (1) The installation library name, which is specified here, is included in library search path for all jobs as the parameter - LIBNAME.

```
// JOB name
// LIBDEF PROC,SEARCH=(%LIBNAME%)
```

- (2) **For Preparation Step** - answer 0 (BG partition). **Note:** the BG partition must be available.
For Installation/ Migration Steps - specify any available partition that has enough size to start the DB2 startup database
- (3) Enter **'YES'** if you want to run all jobs within the current step (Preparation/ Installation/ Migration).
Note: the Job Manager will skip all jobs which were run successfully. The first job it will submit will be a job which failed in previous execution or which was never run before.
The default answer is **'NO'**.
- (4) Enter **'1'** if you want the Job Manager to start from a particular job and continue execution of all jobs which follow the specified one.
Note: this choice is usefull if you have to execute some jobs twice, even if the execution of the jobs was successfull.
- (5) The default answer is **'2'** - to execute only one job.

Note: At any time Enter Q to quit and terminate the Job.

6.5.4 Execution of Jobs Submitted by the Job Manager

On the console during the execution of job you should see the following:

```
F4 0001 IQ47I F4 name_of_submited_job 00025 FROM
(ARISIMGR) , TIME=11:39:33
F4 0004 // JOB name_of_job comment from submitted job
DATE 09/12/2001, CLOCK 11/39/33
* more comments from submitted_job (if available)
F4 0004 EOJ name_of_job MAX.RETURN CODE=0000
DATE 09/12/2001, CLOCK 11/39/36, DURATION 00/00/03
F4 0004 EOJ NO NAME
DATE 09/12/2001, CLOCK 11/39/37
F4 0001 IQ34I F4 WAITING FOR WORK
F1 0001 IQ34I LST WAITING FOR WORK ON 00E
F4-0004 *****
F4-0004 * JOB: name_of_job EXECUTED SUCCESSFULLY (1)
F4-0004 *****
F4-0004 JOB MANAGER COMPLETED SUCCESSFULLY (2)
F4-0004 EOJ JCL MAX.RETURN CODE=0000
BG-0000
```

Figure 84. Console output from the Job Manager

- (1) This message will always appear if submitted job executed successfully.
The possible error messages are:
- 'ERROR! RETURN CODE FROM LAST STEP WAS xxx'
 - 'JOB WAS CANCELED'
 - 'READ CONSOLE FOR DETAILS.'
- (2) **If error occurs you must investigate, correct the error and restart the Job Manager.**

6.5.5 How the Job Results are Evaluated

What do you look for:

- Messages from the Job manager (ARISIMGJ). If it was terminated, read console and check your reader to make sure you understand what went wrong, correct the error, and restart Job Manager.
- Messages from submitted jobs.
 - Some jobs have error checking inside the JCL. In such situations Job Manager will wait for an user response to continue or to stop the installation process.
 - Other jobs that terminate abnormally will produce readable output on the console and send the console output file to your reader. Please read the file to determine what went wrong.
 - Some jobs will not terminate until there is a console response from the user. If no response was received after 30 seconds, Job Manager will output a warning message on the console and wait for your response.
- If the return code allowed for a job was greater than zero, it is your responsibility to check whenever this code was expected or if occurred because of some kind of error. This is very important for Z-type member ARIS73DD. Please read the console output for this job and make sure no errors are found.

IMPORTANT: Always verify if the execution of the last job was successful. If the Job Manager stops its execution, before proceeding to another step, make sure that no errors occurred and that you executed all mandatory jobs for the step.

6.5.6 What Should You Keep in Mind

As soon as you start the Job Manager for Installation or Migration Steps, it will update and recatalog three members: **ARIS73DB**, **ARIS73SL** and **ARIS380D**

Note: If you need to make any changes to ARIS73DB, ARIS73SL or ARIS380D after starting the Job Manager for Installation or Migration Steps, you must do it **manually**.

ARIS73DB Contains the labels for the VSAM files used for the Starter Database. This member will be updated using parameters you specified for ARIS73CD Z-type member. The parameters needed are:

- DBCAT
- DIRFILE

- LOGFILE
- EXTFILE

ARIS73SL This member will be updated using following parameters:

- Default Installation Library, which you specify when starting the Job Manager (default is PRD2.DB2730)
- CLIB - see Figure 59 on page 60

ARIS380D This member will install a language. See 3.6.1, “Install Language and ISQL Help Text” on page 45. If you need to install more than one language you need to modify this procedure manually.

6.6 The Disclaimer

The Job Manager is supplied as an installation aid for DB2 Server for VSE, and is not intended to be used as a general purpose monitoring tool. Any use of the Job Manager, other than Preparation, Installation, and Migration for DB2 Server for VSE is not supported.

7.0 Appendix B. 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.

7.1 Embedding Database Identification Statements

The IBM-supplied procedure ARIS73DB 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 ARIS73DB with actual database DLBL statements, or with references to your own procedures set up for this purpose.

7.2 Embedding DB2 Server for VSE Library Identification Statements

The IBM-supplied procedure ARIS73SL contains the library identification (LIBDEF) statements for most of the installation steps for a database. The IBM-supplied procedure ARIS73PL contains the LIBDEF statements for normal use of DB2 Server for VSE.

The LIBDEF statements in procedures ARIS73SL and ARIS73PL 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 ARIS73SL and ARIS73PL with your own LIBDEF statements, or with references to your own procedures set up for this purpose.

7.3 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 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 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, whenever 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 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 READ MEMBER statement.

7.4 Running the DBS Utility in Single User Mode

The job control example shown in Figure 85 on page 97 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.DB2730)
// EXEC PROC=ARIS73DB   *-- STARTER DATABASE IDENTIFICATION
// EXEC PROC=ARIS73PL   *-- 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 85. Example of Running the DBS Utility in Single User Mode

Note:

For procedure ARIS73DB, you can substitute your own procedure or job control statements, to start the application server using your own database.

7.5 Suppressing Preprocessor Output

SYSPCH and SYSLST output from the DB2 Server for VSE Assembler preprocessor is suppressed during the database install action 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.

8.0 Appendix C. 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
ARISIMGR	Rexx Job Manager
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
ARIS73FC	Sample File Control Table Entries for SQLBIND and SQLGLOB
ARIS73DB	Starter Database Identification Statements
ARIS73PL	DB2 Server for VSE Production Library Definition
ARIS73SL	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

9.0 Appendix D. 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

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)
ARIS6ASD	Sample Assembler Language Application Program to Manipulate the Sample Tables (see note below)
ARIS6CBD	Sample COBOL Application Program to Manipulate the Sample Tables (see note below)
ARIS6CD	Sample C Application Program to Manipulate the Sample Tables (see note below)
ARIS6FTD	Sample FORTRAN Application Program to Manipulate the Sample Tables (see note below)
ARIS6PLD	Sample PL/I Application Program to Manipulate the Sample Tables (see note below)
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: Slovenia, Poland and Romania).
ARIXU01M	Schema Stored Procedure Package for ARIXU01
ARIXU02M	Schema Stored Procudure Package for ARIXU02

ARIXU03M	Schema Stored Procedure Package for ARIXU03
ARIXU04M	Schema Stored Procedure Package for ARIXU04
ARIXU05M	Schema Stored Procedure Package for ARIXU05
ARIXU06M	Schema Stored Procedure Package for ARIXU06
ARIXU07M	Schema Stored Procedure Package for ARIXU07
ARIXU08M	Schema Stored Procedure Package for ARIXU08
ARIXU09M	Schema Stored Procedure Package for ARIXU09
ARIXU10M	Schema Stored Procedure Package for ARIXU10
ARIXU11M	Schema Stored Procedure Package for ARIXU11
ARIXU12M	Schema Stored Procedure Package for ARIXU12
ARIXUPTM	Package for Schema Stored Procedure related application ARIXUPTB
ARISPDEF	DBS Utility Commands to create tables and procedures for Schema Stored Procedures
ARISPRLD	DBS Utility Commands to reload packages and grant authorities for Schema Stored Procedures

Note:

Members ARIS6ASD, ARIS6CD, ARIS6CBD, ARIS6FTD, and ARIS6PLD 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 86. 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.DB2730
PUNCH XXXXXXXX.A
/*
/&

```

Figure 86. Example of JCL Required to Punch A-Type Members

10.0 Appendix E. 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
ARISIMGJ	Job Control to Start Job Manager
ARISIVAR	Control Table with parameters
ARISITBP	Control Table with list of jobs for Preparation Step
ARISITBI	Control Table with list of jobs for Installation Step
ARISITBM	Control Table with list of jobs for Migration Step
ARISBDID	DBNAME Directory Generation Job Control
ARISCNVD	Job Control to Refresh CCSIDs-Related Phases
ARISGDEF	Job Control to set SQLGLOB file default value
ARISSTDL	Job Control to update labels for the new datasets
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
ARIS73AD	Job Control to prepare for installation and restore the Distribution Library
ARIS73BD	Job Control to Do DB2 Server for VSE Link-Edits
ARIS73CD	Job Control to Define the VSAM Master Catalog and the VSAM Data Sets
ARIS73DD	Job Control to Generate and Install Starter Data Base
ARIS73ED	Job Control to Install Optional DB2 Server for VSE Components
ARIS73FD	Job Control to Optionally Grant SCHEDULE Authority to CICS
ARIS73GD	Job Control to Start DB2 Server for VSE in Multiple User Mode
ARIS73HD	Job Control to Add and Delete Dbextents
ARIS73HZ	Job Control to Enlarge HELPTEXT Dbspace

ARIS73ID	Job Control to Increase the Size of the Directory
ARIS73JD	Job Control to Define CICS Programs and Transactions
ARIS73JZ	Job Control to Install National Language
ARIS73KD	Job Control to Define CICS DB2 for VSE DRDA Programs and Transactions for CICS
ARIS73ND	Job Control to Cold Log and Change the Password for User SQLDBA
ARIS73OD	Job Control to Format the DB2 Server for VSE Logs
ARIS73PD	Job Control to Create the Version 7 Release 3 System Catalog
ARIS73QD	Job control to Create the DBS Utility Package
ARIS73RD	Job Control to Update the DB2 Server for VSE System
ARIS73SD	Job Control to Migrate the Help Text Tables
ARIS73TD	Job Control to Reload the English Help Text
ARIS73VD	Job Control to Change the Password for User SQLDBA
ARIS73WD	Job Control to Reload the CCSID-Related Phases Package
ARIS731D	List Primary Keys to be Dropped and Recreated
ARIS732D	Enable DRDA Server Support
ARIS733D	Remove DRDA Server Support
ARIS734D	Linkedit LE/VSE Abend Checking Support
ARIS735D	Job Control to Enable DRDA AR Support
ARIS736D	Job Control to Remove DRDA AR Support
ARIS737D	Job Control to Define VSAM Preprocessor Bind File
ARIS738D	Job Control to define SQLGLOB VSAM file
ARIS739D	Job Control to define BINDWKF VSAM file
ARIS73GZ	Job Control to Start DB2 Server for VSE Migration in Multiple User Mode
ARIS73KZ	Load Fips Flagger
ARIS73LZ	Reload ISQL
ARIS73MZ	Revoke allusers connect
ARIS73NZ	Reset SQLDBA Password
ARISPGPH	Job Control to generate phases for Schema Stored Procedures
ARISPCTB	Job Control to create tables and procedures for Schema Stored Procedures
ARISPSET	Job Control to reload packages and grant authorities for Schema Stored Procedures

You may punch the Z-type source members presented in this appendix using the JCL in Figure 87 on page 105. 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.DB2730
PUNCH XXXXXXXX.Z
/*
/ &
```

Figure 87. Example of JCL Required to Punch Z-Type Members

11.0 Appendix F. 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.

11.1 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.

11.1.1 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 88 on page 107 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 X
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)
      JDEVICE=TAPE
DFHJCT TYPE=FINAL
END DFHJCTBA

```

Figure 88. DFHJCT Examples for CICS Monitoring Facility

Notes for Figure 88:

- 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 non-immediate 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.

11.1.2 DFHMCT Entries

Figure 89 on page 108 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 89. DFHMCT Example for CICS Monitoring Facility

Notes for Figure 89:

- (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.

11.1.3 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
```

11.2 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".
- Include VSE/ESA job accounting. The parameter `JA=YES` must be specified on the IPL SYS command.

11.3 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.

11.3.1 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 90 on page 110 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=TRANSCIVE	

Figure 90. 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 91. 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).

11.3.2 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 92 on page 111 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=(TRANSCIVE)	

Figure 92. 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 90 on page 110) 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 "\n" at the end the statement to indicate the end of data. The output data set (DISKOT1 in Figure 91 on page 110 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).

11.4 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 or 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 93 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 93. DFHDCT Example

Notes:

- (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
```

12.0 Bibliography

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

Related Publications

- DB2 Server for VSE & VM Data Restore Guide, SC09-2991
- IBM SQL Reference, Version 2, Volume 1, SC26-8416
- IBM SQL Reference, SC26-8415

Other Distributed Data Publications

- DRDA: Every Manager's Guide, GC26-3195
- IBM Distributed Data Management (DDM) Architecture, Architecture Reference, Level 3, SC21-9526
- IBM Distributed Data Management (DDM) Architecture, Implementation Programmer's Guide, SC21-9529
- VM/Directory Maintenance Licensed Program Operation and User Guide Release 4, SC23-0437
- IBM Distributed Relational Database Architecture Reference, SC26-4651
- IBM Systems Network Architecture, Format and Protocol
- SNA LU 6.2 Reference: Peer Protocols
- Reference Manual: Architecture Logic for LU Type 6.2
- IBM Systems Network Architecture, Logical Unit 6.2 Reference: Peer Protocols
- Distributed Data Management (DDM) List of Terms

CCSID Publications

- Character Data Representation Architecture, Executive Overview, GC09-2207
- Character Data Representation Architecture Reference and Registry, SC09-2190

C/370 Publications

- IBM C/370 Installation and Customization Guide, GC09-1387
- IBM C/370 Programming Guide, SC09-1399

Communication Server for OS/2 Publications

- Up and Running!, GC31-8189
- Network Administration and Subsystem Management Guide, SC31-8181
- Command Reference, SC31-8183
- Message Reference, SC31-8185
- Problem Determination Guide, SC31-8186

Distributed Database Connection Services (DDCS) Publications

- DDCS User's Guide for Common Servers, S20H-4793
- DDCS for OS/2 Installation and Configuration Guide, S20H-4795

VTAM Publications

- VTAM Messages and Codes, SC31-6493
- VTAM Network Implementation Guide, SC31-6494
- VTAM Operation, SC31-6495
- VTAM Programming, SC31-6496
- VTAM Programming for LU 6.2, SC31-6497
- VTAM Resource Definition Reference, SC31-6498
- VTAM Resource Definition Samples, SC31-6499

CSP/AD and CSP/AE Publications

- Developing Applications, SH20-6435
- CSP/AD and CSP/AE Installation Planning Guide, GH20-6764
- Administering CSP/AD and CSP/AE on VM, SH20-6766
- Administering CSP/AD and CSP/AE on VSE, SH20-6767
- CSP/AD and CSP/AE Planning, SH20-6770
- Cross System Product General Information, GH23-0500

Query Management Facility (QMF) Publications

- QMF General Information, GC26-4713
- QMF VSE/ESA Setup and Usage Guide, GG24-4196
- Managing QMF for VSE/ESA, SC26-3252
- Installing QMF on VSE/ESA, SC26-3254
- QMF Learner's Guide, SC26-4714
- QMF Advanced User's Guide, SC26-4715
- QMF Reference, SC26-4716
- Installing QMF on VM, SC26-4718
- QMF Application Development Guide, SC26-4722
- QMF Messages and Codes, SC26-4834
- Using QMF, SC26-8078
- Managing QMF for VM/ESA, SC26-8219

DL/I DOS/VS Publications

- DL/I DOS/VS Application Programming, SH24-5009

COBOL Publications

- VS COBOL II Migration Guide for VSE, GC26-3150
- VS COBOL II Migration Guide for MVS and CMS, GC26-3151
- VS COBOL II General Information, GC26-4042
- VS COBOL II Language Reference, GC26-4047
- VS COBOL II Application Programming Guide, SC26-4045
- VS COBOL II Application Programming Debugging, SC26-4049
- VS COBOL II Installation and Customization for CMS, SC26-4213
- VS COBOL II Installation and Customization for VSE, SC26-4696
- VS COBOL II Application Programming Guide for VSE, SC26-4697

Systems Network Architecture (SNA) Publications

- SNA Transaction Programmer's Reference Manual for LU Type 6.2, GC30-3084
- SNA Format and Protocol Reference: Architecture Logic for LU Type 6.2, SC30-3269
- SNA LU 6.2 Reference: Peer Protocols, SC31-6808
- SNA Synch Point Services Architecture Reference, SC31-8134

Miscellaneous Publications

- IBM 3990 Storage Control Planning, Installation, and Storage Administration Guide, GA32-0100
- Dictionary of Computing, ZC20-1699
- APL2 Programming: Using Structured Query Language, SH21-1056
- ESA/390 Principles of Operation, SA22-7201

Related Feature Publications

- DB2 Replication Guide and Reference, SC26-9920
- Control Center Operations Guide for VSE, GC09-2992

12.1 Contacting IBM

Before you contact DB2 customer support, check the product manuals for help with your specific technical problem.

For information or to order any of the DB2 Server for VSE & VM products, contact an IBM representative at a local branch office or contact any authorized IBM software remarketer.

If you live in the U.S.A., then you can call one of the following numbers:

- 1-800-237-5511 for customer support
- 1-888-426-4343 to learn about available service options

12.1.1 Product information

DB2 Server for VSE & VM product information is available by telephone or by the World Wide Web at <http://www.ibm.com/software/data/db2/vse-vm>

This site contains the latest information on the technical library, product manuals, newsgroups, APARs, news, and links to web resources.

If you live in the U.S.A., then you can call one of the following

- 1-800-IBM-CALL (1-800-426-2255) to order products or to obtain general information.
- 1-800-879-2755 to order publications.

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